JOHANNESBURG SUMMIT 2002

AUSTRALIA

COUNTRY PROFILE

UNITED NATIONS

INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of. chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

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LIST OF COMMONLY USED ACRONYMS

ACS	Association of Caribbean States
AMCEN	Africa Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CARICOM	The Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CIS	Commonwealth of Independent States
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development of the United Nations
DESA	Department for Economic and Social Affairs
ECA	Economic Commission for Africa
ECCAS	Economic Community for Central African States
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIDA	Foundation for International Development Assistance
GATT	General Agreement on Tariffs and Trade
GAW	Global Atmosphere Watch (WMO)
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring System (UNEP)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GLOBE	Global Legislators Organisation for a Balanced Environment
GOS	Global Observing System (WMO/WWW)
GRID	Global Resource Information Database
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IAEA	International Atomic Energy Agency
ICSC	International Civil Service Commission
ICSU	International Council of Scientific Unions
ICT	Information and Communication Technology
ICTSD	International Centre for Trade and Sustainable Development

IEEA	Integrated Environmental and Economic Accounting
IFAD	International Fund for Agricultural Development
IFCS	Intergovernmental Forum on Chemical Safety
IGADD	Intergovernmental Authority on Drought and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPCS	International Programme on Chemical Safety
IPM	Integrated Pest Management
IRPTC	International Register of Potentially Toxic Chemicals
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources
LA21	Local Agenda 21
LDCs	Least Developed Countries
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NSDS	National Sustainable Development Strategies
OAS	Organization of American States
OAU	Organization for African Unity
ODA	Official Development Assistance/Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Papers
SACEP	South Asian Cooperative Environment Programme
SADC	Southern African Development Community
SARD	Sustainable Agriculture and Rural Development
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Coordinator
UNEP	United Nations Environment Programme

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
WFC	World Food Council
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund
WWW	World Weather Watch (WMO)

CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES

Decision-Making: The Australian Government is committed to policy-making that focuses on linkages across ministries, and recognizes the value of an integrated approach to the various strands of international cooperation/development assistance for sustainable development. The objective of Australia's international development cooperation programme, managed by the Australian Agency for International Development (AusAID), is to assist developing countries to reduce poverty and achieve sustainable development, particularly in the Asia-Pacific region. The Australian Government is committed to involving all relevant groups in its decision-making processes, including providing appropriate information, consulting, and encouraging feedback on the quality of the aid programme. This is done through a variety of consultative mechanisms, the Committee for Development Cooperation (an NGO consultative group), and specialist advisory groups (www.ausaid.gov.au/ngos/consult).

Programmes and Projects: Programmes and projects for accelerating sustainable development in developing countries are operated and managed by AusAID. *Better Aid for a Better Future*, released in November 1997, sets out the priorities and direction of Australia's international development cooperation programme. The programme focuses on the significant challenges facing the Asia-Pacific region, particularly in Papua New Guinea, Pacific island countries and Southeast Asia. Australia also responds selectively to development needs in South Asia, Africa and the Middle East and have a strong multilateral component in the programme. The main sectors that underpin specific projects include health, education, infrastructure, rural development and governance, as well as commitments to the cross-cutting issues of gender and environment.
The Environment Industries Focus Unit, in the Federal Department of the Environment and Heritage, also pursues sustainable development by identifying and promoting Australian environment industry capabilities, in partnership with the private sector, and promoting these domestically and internationally (www.ea.gov.au/industry/innovation/eifu/index).

Status: Australia is committed to a strong and effective international development cooperation programme that focuses on the priority needs of partner governments and maintaining dialogue that leads to enhanced shared objectives of poverty alleviation and sustainable development.

Capacity-Building, Education, Training and Awareness-Raising: The Australian aid programme is geared towards promoting capacity-building opportunities in partner countries. In particular, the development cooperation programme aims to increase access to, and the quality of, education and training for the most vulnerable in the developing countries of the region. Basic education and technical and vocational education are priorities, with selective assistance also given for distance and higher education and institutional strengthening. The Australian Government also engages in a range of educational and training programmes targeting experts and professionals in international relations including diplomatic training programmes, trade negotiation courses, funding and professional support for international seminars, and engagement with professional international organizations.

Information: Australia's Overseas Aid Programme Statistical Summary' (Green Book), and the 'Australia's Overseas Aid Programme Official Expenditure' (Blue Book), are published each year and both provide detailed information on international development cooperation expenditure (www.ausaid.gov.au/publications/pubs). Australia operates an open and accessible system in the dissemination of information. Key public documents such as the Government White Papers are available to the public on request and are widely disseminated to academic, research and international bodies and other interested parties (www.dfat.gov.au/ini/wp). Newsletters and bulletins regarding Australia's commitment to sustainable development, along with other information are available through websites. Material and information are sent to schools, higher education and research institutions, media outlets and non- government organizations at both the national and international level. A wide array of focus groups and interests are invited and welcomed at open forums.

Research and Technologies: The Australian overseas aid programme helps partner countries to build capacity, develop enabling environments and gain access to innovative and environmentally sound technologies, particularly renewable energy technologies.

Financing: Australia commits substantial resources to international development cooperation. At the same time, Australia has emphasised the importance of efficient and effective use of resources, including domestic resources, in the interests of development. Good governance, including economic governance, and institutional strengthening, are crucial in attracting foreign direct investment and other private flows, an important element of external resources for developing countries in the region. Sustainability assessments for activities supported by Australia include consideration of the mobilization of domestic and external financial resources for development cooperation.

Cooperation: Australia is a Party to a large number of international conventions and treaties related to environment and sustainable development, including, but not restricted to, the Convention on Biological Diversity, Framework Convention on Climate Change, Convention to Combat Desertification and Basel Convention. Australia's status in relation to each of these is available on the web-site of the relevant treaty. A list of treaties can be also be found at the Australian Treaties Library website at www.austlii.edu.au/au/other/dfat.

The Australian aid programme supports a range of multilateral agencies for a number of diverse activities related to sustainable development. Among others, contributions were made to the World Bank, the Asian Development Bank, the World Health Organization, the Global Environment Facility and numerous United Nations Organizations such as the World Food Programme and the United Nations Development Programme. Australia also supports a number of regional cooperation bodies, for example the South Pacific Regional Environmental Programme (SPREP), that promote international cooperation to accelerate sustainable development in developing countries.

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CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: No information available.

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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CHAPTER 3: COMBATING POVERTY

Decision-Making: Social security services in Australia are provided by the Federal Government or through State/Territory and Local Government authorities and voluntary organizations. The Department of Family and Community Services (FaCS) at the Federal Government level is the main policy-formulating agency for national social welfare programmes.

Programmes and Projects: Generation of income through employment is considered the main way to improve living standards and Government policies focus on the creation of an economic environment, which is conducive to the generation of employment. Where self-provision is not possible, a comprehensive safety net ensures protection of a basic standard of living.

The Australian income security system provides a range of non-contributory indexed pensions and other transfer payments financed from consolidated revenue. These payments provide a minimum income for people in the event of unemployment, sickness and disability, and to maintain a living standard in retirement. The broad social protection framework is underpinned by an economic strategy, which aims to ensure the present and future well-being of Australian people, including through substantial public sector involvement in health and education. The approach taken when developing social policy is one that aims to address challenges by drawing on values such as independence, tolerance, self-reliance, and upholding an obligation to other members of the community. There is a range of policies to assist low income families, youth, women, people from an Aboriginal, Torres Strait Islander or non-English speaking background and people with a disability, to obtain and retain employment. For example, the Government has made education equity for Indigenous Australians a key national priority.

The Government aims to maximise the engagement of all Australians in society by:

- encouraging increased participation, both economic and social;
- fostering a culture of self-reliance and of planning for the future;
- providing an effective safety net; and
- developing partnerships with key stakeholders such as business and community organizations to improve the efficiency and effectiveness of services and to identify emerging problems and their solutions.

The Federal Government has recently announced important changes to Australia's welfare and employment services – "Australians Working Together - Helping people to move forward". The Australians Working Together package provides new funding for employment and community services to expand and improve the assistance available to Australians looking for work. Extra help will be provided for parents, mature age people, Indigenous Australians and people with disabilities. The package provides new incentives for people to take up full-time, part-time or irregular casual jobs by allowing them to keep more of their income support payments when they start work.

From July 2002, new requirements will apply to working-age people receiving income support payments. Taking account of their individual circumstances, working-age people receiving income support payments will be required to take up opportunities available to help them become job-ready and better able to take part in Australia's economic and community life.

Australia recognizes that easy and affordable access to health and hospital care is a good tool to combat poverty by markedly improving living standards. Medicare, a universal health care system introduced in the 1970s, permits all individuals access to cost-effective medical services, medicines and acute health care, regardless of income.

Another important element to the Australian approach to combating poverty constitute the long standing government policies that facilitate relatively high home ownership levels in Australia. The Government has a number of strategies to assist low-income earners, and people otherwise disadvantaged, to meet their housing needs. Most of this assistance is provided through the Commonwealth State Housing Agreement and the Rent Assistance programme.

Status: The benefits of economic growth in the latter half of the 1990s have been shared across income groups. The real mean incomes of households in the bottom income quintile increased by 8.4% between 1996-97 and 1999-2000. The Australian Bureau of Statistics reports that there has been no significant change in the pattern of income distribution since 1994-95.

In terms of almost every socioeconomic indicator, Indigenous Australians (2.1 per cent of the total population) are on average the most disadvantaged group in Australian society. Many of the most disadvantaged Indigenous Australians live in very remote Australia. Average life expectancy at birth for Indigenous Australians is around 20 years less than for other Australians. Unemployment rates, especially long-term unemployment rates, are particularly high. Although the proportion of Indigenous students who stay at school through the final year has almost quadrupled in the last twenty years, from 8.6 per cent in 1976 to over 36 per cent in 2000, this is only half the rate of other Australians.

To address this, the Government has significantly expanded its expenditure on Indigenous people. In 2001-02, a record amount of AUD2.39 billion was allocated to targeted Indigenous-specific programmes, almost three-quarters of which went to the priority areas of health, housing, education and employment. The Government believes the best results will be achieved through working in partnership and through sharing responsibility with Indigenous Australians and is committed to programmes and services that strengthen the capacity of families and communities to manage their own affairs. The Government supports the aspirations of Indigenous Australians to become more self-reliant.

Capacity-Building, Education, Training and Awareness-Raising: The Australian Government has long been committed to ensuring that all Australians have universal and equitable access to education. All children are required to attend schools for a minimum of ten years. Both the Federal and State Governments are committed to a level of education funding which permits all children to attend school and attain a high quality, rounded education, regardless of socioeconomic situation, disability or ability to speak English.

The Federal Government has also initiated training programmes to assist welfare recipients become job ready. Many working age income support recipients can receive supplements for education participation, 'Work for the Dole' and 'Literacy and Numeracy Training'. Contemporary policy directions are to build a more active participation-based social safety net.

Information: Information on income support programmes are available and delivered through a variety of media including newspaper advertising, the Internet (www.centrelink.gov.au), relevant professionals, touch screen technologies and call centres. Telephone contact with Centrelink is available from anywhere in Australia for the cost of a local un-timed call. This service facilitates the use of translators to assist customers from non-English speaking backgrounds. A teletypewriter service is available for hearing and speech impaired people.

Research and Technologies: The Department of Family and Community Services (FaCS) has agreements with three research organizations to provide ongoing, independent, high quality, policy-relevant social policy research services. These are the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne (www.melbourneinstitute.com), the Social Policy Research Centre (SPRC) at the University of New South Wales (www.sprc.unsw.edu.au) and the Social Policy Evaluation, Analysis and Research Centre at the Australian National University (cepr.anu.edu.au/spear). Amongst the broad areas of interest being pursued by the SPRC is research on social exclusion/inclusion and child poverty.

Financing: Total Commonwealth appropriations for social security and welfare are estimated to be around AUD56.9 billion in 2001-02. Expenditure on social welfare represents 36.6 per cent of the projected Australian Federal Budget expenditure in 2001-02. Australia's social security system is focused on poverty relief and income redistribution, and is funded through the general taxation system.

The prevention of child poverty comprises another factor in Australia's wide-ranging approach to combating poverty. The introduction of a broad-based consumption tax on 1 July 2000 ushered in additional payments to families with children. The new arrangements for Family Tax Benefit since that time involve over AUD2 billion of additional payments to Australian families each year. The Child Support Scheme, introduced in 1988, ensures that children whose parents have separated do not suffer unnecessary financial hardship as a result of the relationship breakdown.

Cooperation: Internationally, the objective of Australia's development cooperation programme is to assist developing countries to reduce poverty and achieve sustainable development. The aid programme's poverty framework is based on the four pillars of growth, productivity, accountability and vulnerability, which requires action on a number of fronts such as: the promotion of sustainable economic growth, investments in human resource development and social development and the provision of safety nets and emergency relief where needed. Most of Australia's development cooperation programme is delivered through bilateral programmes, in

consultation with partner governments. A significant proportion is also distributed through global and regional programmes.

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CHAPTER 4: CHANGING CONSUMPTION AND PRODUCTION PATTERNS

Decision-Making: A national approach to changing consumption and production patterns is facilitated by forums such as the Council of Australian Governments and Councils of Ministers representing the Commonwealth, six States and two Territory governments. The Intergovernmental Agreement on the Environment and the National Strategy Ecologically Sustainable Development support these cooperative organizations (www.ea.gov.au/esd/national/strategy/index) and recognize and implement ecologcally sustainable development in policy and decision making processes. The Federal and State/Territory governments also create a range of policies on industrial, commercial, and environmental issues. Statutory environment protection measures, which outline agreed national objectives, also assist in the move to sustainable consumption and production (www.nepc.gov.au).

The Federal Government is working in partnership with industry to promote eco-efficiency approaches. Australia has embraced the concept of eco-efficiency as a useful objective for achieving sustainable consumption and production. Numerous industry codes of practice and guidelines exist, most of which have been developed by industry with input from regulatory agencies and, in some cases, from non-government organizations. Australia is giving increasing emphasis to strategies to encourage more efficient use of resources and reducing waste through initiatives like the Greenhouse Challenge, a voluntary, non-regulatory programme aimed at reducing greenhouse gas emission from the industrial sector and a national cleaner production strategy. Federal policies that also touch on consumption issues include the National Forest Policy, a Wood and Paper Industry Strategy, a national framework for water reform, the National Waste Minimization and Recycling Strategy, Organic Waste Management Strategy, the Industry Waste Reduction Agreements and the Wastestream Analysis and Reporting Protocol.

Representatives of major stakeholder groups are involved in working with governments to develop policies and programmes to address consumption and production issues. For example in 1998, a taskforce comprising representatives of all levels of government, trade unions, community groups, environment groups, academics and industry developed the draft national cleaner production strategy entitled "Towards Sustainability: Achieving Cleaner Production In Australia". This is being updated in late 2001 and a new business sustainability framework is being developed.

Programmes and Projects: Australia's energy labelling scheme for whitegoods is directed at changing the purchasing patterns of these products and is run by the Australian Greenhouse Office (www.greenhouse.gov.au/energyefficiency/appliances/labelling/index). An Organization for Economic Cooperation and Development (OECD) Experts Workshop on Sustainable Water Consumption was hosted in 1997 by Australia in Sydney as part of their Programme on Sustainable Consumption and Production. Waste minimization and recycling schemes are available to most of Australia's population.

More recently, governments have gone beyond the focus of recycling and towards waste minimization and product stewardship to reduce current levels of consumption and resource use, and to share the cost of waste management across the entire production chain. A Best Practice Environmental Management Programme in mining promotes practices consistent with the principles of ecologically sustainable development and ensures that mining can occur without compromising the quality of life for any community or damaging the health of the environment (www.ea.gov.au/industry/sustainable/mining/index). The programme also seeks to promote continual improvement in environmental management among all Australian companies and provide information internationally to help in the understanding and application of best practice environmental management in mining.

Cleaner production is a key programme for achieving sustainable production by preventing pollution and waste. The Cleaner Production Programme run by Environment Australia includes: demonstration projects of cleaner production implementation with 10 companies; nearly 100 workshops on cleaner production in action, run nationally for small business; and development of a range of educational and informative material. More recently, the policy focus has shifted to promotion of eco-efficiency, and through this moving towards business sustainability. A range of programmes is in place to achieve this shift (www.ea.gov.au/industry/eecp).

Status: While proposed gas market arrangements are near to agreement. The new arrangements will improve efficiency in the existing delivery of energy services. Australia has an energy labelling scheme for whitegoods, which has had a large impact on purchasing patterns of these products (www.greenhouse.gov.au/energyefficiency/appliances/labelling/index).

The Greenhouse Challenge is a voluntary, non-regulatory programme aimed at reducing greenhouse gas emissions from the industrial sector (www.greenhouse.gov.au/challenge/). Industry has adopted a range of methods and processes to assist in achieving more sustainable production, such as life cycle assessment, environmental reporting (again primarily the larger companies at this stage, particularly in the mining sector), cleaner production and eco-efficiency approaches, and environment management systems (currently approximately 100 sites in 40 organizations have been certified to ISO 14001, with a number of other companies having developed environment management systems without seeking certification). Many companies have undertaken environmental audits (for some years the Federal Industry Department ran a programme giving financial assistance to companies to undertake environmental audits). The major constraint is competition for funding and other resources to put towards such activities.

Capacity-Building, Education and Awareness-Raising: Governments, community and environment groups and industry associations have undertaken a range of activities aimed at educating industry and the community on the need for more sustainable consumption and production, such as workshops, newsletters, information through the media including television advertising, and provision of case studies and other material on the Internet through websites such as EnviroNET Australia (www.environet.ea.gov.au/).
An example of encouraging community involvement in the education and capacity building process is "Integrated Catchment Management". This approach encourages local communities to become directly involved in the management of catchments by participating in the planning, decision making and implementation of management plans. A further example is the Waste Reduction Accreditation Programme, conducted by Clean Up Australia (a non-government organization) with funding from the Federal Government, which promotes waste minimization in retail outlets (www.cleanup.com.au); and the WasteWise Construction Programme, designed to reduce the amount of construction waste going to landfill. Under this programme, barriers to efficiently and economically reducing waste are being identified and addressed and building material waste is being reused and recycled (www.ea.gov.au/industry/waste/construction/wastewise).

Information: The National Pollutant Inventory (NPI) encourages community awareness of sustainable production and consumption by providing access to consistent and reliable information about pollutant emissions in Australia. The NPI has been developed as a National Environment Protection Measure through the National Environment Protection Council (www.npi.gov.au). Through EnviroNET, a network of databases on the Internet which has information on industry expertise, environmental technologies, education, and research and development, people in Australia and overseas can access information which will help them identify Australian solutions to environmental problems (www.environet.ea.gov.au).

Research and Technology: Environmentally sound technologies are promoted by all environment agencies at the Federal and State/Territory level. Through the Renewable Energy Equity Fund, Federal funding has been made available specifically for the commercialization and application of renewable energy technologies through the provision of equity finance. Government funding has been provided to one licensed fund manager and invested along with private capital on a 2:1 basis.

Financing: Finance generally comes from government budgets, but industry associations and individual companies also contribute to specific projects. The Australian taxation system also provides a concessional deduction for research and development (R&D) activities. One hundred twenty-five percent of eligible expenditure is deductible and items of R&D plant are deductible over three years. The concession is available to all companies, but eligible activities must be systematic, investigative and experimental, and must involve either innovation or technical risk. A 175% Premium (Incremental) Tax Concession and R & D Tax Offset is also available in certain circumstances.

Cooperation: The Australian aid programme provides funds for activities with developing countries, particularly in the Asia-Pacific region, which will assist in improving consumption and production patterns, such as improved forest and water resource management. . Australia has also undertaken bilateral activities in the Region. Activities have included workshops on cleaner production in China, Thailand, Vietnam and Indonesia and cleaner production demonstration projects in Indonesia, Thailand and Vietnam.

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CHAPTER 4: CHANGING CONSUMPTION AND PRODUCTION PATTERNS – ENERGY

Decision-Making: Federal responsibilities include: ensuring free and fair interstate trade in goods and services, including energy; transmission network regulation; and development of offshore energy resources. The Federal Government provides national leadership in the promotion of competitive electricity and gas markets and committed in its Resource Policy Statement to preparing a White Paper on Sustainable Energy Policy with a 25 year perspective. In 2001, agreement was reached between the Commonwealth and States and Territories to: establish a new Ministerial Council on Energy to consider future energy use scenarios for Australia; potential for harmonising regulatory arrangements; opportunities for increasing interconnection and system security in electricity and gas; and ways of enhancing cooperative energy efficiency activities. Responsibilities concerning energy are shared among a number of national agencies depending on the issue. Australia employs a number of mechanisms to facilitate information-sharing and coordinate decision making, for energy-related matters, across all jurisdictions.

The National Electricity Code covers market rules; operation, system control and system security; network connection and access arrangements; principles of network pricing; and metering. There are a variety of laws regulating the use of energy related to transport and gas emissions. The Australian Greenhouse Office coordinates the implementation of state-based regulations which compel industry stakeholders to meet Minimum Energy Performance Standards or to disclose the energy efficiency of selected products though Appliance Labelling (www.greenhouse.gov.au/energyefficiency/appliances/index). In 1999, following wide consultation, the Federal Government and the building industry reached an agreement on a comprehensive strategy to make Australia's buildings more energy efficient (www.greenhouse.gov.au/energyefficiency/building/index).

Consultations are held throughout the decision making process, with representatives from all major industry associations and businesses, environmental groups (NGO's), women's groups, and the scientific and technological community.

Programmes and Projects: A key area of focus for the Australian Greenhouse Office is to reduce the greenhouse gas intensity of energy supply, transformation and distribution through the more efficient use of fossil fuels and by encouraging more efficient and competitive energy markets. This is promoted through programmes such as the Renewable Energy Commercialization Programme, a competitive grants programme, aimed at fostering development of a strong renewable energy industry, the Photovoltaic Rebate Programme, which encourages the long-term use of photovoltaic technology to generate electricity (www.greenhouse.gov.au/renewable/pv), and the Renewable Remote Power Generation Programme (www.greenhouse.gov.au/renewable/rrpgp/index) which encourages the uptake of renewable energy technology in remote areas of Australia. The Federal Government launched its Energy Efficiency Best Practice Programme in mid-1998. This programme is voluntary and aimed at stimulating energy-efficient best practice in Australian business.

The Australian Greenhouse Office is working to improve energy efficiency in the areas of appliances and equipment and buildings through the implementation of codes and standards, the development of partnerships and the provision of information (http://www.greenhouse.gov.au/energyefficiency/building/practices). The Greenhouse Office also runs a number of market transformation programmes which are intended to encourage energy efficiency practice beyond minimum standard requirements; they include a mandatory energy rating scheme that applies to whitegoods and a voluntary Energy Star programme to identify electrical appliances that meet a minimum energy efficiency level (www.energyrating.gov.au and www.energystar.gov.au). It is also working on developing voluntary programmes to accelerate acceptance of 'smart buying' when consumers choose new electric motor systems, air conditioning systems, commercial and home lighting and other major capital investment items which are heavy electricity users.

The Household Greenhouse Action programme funds projects promoting the efficient use of energy in the domestic sector; targeting lighting, heating and cooling, hot water and refrigeration systems. The Commonwealth Energy Efficiency Policy, announced in 1997, aims to promote Commonwealth Government leadership in demonstrating improved energy efficiency, thereby reducing the environmental impact of government operations. (www.greenhouse.gov.au/government_op/workingenergy/index).

Status: Compared with current rates of production, Australia has vast demonstrated reserves of energy (except crude oil). Energy consumption in Australia continues to be dominated by the electricity generation, transport and manufacturing sectors (around 80 per cent). The strong growth in the electricity generation sector reflects

increased electrification in all end use sectors, in addition to rapid growth in a number of industries in which electricity is the prime fuel source, such as the commercial and nonferrous metals sectors. The mining (principally coal mining, oil and gas extraction, and metal ore mining), electricity generation and commercial sectors experienced faster growth in energy consumption than the other sectors over the 25-year period. Growth in the mining sector, in particular, outstripped that of other sectors, averaging 6.4 per cent a year over the period. However, the mining and commercial sectors are relatively small consumers of energy, accounting for small shares of consumption (5.5 per cent and 4.3 per cent respectively in 1997-98). The most significant impediments to reducing energy consumption in these sectors are the relatively high cost of renewable energy products and challenges faced by industry entering mainstream energy markets. Others include a lack of knowledge and commitment among consumers about the industry, its products and their benefits; difficulties in attracting finance; and the fragmented nature of the industry. These issues are currently being addressed through the implementation of the Renewable Energy Action Agenda.

Capacity-Building, Education, Training and Awareness-Raising: Government agencies produce a range of journals addressing energy and environment issues in broad context, as well as a number of programme-specific newsletters. Some programmes, such as the Energy Efficiency Best Practice Programme, use training and capacity building as key strategies to address organizational barriers to change and to provide companies with the internal capacity to achieve and sustain effective energy management practices (www.industry.gov.au/energybestpractice/). To support this, the programme also provides a range of information-based energy efficiency products, including online resources for the best practice selection and management of electric motors (http://www.industry.gov.au/motors). Media statements are released by Ministers or by relevant agencies as initiatives are launched or progress reports produced. Kits addressing energy and environment issues have been developed and were provided to all Australian schools over the last decade.

Information: A substantial amount of statistical collection and analysis, dealing with most aspects of energy supply and use, is undertaken in Australia. In an effort to assist development of the renewable energy industry sector, a National Sustainable Energy Industry Survey has been released by the Sustainable Energy Industry Association (www.seia.com.au). An Australian biomass atlas, which will assist research and development into biomass as an energy resource, is also being developed. There is a substantial amount of publicly available information on these issues.

Research and Technologies: The Australian Cooperative Research Centre for Renewable Energy was established in July 1996 and will receive AUD10 million, over seven years, from the Commonwealth Cooperative Research Centre Programme (http://acre.murdoch.edu.au and www.crc.gov.au). The Innovation Access Programme (formerly called the Technology Diffusion Programme) aims to enhance Australian industry competitiveness by facilitating access to, and adoption of, new and leading-edge technologies, particularly for small and medium-sized enterprises (www.innovation.gov.au/iap/innovationAccess/index).
The Government is providing a major boost to renewable energy as a key part of its overall strategy for reducing Australia's greenhouse gas emissions. To support this aim it is supporting renewable energy industry development activities, providing equity funding for renewable energy (www.greenhouse.gov.au/renewable). Alternative fuels infrastructure development is being supported by the Compressed Natural Gas Infrastructure Programme (www.greenhouse.gov.au/transport/cng).

Financing: Funding for energy resource exploration and development, production, transmission and distribution is sourced from publicly and privately owned, commercially independent corporations. The Federal Government has established a national investment agency, Invest Australia, to facilitate international investment in major projects, including energy projects (www.investaustralia.gov.au). Funding for energy programmes, particularly energy efficiency and energy-related greenhouse response programmes, is primarily provided via Federal, State and Territory Government budgets**.** The Federal Government administers various programmes providing direct and indirect funding for research, development, demonstration, commercialization and access to best practice technology. These programmes are not directed specifically towards energy projects, but energy projects are eligible to seek assistance through them. They include: Research &Development Tax Concession, Concessional Loans for the commercialization of technological innovation, Value Chain Management, the Innovation Investment Fund, Pooled Development Funds, Commercialising Emerging Technologies Programme and Australian Technology Showcase (www.ausindustry.gov.au).

Cooperation: Australia is an active participant in the information exchange and technology transfer initiatives of the International Energy Agency, particularly through the Energy and Environment Technology Information Centres (EETIC) and through relevant working groups within the Asia Pacific Economic Cooperation (APEC) forum and other international organizations. The Australian Government supports strong international networks facilitating open and competitive international energy markets. Australia also values cooperation on energy policy development and implementation, including R&D cooperation and technology transfer, in particular: high level consultative and cooperative arrangements on energy between Australia and the Peoples' Republic of China, India, Indonesia, Japan, Korea, the Philippines, Chinese Taipei and the USA; support for multilateral projects under the auspices of the IEA and APEC; and participation in relevant UN groups/bodies, such as the International Centre for the Application of Solar Energy (CASE).

Australia participates in, and contributes to, a number of forums relevant to energy co-operation. They include: Asia Pacific Economic Cooperation (APEC) and the International Energy Agency. Australia and Indonesia recently co-hosted a Forum on "The Opportunities and Challenges in the Energy Sector in the Asia-Pacific Region: Toward Energy Sustainability in the Future". Australia is co-operating bilaterally with a number of countries in the implementation of projects under the International Greenhouse Partnerships Programme. Australia will also provide AUD2 million to the Korean Peninsular Energy Development Organization (KEDO) in 1999-2000.

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CHAPTER 4: CHANGING CONSUMPTION AND PRODUCTION PATTERNS – TRANSPORT

Decision-Making: The Federal Government possesses constitutional autorhities relating to transport, particularly in terms of interstate and international trade and commerce. The State and Territory Governments are responsible for domestic transport matters including integration of land use and transport plans at the urban and regional levels within their respective jurisdictions.

Overall Federal Government responsibility for transport rests with the Department of Transport and Regional Services which works with Environment Australia and the Australian Greenhouse Office to realise the potential economic and environmental benefits of greenhouse response actions covering areas such as: fuel switching and end use efficiency in both transport and stationary energy renewable energy and efficient use of fossil fuels. A National Transport secretariat was established in 2000 to advise Federal and State/Territory Ministers (the Australian Transport Council (www.dotrs.gov.au/atc/index) on cross-modal, cross-jurisdictional and strategic transport issues of national significance.

The Federal Government maintains: an environmental management regime for Australian Government airports; a marine environmental control and pollution response programme; and has prime responsibility for vehicle emission standards and voluntary fuel efficiency targets. It has also introduced a range of environmental measures associated with the introduction of the New Tax System. Much of the regulation and policy relating to land transport has been reviewed since 1992 to take account of technological change, efficiency and environmental impacts such as air quality. Both the Federal and State/Territory Governments have regulatory and policy responsibilities for managing the impact of shipping on the marine environment. The Federal Government has responsibility for most aspects of aircraft operations and the regulation of leased Federal Airports.

The Government has introduced a range of initiatives to help reduce greenhouse gas emissions from the transport sector as outlined in the Prime Minister's statement: Safeguarding the Future, announced in 1997 and Measures for a Better Environment in 1999. In 2001, the National Environment Protection Council approved the Diesel Vehicle Emissions National Environment Protection Measure and the Australian Transport Council approved new in-service diesel emission standards (www.nepc.gov.au and www.dotrs.gov.au/atc/index). From 2002, the first national fuel quality standards for petrol and diesel under the Fuel Quality Standards Act 2000 become enforceable (www.ea.gov.au/atmosphere/transport/fuel/index).

The Australian Transport Council endorsed a Strategic Plan which sets out the goal for it "to maximise the contribution of transport to Australia's growth, productivity, quality of life and equity" (www.dotrs.gov.au/atc). The Federal Government has separated provision of rail infrastructure from rail operations, and is in the process of privatising its rail carriers. It is also primarily responsible for maintenance of the National Highway System. Participation in decision-making processes is open to a range of NGOs, lobby groups and individuals.

Programmes and Projects: The following Federal Government policies, programmes and initiatives are focused on the provision of adequate transport services for regional Australia: accessibility of regional Australia to international air services; Remote Air Service Subsidy Scheme; safety inspection of aerodromes serving remote Indigenous communities; review of Aerodromes Serving Remote Indigenous Communities; Tasmanian Freight Equalization Scheme and the Bass Strait Passenger Vehicle Equalization Scheme; and under-writing of air services to and from the Indian Ocean Territories by the Australian Government. There are programmes related to the following issues: promoting traffic efficiency, such as reduction of heavy traffic hours, provision of mass transport modes, etc; improving efficiency in fuel consumption through the introduction in 2001 of mandatory fuel consumption labelling for new passenger vehicles (www.greenhouse.gov.au/fuellabel); reducing emissions from transportation; reducing traffic-related accidents and damages; promoting non-motorised modes of transport such as cycling and walking; and encouraging more sustainable transport choices by individuals and organizations.

A travel demand management programme which will focus on encouraging major trip-generating organizations to implement sustainable transport planning for their employees and customers is also being developed. The Australian Greenhouse Office implements the Environmental Strategy for the Motor Vehicle Industry that aims to significantly enhance the environmental performance of the automotive industry through measures including Consumer Information Programmes and Fuel Consumption targets (www.greenhouse.gov.au/transport/env_strategy). The Alternative Fuels Programme, also administered by the Greenhouse Office, is designed to reduce greenhouse gases and other vehicular emissions from Australia's road transport sector (www.greenhouse.gov.au/transport/alternative_fuel).

Status: Land transport activity has significant environmental impacts, compared to other transport modes, as a result of localised concentrations of land transport activity and infrastructure associated with Australia's urban patterns. As such, land transport impacts are particularly significant in relation to sustainable development. The main negative environmental impacts arise from vehicle noise and vehicle emissions. Transport also contributes to contamination of the natural environment (e.g. soil, ground water, fresh and salt water) with pollution from oil, rubber and the accidental discharge of substances being transported. Other negative impacts include disturbance to people, infra-structural damage from dust, vibration and land stability effects, loss of wildlife killed on roads, and loss of indigenous habitat, forest, coastal and land resources, particularly in cities. It is generally acknowledged that there is an ongoing need to improve interstate rail services, and to improve the level of service provided by urban mass transit systems.

Capacity-Building, Education, Training and Awareness-Raising: All levels of Australian Government administer information programmes addressing the environmental impacts of transport. Environment Australia conducts awareness-raising activities to encourage individuals to reduce their use of the car or choose more efficient cars. Examples can be found at www.ea.gov.au/atmosphere/transport/index. A variety of media have been used, depending upon the message and target audience. Road safety is now a part of every school's curriculum and road safety stories for young children are available in book, audio tape and video formats. Publications on a variety of safety topics are available from all jurisdictions. The Institute for Transport Studies, at Sydney University and Monash University, offers specialised transport and logistics management training courses, workshops, short courses and seminars (www.its.usyd.edu.au and www-civil.eng.monash.edu.au/people/centres/its/index). The Australian Greenhouse Office implemented a consumer information programme targeting key stakeholders to support the introduction in January 2001 of a mandatory fuel consumption labelling scheme for new passenger cars. A discussion paper has also recently been released on the development of an internet-based green vehicles guide for consumers.

Information: There is currently no single, unified database for transport in Australia, however a number of sources do provide comprehensive information on transport and traffic systems. The National Pollutant Inventory is a publicly available database providing information on the types and amounts of certain chemicals being discharged into the environment (www.npi.gov.au). Information on emissions from mobile sources such as motor vehicles, boating, aircraft and railways in major airsheds are reported through the inventory. Information on the fuel consumption of new vehicles has been published for more than twenty years in the Fuel Consumption Guide (www.greenhouse.gov.au/transport/fuelguide/). Guidelines to promote best practice in transport and land use planning have been developed under the National Greenhouse Strategy and will be launched in the near future.

Research and Technologies: The Federal Government has developed a range of programmes promoting increased use of alternative transport fuels in Australia. These include the Alternative Fuels Conversion Programme , the Diesel and Alternative Fuels Grant Scheme, the proposed Energy Grants Credits Scheme and the CNG Infrastructure Programme (www.greenhouse.gov.au/transport).

Financing: Transport infrastructure is primarily government funded by all levels of government, with some funding sourced from charges on users through vehicle registration charges. The Infrastructure Borrowings Tax Offset Scheme encourages private sector investment in the provision of public land transport infrastructure and related facilities, by reducing finance costs. The Scheme operates on a selection basis. Borrowers apply for benefits flowing on from a tax offset extended to the provider of infrastructure project funds. In return the infrastructure proponent (the borrower) receives a reduction in finance costs in the form of lower interest rates or other benefits, and foregoes tax deductibility on interest payments associated with the loan.

Cooperation: The Federal Government manages Australia's contribution to, and participation in, international agreements and organizations, such as the transport-related groups of the Asia–Pacific Economic Cooperation forum, the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). Australia participates through the IMO in regional fora regarding ship safety, navigation, ship operations and technology and participates in the development of international conventions such as: the Bunkers Convention; Hazardous and Noxious Substances Convention; Athens Convention; and Wreck Convention. Australia is also a member of ICAO. The Australian Government will continue to participate in international regional bodies working to harmonise national approaches to transport and establish sensible

international transport frameworks. This includes the next round of WTO deliberations and the APEC Forum. Australia also participates in the OECD's consideration of transport issues.

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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: The Department of Immigration and Multicultural Affairs has primary responsibility for broad population issues at the national level. While Australia does not have a formal population policy, it does have immigration policies and a migration programme in place, which is set annually in the context of trends in the level and composition of the population (www.immi.gov.au).

Programmes and Projects: The environmental and economic impact of the urban nature of Australia's population has led the Federal Government to look at ways to promote greater migration away from metropolitan centres. The Government has established a range of targeted migration mechanisms such as the Regional Sponsored Migration Scheme, the State/Territory Nominated Independent scheme and the skill matching visa class, which aim to assist in achieving a greater dispersal of migrant settlement away from the capital cities and more towards the regional centres. This should help boost the population and economic development of these areas.
The Federal Government is also addressing the problems of increasing per capita consumption and the inefficient and inappropriate management of natural resources and ecological systems through a range of environmental policies and programmes administered by Environment Australia and the Australian Greenhouse Office.

Status: Australia's population has increased steadily between 1 and 1.5 % per annum during the past ten years. The preliminary estimated resident population of Australia in March 2001 was 19,334,000 persons, representing a 1.2 % increase from March 2000 (www.abs.gov.au). Based on current trends in fertility, mortality and immigration, Australia's population is projected to grow to about 25 million by 2050. Australia is also highly urbanised with 64 per cent of the population currently living in the capital cities. Over three quarters of Australia's population lives in three States, New South Wales (33.8%), Victoria (24.9 %), and Queensland (18.3%). In recent years, about two thirds of all net overseas migration to Australia has been to the cities of Sydney and Melbourne. This means that as overseas migration plays an increasing part in Australia's population growth on present trends much of that growth would be in Sydney and Melbourne. State Specific Migration Mechanisms play an important role in encouraging greater dispersal of migrant settlement away from these areas.
The inter-relationship of population and the environment in Australia is complex and variable. For example, many of the activities in Australia that have high environmental impact (such as minerals processing) are strongly oriented to the supply of overseas markets. Factors relating to population and environmental degradation include patterns of population distribution, patterns and levels of consumption, public sector pricing policies, lifestyle choices, technology paths, land management practices and product mix at national and regional levels. Non-permanent population flows, such as tourism, also impact on the environment.

Capacity-Building, Education, Training and Awareness-Raising: The Department of Immigration coordinates *Australia 2030: Investigating the Facts of Immigration*, which is a national programme for Australian secondary school students. Central to the programme is a multimedia educational resource kit designed to promote informed discussion on Australian population and immigration issues among secondary school students. Further information can be found at www.immi.gov.au/australia2030/index.
Each year the Minister for Immigration and Multiculture and Indigenous Affairs undertakes annual consultations on Australia's migration and humanitarian intake and associated settlement and population issues. These consultations inform the Cabinet's annual consideration of the size and composition of the Migration and Humanitarian Programmes and provide an opportunity for a wide range of stakeholders (including State/Territory and Local Governments, other departments, business, interest groups and the community) to present their views about Australia's population future and the size and composition of Australia's Migration and Humanitarian Programmes.

Information: Linkages between population and environmental degradation have been considered by a number of government inquiries into population, including the National Population Council report titled "Population Issues and Australia's Future: Environment, Economy and Society" in 1991. In 1994, the House of Representatives Standing Committee for Long Term Strategies conducted an inquiry into Australia's population carrying capacity. The Committee rejected the view that Australia is already close to its maximum carrying capacity and the notion of an optimum population target. It found that environmental impacts are not only

associated with populations levels but also with technology, economic well being, location, lifestyle and environmental management.
Each year, the Department produces reports based on statistical data and research are compiled on the following issues: population size, growth and composition, natural increase, international migration, regional patterns of population growth and decline, and population projections. For example, the 2000 edition of *Population Flows: Immigration Aspects* is available from www.immi.gov.au/statistics/publications/popflows/popflows. Additional material on population is available on the Department's research site at www.immi.gov.au/research/index and also in the Multicultural Australia and Immigration Studies Database which is accessible in Australian libraries through computer links to the National Library of Australia (www.immi.gov.au/library/mais).
Every five years Environment Australia produces the State of the Environment report, with the next due to be completed in late 2001. This report provides a comprehensive assessment of Australia's environment and acts as a report card on the condition and sustainability of a range of natural assets (www.environment.gov.au/soe).

Research and Technologies: The Department of Immigration has commissioned research from the Commonwealth Scientific and Industrial Research Organization that will examine the inter-relationship between different levels of population, the environment, and resource use in Australia over the next fifty years. The project, entitled "Future Options to 2050" will explore Australia's future in terms of key infrastructure and environmental factors including water, energy, agriculture, forests and fisheries. Reports are progressively being released at www.dwe.csiro.au/futures/ecumene/DIMAwshopMAIN. Considerable research is being undertaken in Australia on population issues by a wide range of organizations, including Federal Government agencies, universities and private institutions.

Financing: Not applicable.

Cooperation: Not applicable.

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CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH

Decision-Making: Australian constitutional arrangements place implementation of health policy, programmes and promotion within the ambit of State and Territory Governments. The Federal Government's role is one of leadership, coordination, harmonization of approach and international health activities. A National Environmental Health Strategy has been developed and represents the first national framework for the management of environmental health in Australia. The Strategy promotes a partnership approach across the many sectors that have an impact on environmental health and, in particular, strong collaboration between all levels of government. The Strategy implementation is increasing the capacity to provide environmental health services by improving the assessment, prevention, control and management of environmental health. The Australian Charter for Environmental Health identifies the basic entitlements and responsibilities for individuals and communities, business and industry, to live in safe and healthy environments. Australia has a strong commitment to strengthening families, particularly in parenting and caring roles. It views family and parenting support as pivotal in reducing the long-term incidence of child abuse and in increasing the psycho-social health of Australians. Australia is also committed to improving the supply, affordability and quality of childcare. An extensive range of services has been developed to meet the needs of children and families, including those who are socially or economically disadvantaged.

The Australian Health and Community Services Ministers have supported the development of a National Public Health Partnership between the Commonwealth, State and Territories as a coordination and collaboration mechanism that adds value to the work of each jurisdiction. The development of the Partnership has been seen as an opportunity to place public health at the forefront of effective health care in Australia. Included in the Partnership is the enHealth Council which includes representatives from the Commonwealth, State and Territory governments, the Australian Institute of Environmental Health, the environment protection sector, public health and community sectors and the Indigenous Australian community. The enHealth Council is crucial to intergovernmental cooperation on environmental health. The enHealth Council promotes uniformity and reduction of duplication across a range of environmental health policy issues and technical initiatives and provides a conduit for information and expertise transfer, on international issues. It also provides advice, including public education, on a wide range of environmental health issues.

The National Aboriginal Health Strategy (NAHS) aims to improve the health status of Aboriginal and Torres Strait Islander people, and has informed policy development in Aboriginal Health since 1989. The Strategy addresses primary health care, environmental health, and community infrastructure issues. Over 2001-2002, the National Aboriginal and Torres Strait Islander Health Council has overseen the development of the National Strategic Framework on Aboriginal and Torres Strait Islander Health, which builds on the 1989 Strategy. The Strategic Framework aims to set a national agenda and objectives for Aboriginal and Torres Strait Islander health policy and programmes and focuses on primary health care, community capacity building and establishing linkages across government ministries and the community sector. Since 1 July 1995 responsibility for funding Aboriginal and Torres Strait Islander health and substance abuse services has resided with the now Department of Health and Ageing. During 2000-2001, the Department provided direct grants to 220 organizations for the provision of health and related services targeting Indigenous Australians. This included 185 Aboriginal and Torres Strait Islander community controlled or managed organizations. Health Framework Agreements between the Federal and State/Territory Governments, Aboriginal and Torres Strait Islander Commission (ATSIC) and Indigenous health organizations are being signed (second round) to ensure joint priority setting, planning and coordinated delivery of health care for Indigenous Australians. Aboriginal Coordinated Care Trials were conducted between 1997 and 1999 to test innovative ways to fund and deliver health services for Aboriginal and Torres Strait Islander people using models of care coordination and pooled funding. The Primary Health Care Access Programme (PHCAP) builds on the success of the Aboriginal Coordinated Care Trials and funding for this programme will permit expansion of primary health care services in new sites across Australia.

Programmes and Projects: Vulnerable groups, including infants, youth, women, Aboriginal and Torres Strait Islander groups, the aged and people from non-English speaking backgrounds, receive special priority in Australian health programmes. The National Women's Health Programme includes sub-programmes such as the Alternative Birthing Services Programme, the Family Planning Programme, the National Programme for the Early Detection of Breast Cancer, and Cervical Cancer screening. Within the Disability Services Programme, a range of NGOs and local government bodies are funded to provide support services in an innovative manner for people with a disability. Elderly people receive assistance with residential and home and community care

services. A National Action Plan for Dementia Care aims to improve services for people with dementia and their care givers. The national communicable diseases surveillance programmes are aimed at ensuring a prompt and coordinated response to any outbreaks of communicable diseases and improving the status of children. Special programmes address HIV/AIDS. The Australian Institute of Health and Welfare is an independent Statutory authority, which undertakes statistical and research work in the health and welfare areas, providing support to the Federal and State/Territory Governments. The Rural Health Support, Education and Training Programme aims to provide recruitment of health workers in rural and remote areas by increasing education, training and support opportunities. Initiatives include the development of culturally appropriate curricula for Aboriginal Health Workers, a manual for primary clinical care, and an education and training programme for managing children, domestic violence and suicide behaviour among adolescents.
The National Occupational Health and Safety Commission (NOHSC) is a tripartite statutory body, with government, employer and employee representatives. Its mission is to lead and coordinate national efforts to prevent workplace death, injury and disease in Australia. NOHSC has adopted a Strategic Plan for the period 2000 to 2003 that describes five key output areas that define and differentiate NOHSC's role from that of the State and Territory jurisdictions. These output areas are:

- improving national data systems and analysis;
- improving national access to OHS information;
- improving national components of the OHS and related regulatory framework;
- facilitating and coordinating national OHS research efforts; and
- monitoring progress against the National OHS Improvement Framework.

Status: The Australian population has generally good health status with life expectancy at birth at 75.2 years for boys born in 1994-96 and 81.0 years for girls born in that period. There are some groups with poor health status, notably Aboriginal and Torres Strait Islander peoples. Otherwise the pattern of disease is similar to that of other developed countries.

Capacity-Building, Education, Training and Awareness-Raising: Responsibility for the health workforce, including education and training, is shared between the Commonwealth and the State and Territory governments. More information can be found at www.health.gov.au/hfs/workforce/index.htm.
Also the NHMRC has also recently introduced new Capacity Building Grants in Population Health Research, aimed at building critical mass and developing researchers within groups undertaking excellent population health research encompassing all areas and disciplines of public health and health services research. The programme will run for 10 years with a total commitment of AUD50 million.

Information: The Australian Bureau of Statistics also collects and publishes information about the health of Australians through a programme of social surveys such as the National Health Survey and the Survey of Disability, Ageing and Carers.
The National Occupational Health and Safety Commission (NOHSC) has adopted a Strategic Plan for the period 2000 to 2003 which describes five key output areas including the following information-related outputs:

- improving national data systems and analysis;
- improving national access to OHS information;
- facilitating and coordinating national OHS research efforts; and
- monitoring progress against the National OHS Improvement Framework.

More information can be found at: http://nohsc.gov.au.

Research and Technologies: The National Health and Medical Research Council (NHMRC) has developed a strategic framework to guide its activities in priority driven research. The main objective is to develop strategic research capability in areas where the research effort is not commensurate with the magnitude of its importance to health care in Australia. Current research priority areas include: ageing; mental health; systems of care for chronic diseases; oral health; and Aboriginal and Torres Strait Islander health.
The Commonwealth Health Research Programme provides funding through several research granting schemes for research into all aspects of health and health services. One of the principal source of funding for this research is NHMRC which provides a wide range of research grants including Project Grants, Programme Grants and Health Partnership Grants, as well as fellowships, scholarships and training awards to support research teams and individual researchers. The National Research Centre for Environmental Toxicology (NRCET) undertakes research into all aspects of plant toxins, soil and water contaminants and other potential

environmental hazards. Specific funding programmes through NHMRC and the Commonwealth Department of Health and Ageing are provided for research into public health, health and welfare services, mental health, HIV/AIDS, and Indigenous health issues.

Financing: The aim of the national health care funding system is to give universal access to health care while allowing choice for individuals through substantial private health involvement in delivery and financing of services. The major part of the national health care system is called Medicare. Medicare provides high quality health care which is both affordable and accessible to all Australians, often provided free of charge at the point of care. It is financed largely from general taxation revenue, which includes a Medicare levy based on a person's taxable income. Commonwealth funding for Medicare is mainly provided as: subsidies for prescribed medicines (with a safety net providing free medicines for the chronically ill); and free or subsidised treatment by practitioners such as doctors, participating optometrists or dentists for specified services only; substantial grants to State and Territory Governments to contribute to the costs of providing access to public hospitals and community health services at no cost to patients; and specific purpose grants to governments and other bodies. For NHMRC alone, the total funding will be AUD366 million in 2002.

Cooperation: Australia's international development cooperation programme works in partnership with developing countries and other key players, including the World Health Organization, to improve health standards and basic health services for vulnerable groups and promote outcomes that are sustainable. A recent example is Australia's commitment of AUD200 million over a six-year period commencing in June 2000 to combat the global HIV/AIDs epidemic. The Government cooperates with ILO in the occupational health and safety area.

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CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: The Planning Ministers' Conference acts to promote an integrated approach to urban and regional planning, which covers regulatory, microeconomic, environmental and social issues. Membership consists of the Federal, State, Territory and New Zealand Ministers responsible for planning.

Programmes and Projects: The Federal Government is working in partnership with Local Government through its Environmental Resource Officer (ERO) and Local Agenda 21 (LA21) programme to promote sustainable development at the local government level. The ERO Scheme places dedicated officers in the peak local government associations in each State and the Australian Local Government Association, to assist local government to better manage their local environments. The Local Agenda 21 programme assists local governments to apply the framework from Agenda 21 for local government in order to integrate environmental, economic and social objectives. Elements of the LA21 Programme include: a National Local Leaders in Sustainability Forum, corresponding State and Territory fora, pilot projects to test regional approaches to sustainable development and to develop appropriate models for the implementation of LA21 on a regional basis, a Local Agenda 21 Award, and a national Local Agenda 21 Conference. The Federal Government is also developing a national framework of milestones for adoption and use of LA21 by local government.
The National Urban Development Programme promotes an improved range of housing types, making more efficient use of land and infrastructure, and reforming planning processes at the local level. It includes the Australian Model Code for Residential Development (AMCORD).

Status: In 1992, a National Housing Strategy was completed, putting forward a comprehensive set of national housing and urban policies and setting objectives for expanding the range and supply of affordable and appropriate housing. The Australian Urban and Regional Development Review was carried out in 1993 to 1996. The outcomes of the Review offer significant potential to address human settlements in an environmentally sustainable manner. The Review considers the relationship between energy use, urban form, transport and housing design. The National Water Quality Management Strategy addresses the issues of water supply and wastewater treatment in urban areas. The Australian Housing Industry Development Council is examining the recycling of building materials and mechanisms for the disposal of builders' rubble. The National Strategy for Ecologically Sustainable Development promotes the implementation of travel demand strategies and management techniques such as the integration of land use and transport planning to minimise the need of fossil fuel-based transport. The National Strategy for the Conservation of Biological Diversity refers to the conservation of biodiversity in urban areas and includes bioregional planning, habitat retention and providing public information..

Capacity-Building, Education, Training and Awareness-Raising: The Integrated Local Area Planning Programme (ILAP) is the key programme designed to build the capacity of local governments in urban management. A pilot study of 20 councils aims to build the capacity of local governments to reform strategic planning and decision-making processes to ensure a more holistic approach with and between local governments and the integration of regional and State Government plans.

Information: The Federal Government's Environmental Resource Officer Scheme provides information and support to local government for better environmental management. In addition to the large number of data sets managed by State and Territory governments, a number of national data bases are managed by the Bureau of Rural Sciences, the Australian Government Land Information organization, the Australian Bureau of Statistics, Geoscience Australia. Moreover each State Government agency has extensive databases and decision support tools for their respective responsibilities. These feed into Federal databases. The National Land and Water Resources Audit is also adding to these data sets and will provide a more comprehensive picture of the range of information managed by State, Territory and Federal organizations.

Research and Technologies: The Australian Housing and Urban Research Institute was established to promote research into social and economic aspects of housing and related issues. The Institute has been encouraging all aspects of the urban environment to be addressed in an integrated manner.

Financing: The Federal-State Housing Agreement provides funding for housing assistance for people on low income. The Natural Heritage Trust, which is jointly administered by Agriculture, Fisheries and Forestry and

Environment Australia, provides funding for a number of sustainable land and water management and environment conservation programmes.

Cooperation: The quality of the urban environment is an increasingly important issue in the national development cooperation programme. Australia participated in HABITAT and supporting agencies, ESCAP and the ADB. Australia has relevant expertise especially in land title registration, urban infrastructure, land use planning and waste management and is cooperating, e.g. with Thailand.

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: Authorities for environmental issues are not specifically dealt with in the Australian Constitution and are not the sole province of any one sphere of government. There is recognition that environment and/or sustainable development issues need to be addressed on a local, regional, national and international scale. This is reflected in the development of national strategies and agreements, which provide the main domestic basis for the implementation of UNCED outcomes. In order to oversee the development of national strategies and policy issues concerning the environment and ecologically sustainable development a range of mechanisms operate, which provide an administrative and Ministerial framework for advice and input. Whole of government coordination is effected within the Federal Government by a Cabinet Environment Sub-committee chaired by the Prime Minister and between the Commonwealth and the six States and two Territories by the Council of Australian Governments. A number of Commonwealth/State Ministerial Councils coordinate action related to particular elements of the environment agenda. These include the Natural Resource Management Council, Environment Protection and Heritage Council and Murray Darling Basin Ministerial Council.
The 1992 Intergovernmental Agreement on the Environment (IGAE) is an agreement among all spheres of government concerning their roles and responsibilities in decision making processes and sets out mechanisms for resolving national issues. Australia has a number of key strategies in place to support sustainable development. The principal and overarching strategy is the National Strategy for Ecologically Sustainable Development, which seeks to address sustainable development from a distinctly Australian perspective (http://www.ea.gov.au/esd/national/strategy/index). Other key strategies, which have been implemented since 1992, include the National Forest Policy Statement, the National Strategy for the Conservation of Australia's Biological Diversity (http://www.ea.gov.au), the National Greenhouse Strategy, the Federal Coastal Policy, the National Waste Minimization and Recycling Strategy (www.ea.gov.au), the National Action Plan for Salinity and Water Quality and the National Framework for Managament and monitoring of Australia's Native Vegetation (http://www.ea.gov.au).

Programmes and Projects: Under the Natural Heritage Trust (http://www.nht.gov.au) support is provided to stimulate significant improvement and greater integration of biodiversity, land, water and vegetation management on public and private land. The Trust encourages management systems that bring long-term environmental, economic and social benefits. The Natural Heritage Trust has funded natural resource management activities from 1996-97 to 2001-02 under the themes of land, rivers, vegetation, biodiversity, coasts and marine through the partnerships between governments, communities and the private sector. From 2002-03 to 2007-08, there will be a fundamental shift in the Natural Heritage Trust towards more strategic investment, with a clear emphasis on outcomes at the regional level. Over this period, activities will be targeted at three overarching objectives, namely: biodiversity conservation; sustainable use of natural resources; and community capacity building and institutional change.

Status: Governments, through the Natural Heritage Trust, the National Action Plan for Salinity and Water Quality and other programmes, are enacting a comprehensive response to integrated sustainable natural resource management. Australia is implementing economic instruments and developing the use of market-based mechanisms, which incorporate the environmental and social costs of resource use into pricing. Measures under way include improved pricing and allocation of water, cost recovery for solid waste disposal and a price differential for leaded petrol. A compendium of Australia's experience in using economic instruments to meet environmental objectives has been prepared by Environment Australia (www.ea.gov.au/about/publications/list.html#economics).

Capacity-Building, Education, Training and Awareness-Raising: Both the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust have significant capacity building, training and education components at the regional level. Considerable emphasis is placed on capacity building as an important component and step towards improved natural resource management outcomes in Australia. The capacity of individuals, industry, governments and communities is enhanced so they are equipped with the skills, knowledge and information to sustainably manage the natural resource base. Initiatives range from formal training programmes, learning through on-ground action and workshops, through to environmental education activities, the provision of support and technical services and the production of resource materials.

Information: One of the major constraints that has traditionally limited Australia's capacity for integrated decision making which addresses environmental, economic and social objectives has been the lack of comprehensive information on the state of the environment, and, in particular, the state of Australia's land, water and biodiversity.

Since 1992 there has also been general international consensus on the need to provide more quantifiable advice to policy makers on the progress towards implementing sustainable development. In Australia there have been a number of approaches in this regard. In 1996, the first comprehensive Australian State of the Environment (SoE) Report was released (www.ea.gov.au/soe/index.html), and a second national report has been released in 2002. The Report, which was called for in the National Strategy for Ecologically Sustainable Development, is a key element in providing information on the condition of and the pressures on the natural environment, and societal responses to these pressures and conditions.

Australia has in place a range of policies and delivery frameworks that assist in national coordination of information. Substantial progress has also been made on national standards for data collection, access and use. The Australian New Zealand Land Information Council is developing an Australian Spatial Data Infrastructure to provide better access to essential spatial data. Meeting Federal legislative requirements has also led to the development of information products to assist decision-making.

In addition to the five yearly State of the Environment Report mentioned above, Australia has recently completed a comprehensive audit of its land and water resources, taking into account environmental, social and economic values. The National Land and Water Resources Audit provides an independent, objective assessment of the extent of natural resource degradation and includes an economic analysis of each problem. Australia is also improving mechanisms for manipulating data, and for accessing indigenous knowledge.

Many State, Territory and Local Governments are in various stages of undertaking state of the environment reporting. At both the national and sectoral levels there is also a range of initiatives on developing sustainability indicators. The Federal Government has developed and reported against a set of headline sustainability indicators. Work on improving information available to decision-makers has also been undertaken by the Australian Bureau of Statistics (www.abs.gov.au). The Bureau has researched and produced a range of publications on environmental statistics. It has also developed national accounts balance sheets to include the market value of natural assets including forests, subsoil assets and land. These estimates are based on resource use values and exclude non-monetary environmental values. The Federal Government has recently published a handbook on a range of techniques for environmental valuation and their application in decision-making (www.ea.gov.au/about/publications/list.html#economics). The Bureau of Statistics is also developing a range of environmental accounts, including physical accounts in an input-output framework, and financial accounts for environmental protection.

Geoscience Australia provides spatial information services to Australia. It uses innovative decision support systems, integrating diverse datasets, to develop and display options forming the basis for informed, transparent decisions (www.agso.gov.au).

Research and Technologies: Through the Regional Forest Agreement programme Australia has developed or adapted several forest planning tools useful in land use planning and sustainable use of resources. These tools were used extensively to facilitate the development of options for sustainable forest management. They included tools for, (a) designing efficient reserve systems taking into account broad biodiversity values and priorities and, (b) understanding consequential effects on the sustainable use and supply of wood including associated economic and social costs and benefits.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further six years, from 2002-03 until 2007-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants.

The Australian government has also committed almost AUD1 billion to addressing climate change with a core policy goal of meeting Australia's greenhouse commitment in the most cost-effective manner possible without compromising economic competitiveness. Significant funds are dedicated to the commercialization of renewable energy technologies and the development of the renewable energy industry.

Cooperation: Australia's commitment to the principles of Agenda 21 is also reflected in the appointment of an Ambassador for the Environment. Australia has consistently supported an expanded role for non-government (NGO) participation throughout the UNCED process. Having NGO representatives on Australian delegations to all sessions of the CSD has reinforced this commitment. Australia funds key international institutions involved in promoting multilateral solutions to environmental problems. Among these organizations are: UNEP, WHO, UNFPA, UNIFEM, WMO, UNDP, IMO, UNESCO, FAO, and the twenty-two international agricultural research centres, including the sixteen centres of the Consultative Group on International Agricultural Research. Australia's overseas aid programme assists developing countries, particularly in the Asia-Pacific region, to reduce poverty and achieve sustainable development. This is achieved through the integration of economic, social and environmental considerations in the delivery of all activities. The sectors that underpin the aid programme are health, education, infrastructure, rural development and governance. AusAID has developed policies on these sectors, and on the key cross-cutting issues of gender and environment. Development assistance to address environmental sustainability has focused on areas outlined in Agenda 21 including, among others, water and natural resource management, oceans, atmosphere, biological diversity, deforestation and desertification. In 2000-01, approximately AUD224 million was spent on environmental activities, including on activities directly promoting environmental sustainability, and on multilateral activities and those in the rural development and infrastructure sectors indirectly addressing environmental issues.

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CHAPTER 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: The Federal Department of Environment and Heritage (Environment Australia – http://www.ea.gov.au) has primary responsibility for the development of policy and programmes relating to environment protection (including atmosphere). However, Environment Australia works closely with a range of state and federal Government agencies that also make decisions relating to the atmosphere. The Ministerial Council on Environment Protection and Heritage is the prime national coordinating body on environment issues.

The National Environment Protection Council is a statutory body with law making authority composed of a Minister from each State and Territory. It has two primary functions: to make National Environment Protection Measures and to assess and report on their implementation and effectiveness in participating jurisdictions. A National Environment Protection Measure for Ambient Air Quality, made in 1998 by the Council, has set national air quality standards based on the protection of human health for the six criteria air pollutants (www.nepc.gov.au). The Measure provides the basis for management of air pollution in Australia, which is largely undertaken by the States and Territories under Australia's federal system of government. A Measure for Ambient Air Toxics is currently being developed and is anticipated to be finalised in 2002. The Council also made the National Environment Protection Measure for Diesel Vehicle Emissions in 2001. This Measure sets an in-service standard for diesel vehicles and provides options for States and Territories to manage emissions from diesel vehicles.

Environment Australia has primary responsibility for implementing Australia's obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer, and its adjustments and amendments. This responsibility is discharged through: administration and enforcement of the *Ozone Protection Act* 1989; development and implementation of national strategies to phase out ozone depleting substances; and representation of Australia at Montreal Protocol fora.

The Australian Greenhouse Office (AGO www.greenhouse.gov.au) was established in 1998 to drive the Australian Government's domestic greenhouse agenda. The AGO is responsible for the coordination of Australia's climate change policy and the delivery of the nearly AUD1 billion of Commonwealth policies and measures for greenhouse abatement.

Australia has developed a multi-faceted national strategy addressing greenhouse issues (http://ngs.greenhouse.gov.au/index). The National Greenhouse Strategy articulates the framework for a coordinated and collaborative approach by all levels of government in Australia. It is directed toward the achievement of three overarching goals:

- Fostering knowledge and understanding of greenhouse issues;
- Limiting greenhouse gas emissions; and
- Laying the foundations for adaptation to climate change.

Consultation on greenhouse and air quality policy occurs across a broad range of stakeholder groups including community members, State and Territory Governments, business, NGOs and industry.

Programmes and Projects: Projects to improve the quality of Australia's urban air sheds are implemented under the Natural Heritage Trust's Air Pollution in Major Cities Programme (www.nht.gov.au/programmes/airqual). This programme includes a range of projects such as strategies to improve Australia's vehicle emissions performance, improve fuel quality, reduce wood heater emissions and improve understanding of air pollution production and its reporting. Programmes to repair the stratospheric ozone layer include the licensing and quota system for the import, export and manufacture of ozone depleting substances and national methyl bromide, halon and CFC management strategies.

The current mix of programmes to mitigate climate change includes voluntary, regulatory and market based approaches. A number of key elements are:

- The AUD400 million Greenhouse Gas Abatement Programme (GGAP) established in 1999 supports large-scale, cost-effective and sustained abatement by industry and the community,
- Greenhouse Challenge - a joint voluntary initiative between the Commonwealth and industry with over 620 members.
- The Greenhouse Friendly Certification Programme where consumers are offered the opportunity to buy products and services whose associated greenhouse gas emissions have been offset through projects that reduce greenhouse gas emissions.

- A suite of renewable energy development activities including the Mandatory Renewable Energy Target, the Renewable Energy Commercialization Programme, the Renewable Energy Action Agenda; and
- Energy efficiency measures such as minimum energy performance standards for appliances, equipment and buildings, efficiency standards for power generators, and the Energy Efficiency Best Practice Programme (EEBPP).

More information can be found at (www.greenhouse.gov.au).

Status: While air quality continues to be of concern to many Australians, Australia's air quality by world standards is generally good. Major pollution problems in Australian cities are episodic, largely influenced by seasonal and meteorological factors. Although Australia producers relatively high levels of some pollutants, this tends to occur in areas of low population and emissions per unit area are low by world standards due to the overall low population density. Emissions from vehicles, industry and solid fuel heaters can lead to pollution problems in urban environments.

Consumption of ozone depleting substances, HCFCs and methyl bromide will be phased out gradually over the next 5-20 years in line with Montreal Protocol obligations. Australia's proximity to the area of greatest ozone depletion, outdoor lifestyle, and dependence upon trade and agriculture make it particularly susceptible to changes in the ozone layer. It is difficult to quantify the impact of stratospheric ozone depletion on human health, settlements, ecosystems and economic activities. However, the net benefits of implementing actions to combat ozone depletion under the Australian Ozone Protection Act can be estimated through the independent cost/benefit analysis of the Act's operation undertaken in 2001. This analysis indicates that the net benefit from the legislation to Australia is AUD6.4 billion consisting of benefits of AUD7.4 billion and costs of AUD1.0 billion.

The Australian Government has taken steps to clean up emissions from the transport sector, through harmonization of vehicle emission standards with European Union standards (www.dotrs.gov.au/land/Environment/vehicle –emissions-adrs) and by improving the quality of fuel supplied in Australia. Improving the quality of fuel reduces the level of pollutants and emissions arising from the use of that fuel. National fuel quality standards for petrol and diesel, modelled on international standards will be implemented from January 2002 (www.ea.gov.au/atmosphere/transport/fuel/index).

Australia is vulnerable to changes in temperature and rainfall projected for the next 50 to 100 years. This is because Australia has large areas of arid and semi-arid areas and lies largely in the tropics and sub-tropics. Increased evaporation and possible decreases in rainfall in many parts of Australia could adversely affect water supply, agriculture and the survival and reproduction of key species in some regions. Climate change will affect human settlements and industry due to changes in both mean climate and possible changes to the frequency and intensity of extreme events. Australia faces a range of factors, which can be problematic for efforts to reduce greenhouse gas emissions. These factors include: the size and topography of the Australian continent; varying climatic patterns and extremes; projected population increase; a relatively small population distributed over a large area and consequent significant transport infrastructure and activity requirements; significantly changing land use patterns; economic reliance upon energy intensive exports; urban settlement patterns; and governmental structures. With the establishment of the Australian Greenhouse Office and adoption of a National Greenhouse Strategy, Australia has developed a comprehensive national strategic framework for advancing its domestic greenhouse action that reflects its particular national circumstances and recognizes Australia's vulnerability to climate change.

Capacity-Building, Education, Training and Awareness-Raising: Key national awareness raising and education programmes designed to improve air quality are: Breathe the Benefits, a programme to minimize emissions from wood-heaters and fireplaces (www.ea.gov.au/atmosphere/airquality/woodsmoke/breathe-the-benefits.html); Smogbusters, encouraging alternative, less polluting transport modes: and AirWatch, a school curriculum-based project to raise student awareness of air quality issues(www.airwatch.mrwa.wa.gov.au).

Environment Australia is undertaking the following activities to promote public awareness of protection of the atmosphere: publicising all successful enforcement activities and prosecutions under the *Ozone Protection Act*; advertising widely for grant applications under the Ozone Protection Reserve; maintaining an ozone protection website (www.ea.gov.au/atmosphere/ozone); and distributing fact sheets on key ozone issues. In late 2000, Environment Australia also conducted extensive consultations with the public as part of the review of the Federal Ozone Protection Act.

The Australian Greenhouse Office has undertaken a number of programmes and activities to improve understanding of climate change and to promote partnerships between government, industry and the wider

community. Greenhouse partnerships have been developed by the various levels of governments by working with industry (through measures such as Greenhouse Challenge), by fostering broader community engagement (through local government initiatives such as such as Australia's Cities for Climate Protection ™ programme and the Cool Communities programme), and by promoting international greenhouse partnerships (through the Commonwealth Government's International Greenhouse Partnerships Programme). Australia has also continued to undertake a broad range of public information and education projects as part of its national greenhouse response. Activities undertaken have included the production of booklets, journals, books, websites, demonstration projects, training programmes and media advertising.

Information: The National Environment Protection Measure for Ambient Air Quality (www.nepc.gov.au) requires all jurisdictions to report annually against standards for the six criteria pollutants. Atmospheric emissions for the major Australian airsheds are reported under the National Pollutant Inventory (www.npi.gov.au). A "State of Knowledge Report on Air Toxics and Indoor Air Quality – in Australia" (www.ea.gov.au/atmosphere/airtoxics/sok) was published in late 2001. The report aims to raise community awareness and establish a common baseline understanding of indoor air quality issues and air toxics in ambient air. The Living Cities – Air Toxics Programme is working with all government jurisdictions, industry, community groups and other interested parties to monitor and establish the levels of community exposure to selected priority air toxics. Several projects being conducted under this programme are about data and information gathering (www.ea.gov.au/atmosphere/airtoxics/programme/index).
The national State of Environment Reporting process (www.ea.gov.au/soe) also assesses atmospheric protection progress against a range of criteria about climate variability and change, stratospheric ozone, regional air quality and urban air quality (www.ea.gov.au/soe).
Australia produces an annual comprehensive inventory of national greenhouse gas emissions (www.greenhouse.gov.au/inventory/index). Data and information on climate change and atmospheric protection is made available through web-sites maintained by Environment Australia, and the Australian Greenhouse Office (www.ea.gov.au and http://www.greenhouse.gov.au/). In 2000, the Government published a report on the progress to date implementing the National Greenhouse Strategy (www.greenhouse.gov.au).
The National Pollutant Inventory was first released in January 2000, and holds information reported annually by facilities as well as aggregated emissions from sources such as transport, domestic activities and light industries. The Inventory has been developed cooperatively by the Commonwealth, States and Territories under the National Environment Protection Act.

Research and Technologies: Environment Australia has funded a number of national research activities designed to improve understanding of air pollution formation, its measurement and forecasting. The world's first Air Quality Forecasting System uses emission inventories and high resolution weather forecasts to predict pollution levels in real-time (www.dar.csiro.au/info/AAQFS).
In relation to ozone depleting substances, technologies and methods used (by substance being measured), include: stratospheric ozone - in situ measurements using ground-based and satellite-borne ultra-violet (UV) spectrophotometers and balloon-borne chemical ozone sondes; ozone depleting substances - ground-based gas chromatographs equipped with electron capture detectors and mass spectrometric detectors, for the analysis of air and ocean water samples collected at Cape Grim, in aircraft, from ships and from Antarctic ice and firn; and UV radiation - ground-based and satellite-borne spectral UV spectrophotometers. The Commonwealth Scientific and Industrial Research Organization (CSIRO) and the Bureau of Meteorology are undertaking a climate modelling programme to develop a better understanding of climate and its variations. CSIRO also operates the Global Atmospheric Sampling Laboratory. The Laboratory assists determination of sources and sinks of ozone-depleting gases, as well as their atmospheric behaviour.
Key Commonwealth agencies that undertake this research include the Bureau of Meteorology, the Commonwealth Scientific and Industrial Research Organization (CSIRO) and the Cooperative Research Centre (CRC) for the Antarctic and Southern Ocean Environment. Other government agencies, including the Australian Antarctic Division, as well several Australian universities, also contribute to Australia's climate research. The Australian Greenhouse Science Programme, managed by the Australian Greenhouse Office, provides strategic research funding to bodies such as the Atmospheric Research and Marine Research divisions of the CSIRO, the Bureau of Meteorology Research Centre (BMRC), the National Tidal Facility, and the Cooperative Research Centre for Greenhouse Accounting. The Greenhouse Science Advisory Committee provides strategic advice to the Commonwealth Government on the global status of greenhouse science.
The Australian Greenhouse Office also provides funding for a variety of technology development programmes including: GGAP (which supports the deployment of greenhouse gas abatement technologies across the

economy); the Renewable Energy Showcase Programme (which supports and promotes leading edge and strategically important renewable energy projects with strong commercial potential); the Renewable Energy Commercialization Programme (which fosters the development of the renewable energy industry in Australia and aims to reduce greenhouse gases by providing funds for projects leading to the commercialization of innovative renewable energy equipment, technologies, systems and processes); and the Renewable Energy Equity Fund (which targets companies that are commercialising or enabling renewable energy technologies and services, providing there is an innovative development being commercialised).

Financing: Australia has developed a multi-faceted national strategy addressing greenhouse issues, underpinned by Federal Government funding of almost AUD1 billion over 5 years (www.greenhouse.gov.au/pubs/ngs/ngs). The AUD400 million Greenhouse Gas Abatement Programme (www.greenhouse.gov.au/ggap), has been designed to lever private funds into cost-effective abatement action by the private sector. The Government's *Renewable Energy (Electricity) Act 2000* will ensure the proportion of this country's electricity produced from renewable sources increases from about 10% to 12% by 2010, an increase of 9,500 giga watt hours of extra renewable electricity per year. This is expected to create more than AUD2 billion worth of investment in the Australian renewable energy industry.
The Federal Government has allocated AUD18.5 million over six years for its Air Pollution in Major Cities Programme (www.nht.gov.au/programmes/airqual). Under its Measures for a Better Environment Programme the Government has allocated AUD40 million over 4 years to support in-service emission testing capabilities for petrol and diesel vehicles.
Revenue from the National Halon Banking Facility, and ozone depleting substances licence and activity fees is a significant source of funds for the Australian Government's Ozone Protection Programme. The Australian Government has employed a number of cost recovery measures to source funds allocated to stratospheric ozone protection from the national budget, including: imposing licence and activity fees on companies which import, export or manufacture ozone depleting substances; and imposing fees on private and public enterprises for the responsible management and disposal of non-essential halon stocks at Australia's National Halon Bank. Private sector investment in ozone protection includes the following initiatives: Refrigerant Reclaim Australia operates a national programme for the responsible recovery, reclamation and destruction of ozone depleting refrigerants, while rural industry research corporations collect levies from methyl bromide sales to fund research and development into methyl bromide alternatives.

Cooperation: As an island continent relatively isolated in the southern hemisphere, Australia suffers little from air pollution from beyond its borders. Australia has therefore not participated in any international or regional arrangements related to trans-boundary air pollution by the common atmospheric pollutants. However, Environment Australia often participates in information exchanges with neighbouring countries on programmes designed to improve air quality.
Australia provides substantial support for the Montreal Protocol Multilateral Fund. Under the auspices of the Montreal Protocol's financial mechanism (the Multilateral Fund), Australia is collaborating with Canada to develop a halon banking and management programme to assist India phase out ozone depleting substances, and cooperating with New Zealand and UNEP to develop a regional strategy to assist Pacific Island Countries implement an accelerated phase out of CFCs. Australia and Argentina regularly exchange information on ozone-related physical and chemical processes occurring at the mid-latitudes of the Southern Hemisphere. Australia's National Halon Bank has accepted surplus CFC from New Zealand, to ensure the responsible storage and disposal of the ozone depleting substances. Australia regularly shares its ozone policy experience with both developed and developing Protocol Parties.
Australia participates intensively in the technical and policy fora on the ozone layer and climate change. Australia's Cape Grim observation station is part of the World Meteorological Organization's global network of stations monitoring ozone-depleting substances and greenhouse gas concentrations in the atmosphere. Australia's Greenhouse Science Programme supports the International Project Office of the Global Change and Terrestrial Ecosystems (GTCE) project, which is part of the International Geosphere-Biosphere Programme. Australian scientists have played an active role in the various components of the World Climate Research Programme including the World Ocean Circulation Experiment, the Global Energy and Water Cycle Experiment and the Tropical Ocean-Global Atmosphere programme and in the IPCC. Australia has provided funding to the WMO to carry out a Climate Monitoring and Impacts Study in the South Pacific region and is a key player in progressing the aims of the Global Climate Observing System.

The Australian Government's overseas aid programme funds activities in developing countries in support of the United Nations Framework Convention on Climate Change (UNFCCC), particularly in the Asia-Pacific region. Since 1996/97, Australia has provided over AUD160 million for bilateral and regional overseas aid activities that contribute to sustainable development while reducing net greenhouse gas emissions, or that help developing countries to adapt to climate change. Australia has also continued to make financial contributions to multilateral institutions and programmes with significant climate change programmes, including the Global Environment Facility (GEF), the financial mechanism of the UNFCCC. Since 1991, Australia has committed over AUD116 million to the GEF; approximately 40% of funds contributed have been allocated to the GEF's climate change focal area.

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CHAPTER 10: INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES

Decision-Making: Responsibility for integrated land management is the responsibility of all spheres of government. There are a number of Federal/State agreements or frameworks that provide an integrated approach to natural resource management. These include the National Strategy for Ecologically Sustainable Development (www.ea.gov.au/esd/national/strategy/index), the National Strategy for the Conservation of Australia's Biological Diversity (www.ea.gov.au/biodiversity/publications/strategy/index), the National Greenhouse Strategy (http://ngs.greenhouse.gov.au/index), the National Forestry Policy Statement, the Decade of Landcare Plan (www.affa.gov.au), the Inter-Governmental Agreement on the Environment (www.ea.gov.au/esd/publications/igae), the Natural Heritage Trust Partnership Agreements (www.nht.gov.au), the National Framework for the Management and Monitoring of Australia's Native Vegetation (www.ea.gov.au/land/vegetation/nvf/index) and the National Framework for Natural Resource Management Standards and Targets (which is under development). These are supported by State and Territory regional plans and/or strategies that outline priority areas for activities. The Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 was established for the protection of matters of national environmental significance. It replaced five Commonwealth Acts. Ministerial Councils comprising State/Territory and Commonwealth Ministers also provide fora for developing and implementing a coordinated approach to natural resource management and environment.
For sustainable land management, considerable emphasis is now being place on the delivery of regional programmes through the Natural Heritage Trust and the National Action Plan for Salinity and Water quality. These incorporate long-term objectives for resource management, energy use and improved environmental performance. Innovative measures are being explored through economic instruments, such as credits for carbon, biodiversity and salinity management. The regional programmes will require measurement and monitoring of activities against agreed standards and targets.

Programmes and Projects: Under the Natural Heritage Trust (http://www.nht.gov.au) support is provided to stimulate significant improvement and greater integration of biodiversity, land, water and vegetation management on public and private land. The Trust encourages management systems that bring long-term environmental, economic and social benefits. The Natural Heritage Trust has funded natural resource management activities from 1996-97 to 2001-02 under the themes of land, rivers, vegetation, biodiversity, coasts and marine through the partnerships between governments, communities and the private sector. From 2002-03 to 2007-08, there will be a fundamental shift in the Natural Heritage Trust towards more strategic investment, with a clear emphasis on outcomes at the regional level. Over this period, activities will be targeted at three overarching objectives, namely: biodiversity conservation; sustainable use of natural resources; and community capacity building and institutional change.
The Indigenous Land Corporation is a Commonwealth statutory authority established to assist Indigenous persons to acquire and manage land for the social, cultural, environmental or economic benefit of Indigenous people. The ILC's land management functions include the provision of environmental management services in relation to the use, care and improvement of land. Additionally, in June 1999 the Minister for Environment and Heritage established an Indigenous Protected Areas Advisory Group to provide advice on the development of the Indigenous Protected Areas programme. The Indigenous Protected Areas programme aims to support Indigenous landowners to manage their lands for the protection of natural and cultural features.

Status: Governments, through the Natural Heritage Trust, the National Action Plan for Salinity and Water Quality and other programmes, are enacting a comprehensive response to integrated land management. A number of States and Territories have institutionalised integrated land management. In Victoria, for example, this has been achieved through the establishment of Catchment Management Authorities. Regional Forest Agreements (RFAs) between States/Territories and the Federal apply to major-forested regions, which continue commercial harvesting, and are designed to ensure conservation of natural and cultural values through comprehensive, adequate and representative reserves within a framework of ecologically sustainable forest management (www.affa.gov.au).

Capacity-Building, Education, Training and Awareness-Raising: Both the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust have significant capacity building, training and education components at the regional level. Considerable emphasis is placed on capacity building as an important

component and step towards improved natural resource management outcomes in Australia. The capacity of individuals, industry, governments and communities is enhanced so they are equipped with the skills, knowledge and information to sustainably manage the natural resource base. Initiatives range from formal training programmes, learning through on-ground action and workshops, through to environmental education activities, the provision of support and technical services and the production of resource materials.

Under the Natural Heritage Trust (NHT) a number of support networks, such as the Bushcare Network, Coastcare Network and Landcare Network, have been established across Australia supporting community involvement in the management, protection and rehabilitation of Australia's natural environment. This support includes project planning, training in vegetation, water and sustainable agriculture activities. Communication activities under the Trust have focussed on raising awareness of the value of integrated management and aim to raise community capacity to deal with natural resource degradation. The National Action Plan for Salinity and Water Quality also places considerable importance on equipping regional communities to deliver the salinity and water quality outcomes expected from the Plan. The Natural Heritage Trust has placed considerable emphasis on building capacity of natural resource managers and community groups to repair the landscape. Initiatives range from formal training programmes, accreditation processes, to funding of projects to specifically build capacity and achieve training objectives.

In addition to direct community involvement, Education and Training initiatives have been supported through the Trust. The Skills Tool Kit is a competency-based, national training resource aimed at the needs of regional facilitators, project coordinators, landcare leaders and volunteers in rural and regional areas. It will help build the skills and capacity base in rural and regional Australia to underpin sustainable and viable regional industries and communities. A short course "Building Regional Capacity: natural resource management short course" is also available for community leaders, facilitators, and coordinators working with land, water, and bush in rural and urban Australia.

Information: Australia has in place a range of policies and delivery frameworks that assist in national coordination of information. Substantial progress has also been made on national standards for data collection, access and use. The Australian New Zealand Land Information Council is developing an Australian Spatial Data Infrastructure to provide better access to essential spatial data. Meeting Commonwealth legislative requirements has also led to development of information products to assist in decision-making. For example, under the EPBC Act these include a Collaborative Database on Protected Areas, a Directory of Important Wetlands and a nationally significant threatened and migratory species database.

In addition to the five yearly State of the Environment Report, indicators are being developed to assist in the sustainable management of natural resources (www.ea.gov.au/soe/index.html). Australia has recently completed a comprehensive audit of its land and water resources, taking into account environmental, social and economic values. Australia is also improving mechanisms for manipulating data, and for accessing indigenous knowledge. The National Land and Water Resources Audit (www.nlwra.gov.au/minimal/index) is a Natural Heritage Trust Programme that provides an independent, objective assessment of the extent of natural resource degradation and includes an economic analysis of each problem, to facilitate improved decision making on land and water resources.

Research and Technologies: Under the authority of the *Primary Industries and Energy Research and Development Act* 1989 the Federal Government has established industry based research and development corporations that fund research designed to improve the profitability and ecological sustainability of a number of agricultural and pastoral industries.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further six years, from 2002-03 until 2007-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants.

Funding is provided through Commonwealth, State and Territory Government programmes to community groups for activities that address sustainable land use with priority given to those dealing with integrated land management.

Cooperation: Australia's overseas aid programme focuses on three key areas to meet the needs of rural poor: increasing agricultural productivity, stimulating rural non-farm employment and managing natural resources sustainably. In 2000-01, the aid programme provided an estimated AUD223.3 million for rural development, supporting 344 projects through AusAID and the Australian Centre for International Agricultural Research (ACIAR). Many of AusAID's activities in other sectors contribute to rural development and poverty alleviation.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: The Federal Government, is responsible for relevant international obligations and agreements related to forests and for coordinating a national approach to the conservation and ecologically sustainable management of forests (www.ea.gov.au/land/bushcare). The State and Territory governments have responsibility for forest management through their constitutional responsibility for land use management and their ownership of large areas of forest. In 1992, the Federal and State governments developed a National Forest Policy Statement (www.rfa.gov.au/rfa/national/nfps/index.html) which is based on sustainable use and conservation goals. A key element of the approach adopted under the Statement are Regional Forest Agreements between the Commonwealth and State governments. These provide a blueprint for the future management of Australia's forests, and the basis for an internationally competitive and ecologically sustainable forest products industry (www.affa.gov.au/content/).
A Wood and Paper Industry Strategy was announced in 1995 and involved a four year Federal Government initiative to encourage investment, value adding and jobs growth in the forest industries. In October 1997, governments and industry agreed on a strategy called - Plantations for Australia: the 2020 Vision aimed at trebling Australia's forest plantation estate by the year 2020 (www.affa.gov.au/content/output).

Programmes and Projects: The Federal and State governments spent collectively AUD230 million to undertake comprehensive regional assessments of environmental, heritage, economic and social values related to the use of Australia's forests. These assessments were used to implement the Regional Forest Agreements. The Regional Forest Agreement programme implemented by the Federal and State governments in Australia is an example of integrating environment and development considerations into decision-making. Regional Forest Agreements (http://www.rfa.gov.au/) provide a mechanism for achieving an equitable balance between conservation and sustainable use of the natural and cultural, and economic and social values of Australia's forests. Comprehensive Regional Assessments, that underpinned these Agreements, provided the scientific information, analytical methods and consultation mechanisms necessary to develop durable and credible Agreements. Conservation, resource use, and industry development options were developed by Governments and key stakeholders on the basis of this information using sophisticated resource analysis tools and modelling techniques. Collaboration and consultation with stakeholders and opportunities for public comment were an integral part of the process. The final allocation of forest resources and management arrangements for sustainable use and conservation were negotiated between State and Federal governments with stakeholder and community input. Regional Forest Agreements are a case study of the 'ecosystem approach' for the Convention on Biological Diversity (http://www.biodiv.org/doc/case-studies/cs-ecofor-au-management.pdf).
The Forest Industry Structural Adjustment Package (FISAP) is a Commonwealth Government initiative to assist forest industry businesses and workers adjust to changes in the availability of native forest resources resulting from the Regional Forest Agreement (RFA) process. The Commonwealth has committed AUD101m to promote investment in value adding and employment by businesses in the native hardwood industry. The programme also provides for Business Exit Assistance and Worker Assistance in circumstances where there is no alternative to a company leaving the industry.
One activity under the Natural Heritage Trust is to encourage the incorporation of commercial tree growing and management on cleared agricultural land into farming systems for the purpose of wood and non-wood production, increasing agricultural productivity and sustainable natural resource management (www.affa.gov.au/docs/1_nrm/nht_landcare/nht/ffp-summary). Bushcare, has the national goal of reversing the long-term decline in the quality and extent of Australia's native vegetation cover (www.ea.gov.au/land/bushcare/about/index) and the Bush for Greenhouse Programme facilitates private investment in targeted native revegetation (www.greenhouse.gov.au/pubs/factsheets/fs_bush.l). The Federal Government has committed AUD30 million to a programme to protect environmental values on private land as part of the Tasmanian Regional Forest Agreement. This money is aimed at protecting biodiversity values on private land where reservation targets were not met on public land.

Status: Ten Regional Forest Agreements are in place in four Australian States. :These Agreements have added 2.5 million hectares to Australia's forest reserves. They boosted the total area of forest in reserves by about 39 per cent, and brought the percentage of public land within reserves to more than 60 per cent in Agreement regions. Forests outside reserves are available for wood production and other uses. They are subject to substantial regulation and control that ensure long-term sustainability and contribute to the protection of their natural and cultural values. The Regional Forest Agreement programme implemented by the Federal and State

governments in Australia is an example of integrating environment and development considerations into decision-making. Regional Forest Agreements (http://www.rfa.gov.au/) provide a mechanism for achieving an equitable balance between conservation and sustainable use of the natural and cultural, and economic and social values of Australia's forests. Comprehensive Regional Assessments, which underpinned these Agreements, provided the scientific information, analytical methods and consultation mechanisms necessary to develop durable and credible Agreements. Conservation, resource use, and industry development options were developed by Governments and key stakeholders on the basis of this information using sophisticated resource analysis tools and modelling techniques. Collaboration and consultation with stakeholders and opportunities for public comment were an integral part of the process. The final allocation of forest resources and management arrangements for sustainable use and conservation were negotiated between State and Federal governments with stakeholder and community input. Regional Forest Agreements are a case study of the 'ecosystem approach' for the Convention on Biological Diversity (http://www.biodiv.org/doc/case-studies/cs-ecofor-au-management.pdf).
Australia is currently developing an Australian Forestry Standard to encourage best practice forest management with the criteria based on the Montreal Process.

Capacity-Building, Education, Training and Awareness-Raising: Through the programmes of the Natural Heritage Trust, the Federal Government supports a range of capacity-building, education, training and awareness raising activities. Considerable emphasis is placed on capacity building as an important component and step towards improved natural resource management outcomes in Australia, including the conservation and sustainable use of native vegetation and forests. The capacity of individuals, industry, governments and communities is enhanced so they are equipped with the skills, knowledge and information to sustainably manage the natural resource base. Initiatives range from formal training programmes, learning through on-ground action and workshops, through to environmental education activities, the provision of support and technical services and the production of resource materials.

Information: A National Forest Inventory was set up in 1989 (www.affa.gov.au/content/output) to collect, analyse and communicate information on Australia's forests, both domestically and internationally. In 1998, a national State of the Forests report was produced and will be compiled every five years. In 1997, under the auspices of the Montreal Process, Australia produced its First Approximation Report against criteria and indicators for sustainable forest management. Australia is committed to using the Montreal Process criteria and indicator framework for reporting on forest condition and progress towards sustainable forest management. Australia is currently developing an Australian Forestry Standard to encourage best practice forest management, with criteria based on the Montreal Process. Information on sustainable forest management is made available to potential users through a number of avenues notably Australia's State of the Forest Report and Montreal Process First Approximation Report.
The National Carbon Accounting System provides a national assessment and monitoring capability for carbon which helps to report on carbon in forests (www.greenhouse.gov.au/ncas).

Research and Technologies: Continued research and development into Australia's forests and forest industries is undertaken by the Forest and Wood Products Research and Development Corporation, the Commonwealth Scientific and Industrial Research Organization (www.csiro.gov.au), Bureau of Rural Sciences (www.brs.gov.au), universities, State agencies and private companies.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development, including vegetation and forest management, conservation, farm forestry and the National Forest Inventory. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further six years, from 2002-03 until 2007-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants.

Cooperation: Australia has been an active participant in the International Panel on Forests, the Intergovernmental Forum on Forests and most recently the UN Forum on Forests.
AusAID, the Australian Agency for International Development, uses a variety of channels to support sustainable forest management and conservation, especially in the Asia-Pacific region. Assistance is provided

through bilateral and regional projects; contributions to multilateral agencies (such as the World Bank; the ADB and ITTO); and Australian NGOs.

Over the last ten years since the agreement of Agenda 21, the Australian international development programme has spent an estimated AUD109.7 million on deforestation related activities in developing countries. In addition, an estimated AUD80.8 million was spent on other activities and projects in which deforestation featured as a secondary focus. Australia also supports international forestry research activities through the Australian Centre for International Agricultural Research, the Department of Environment and Heritage and the Department of Agriculture, Fisheries and Forestry. The Australian Federal Government was also a contributor to the development of the Code of Practice for Forest Harvesting in the Asia-Pacific, in conjunction with the Asia-Pacific Forestry Commission. The Code was developed to provide a basis for improved forest harvesting with reduced negative environmental and social impacts with a focus on the Asia-Pacific region.

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CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

Decision-Making: Australian governments seek consistency between policies and programmes aimed at natural resource management, industry development and drought. Many initiatives link ecological, social and economic objectives through development of integrated regional approaches to resource management. A range of strategies, such as the National Strategy for Ecologically Sustainable Development, the National Drought Policy and the National Weeds Strategy , agreed between the Federal and State Governments, have had significant influences on land management practices in the rural sector.
Arid areas have received particular attention through agreement on a set of National Principles and Guidelines for Rangeland Management. One of the key initiatives called upon in this strategy was the establishment of a system to monitor the trend and condition of Australia's rangelands.
Indigenous peoples have a special relationship with the rangelands and are substantial stakeholders within the region, managing approximately 18.4 percent of the total land area. A new Indigenous Land Corporation (ILC) came into existence on 1 June 1995.

Programmes and Projects: The principal Federal Government vehicle for addressing the issues involved in the sustainable use of the natural resource base, is the Natural Heritage Trust, (http://www.nht.gov.au) which has focused on encouraging communities to address the underlying problems of land degradation, rather than just the symptoms, and to form partnerships and support networks to help build capacity in land managers to undertake the tasks required.
The National Action Plan for Salinity and Water Quality (http://www.affa.gov.au/actionsalinityandwater) in Australia builds on work established under the Natural Heritage Trust, the Murray-Darling Basin Commission, State/Territory salinity strategies and the COAG Water Agreement. The Action Plan aims to motivate and enable regional communities for coordinated and targeted action to prevent, stabilize and reverse trends in dryland salinity and improve water quality and secure reliable allocations for human uses, industry and the environment.

Status: More than 75% of Australia is broadly defined as rangelands (570 million hectares) including a diverse group of relatively undisturbed ecosystems including tropical savannas, woodlands, shrublands and grasslands. Australia's rangelands extend across low rainfall areas (arid and semi-arid) and some seasonally high rainfall areas.
The main causes of land degradation in the rangelands include over-grazing by introduced and native herbivores (total grazing pressure), mechanical removal of vegetation cover, woody weed invasion and land management without regard to climate variability. The effects of these processes include increased soil erosion, soil degradation, altered stream flow regimes, increased soil salinity and loss of biodiversity.
Many rangeland areas contain habitat for rare, threatened and endangered species and have a significant number of endemic species or exhibit high species diversity.

Capacity-Building, Education, Training and Awareness-Raising: Both the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust have significant capacity building, training and education components at the regional level. Considerable emphasis is placed on capacity building as an important component and step towards improved natural resource management outcomes in Australia. The capacity of individuals, industry, governments and communities is enhanced so they are equipped with the skills, knowledge and information to sustainably manage the natural resource base. Initiatives range from formal training programmes, learning through on-ground action and workshops, through to environmental education activities, the provision of support and technical services and the production of resource materials.
Australia has been proactive in assisting other affected countries with a range of technology transfer and capacity building support measures. In working towards a cost effective method of information sharing, a range of Australian case studies that outline best practice examples of government, industry and community efforts to address land degradation are soon to be developed. These case studies along with contacts for further information will be included on an Australian UNCCD web page, expected to be online by mid to late 2002.

Information: The National Land and Water Resources Audit, a programme of the Natural Heritage Trust, is finalising a comprehensive audit of existing information on the status and condition of Australia's land and water resources. In conjunction with other national scale reporting processes, such as State of the Environment

Reporting, Australia, the National Land and Water Resources Audit is developing a better understanding of the extent and causes of land degradation. This will lead to improved decision making in addressing the impacts of land degradation.

Research and Technologies: Universities and a variety of Federal and State bodies are undertaking research into natural resources management. These include: the CSIRO, the Land and Water Resources Research and Development Corporation, the Bureau of Rural Sciences and a number of joint industry-government funded research and development corporations such as the Cooperative Research Centres (which includes a Tropical Savannas CRC). There are many other institutions and agencies that make a substantial contribution to understanding of status and change in the rangelands.
State and Territory governments, with an interest in the rangelands, are also undertaking research into rangeland management issues. The establishment in 1995 of the Cooperative Research Centre for the Sustainable Development of Tropical Savannas is an example of the cooperation being undertaken between organizations working in the rangelands of Australia.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further six years, from 2002-03 until 2006-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants
Through the National Action Plan for Salinity and Water Quality in Australia, funding of AUD1.4 billion over seven years will be provided by the Commonwealth and the states principally to undertake targeted action in 21 highly affected catchments or regions.

Cooperation: The United Nations Convention to Combat Desertification in those Countries experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD) was signed by Australia on 14 October 1994. The Australian Minister for Foreign Affairs deposited the instrument of ratification with the UN Secretary General in New York on 15 May 2000, signalling Australia's agreement to become a Party to the Convention. Ratification was complete in September 2000.
Australia has, for many years, been working with developing countries affected by land degradation and desertification, including neighbours in the Asia-Pacific region and Africa. Recognizing that prevention of environmental degradation is essential to alleviating poverty and fostering sustainable development, the Government's Australian Agency for International Development (AusAID) is currently supporting a range of programmes to combat desertification in developing countries worth approximately AUD53 million. Additionally, the Australian Government provides contributions to a range of multilateral organizations, which either directly or indirectly combat desertification.
The Australian Centre for International Agricultural Research (ACIAR) also participates in desertification and land degradation mitigation by developing innovative technologies and land use methods with an international perspective. ACIAR, which is a component of the Australian Government's overseas aid programme, has funded a range of projects related to desertification. These projects, which are located primarily in southern Africa, China, India and South-East Asia run over the years 1992-2004 and have a combined value of AUD10.9million.

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CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

Decision-Making: Management of mountainous areas is, in general terms, the responsibility of the relevant State and Territory or Local Governments. Many mountain sites are included in protected areas managed by State or Territory conservation agencies. The Australian Alps national parks are managed by three park agencies. The Federal Government, through the Parks Australia, supports the management agencies with coordination, secretariat and website support. To facilitate a common approach to management for the alpine parks and reserves, the State and Federal Ministers responsible for the Australian Alps Co-operative Management Programme maintain a Memorandum of Understanding (MOU), established in 1986, and revised in 1989, 1996 and 1998. The objective of the agreement is to pursue cooperative management and develop complementary policies to protect the natural and cultural heritage of the Australian Alps, whilst providing opportunities for public enjoyment of that resource. The Australian Alps Liaison Committee was formed to coordinate the development and implementation of co-operative programme and arrangements. The 2000-2002 Strategic Plan for the cooperative management of the Australian Alps national parks is in place. This is an extension of the previous Strategic Plans and reflects community consultation and agency review of priorities.

Programmes and Projects: The Australian Alps Co-operative Management Programme maintains five programmes focusing on natural heritage, cultural heritage, community relations, recreation and tourism and programme development. Further details can be obtained from the website - http://www.australianalps.environment.gov.au/.

Status: Australia has a generally flat land surface with relatively low precipitation and run-off. The Great Dividing Range is a discontinuous chain of mountainous terrain that extends up the east coast and into Cape York. The higher altitude peaks often harbour a range of plant and animal species that are of Gondwanan origins and thus of high conservation significance. Australia's mountainous regions have their greatest extent in the south-east of the continent (a region known as the Australian Alps) and in parts of the island State of Tasmania. The Alps and the mountainous areas of Tasmania have a long history of grazing. In recent years other industries and land uses, particularly hydroelectricity generation, forestry, skiing, fishing, bushwalking, trail riding and general tourism have come to dominate. Protection of important catchments is a high priority, as are the control of erosion, the protection of cultural heritage, and the conservation of unique alpine fauna and flora habitat. The Australian Alps national parks encompass an area of approximately 1.6 million hectares of the Australian mainland and provide protection to more than 60 % of the Australian Alps biogeographic region. Much of the area outside national parks is also public land. It is managed under a multiple use strategy, covering uses such as skiing, cattle grazing and forestry activities.

Capacity-Building, Education, Training and Awareness-Raising: The Australian Alps Co-operative Management Programme also develops agency staff expertise through annual field workshops and training courses. It has a comprehensive community relations programme including video and high quality printed materials. A series of minimal impact codes for walking, horse riding, camping and cycling have been successfully adopted by many park users.

Information: Through the implementation of the MOU, the Australian Alps national parks are developing an international reputation for their cooperative management. The IUCN publication, "Parks on the Borderline: Experience in Transfrontier Conservation," give recognition to the success of cross-border cooperation between the different MOU agencies. The IUCN publication indicated that the Australian Alps parks and reserves constituted the most advanced operating cross-border park management agreement.

Research and Technologies: The bulk of funds managed by the Australian Alps Co-operative Management Programme is channelled into a research programme based on the four programmes or key-result areas. Examples of the research projects can be obtained from the website (noted above).

Financing: A total annual budget of AUD280 000 is provided for the Australian Alps National Parks Co-operative Management Programme through contributions from the States and the ACT. This is in addition to the operational budgets of the individual parks and management agencies.

Cooperation: Australian expertise in dry land agricultural methods has been used to improve the sustainability of agricultural practices in a number of marginal mountain environments in Asia and the Pacific. Examples of such projects include the Highland Agricultural and Social Development project in northern Thailand, the Nepal Australia Community Forestry project, the Laos Upland Agriculture project, the Nusa Tenggara Timur Watershed Management project in Indonesia and two integrated area development projects in Simbu province in the Papua New Guinea Highlands. Together these projects total over AUD60 million. The Australian Centre for International Agricultural Research (ACIAR) has supported research projects on reducing degradation of upland areas of South Asia caused by soil erosion and acidification.

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CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURAL AND RURAL DEVELOPMENT

Decision-Making: The State and Territory governments have prime responsibility for land management and all have departments responsible for agriculture. However, the Federal Government has an interest in many aspects of land management including sustainable agriculture and rural development. The Department of Agriculture, Fisheries and Forestry has carriage of agriculture at the Federal level and works very closely with Environment Australia on sustainable land management issues (www.ea.gov.au, www.affa.gov.au). The development of nationally integrated and sustainable agriculture, land and water management policies, strategies and practices is managed by two Councils of Ministers representing the Federal Government, six State and two Territory Governments. The key coordinating mechanism is the Primary Industries Ministerial Council, which aims to develop and promote sustainable, innovative and profitable agriculture, forestry and fisheries/aquaculture industries.
In September 1997, the Federal Government announced an integrated rural policy package titled 'Agriculture - Advancing Australia' which comprises a package of programmes designed to help primary producers in agriculture, fishing, forestry and processes food industries become more competitive, sustainable and profitable. Other measures to enhance sustainable development include the National Strategy for the Management of Agricultural and Veterinary Chemicals; and the Council of Australian Governments Water Reform Framework.

Programmes and Projects: The funding initiatives of the Natural Heritage Trust have supported integrated approaches to the planning and management of land resources underpinning agriculture, addressing issues such as the sustainable management, rehabilitation and conservation of natural resources (www.nht.gov.au). The Natural Heritage Trust has funded natural resource management activities from 1996 to 2002 under the themes of land, rivers, vegetation, biodiversity and coasts and marine. From July 2002 to June 2007, there will be a fundamental shift in the approach taken under the Natural Heritage Trust with a new emphasis on regional outcomes, targeted at three overarching objectives, namely: biodiversity conservation; sustainable use of natural resources; community capacity building and institutional change.

Status: The Federal Government is committed to microeconomic reform to enhance Australia's international competitiveness and to raise living standards and, through improved efficiency, a more sustainable pattern of resource use. The unilateral tariff reductions of recent years have seen the nominal rate of assistance to both the manufacturing and commodities sectors substantially reduced. Australian farm productivity continues to increase through advances in technology and improved farm management. Central to these achievements is the ability of farmers to make appropriate structural adjustments in response to market developments. It has been recognized that the key to sustainable agriculture in Australia is sound land management and planning. Successive governments are developing programmes to combat the major issues of dryland salinity, water use and vegetation management. Water reforms to arrest widespread degradation of Australia's water resources through, among other things, improved water pricing and transferable water entitlements are a major part of Australia's response (www.ea.gov.au/water/policy/coag).

Capacity-Building, Education, Training and Awareness-Raising: Programmes such as FarmBis and those supported under the Natural Heritage Trust aim to enhance management skills in primary producers, including fishers, through assistance to attend learning activities in the area of general business, finance, marketing, human resources, production, and natural resources. Land managers are also able to access natural resource management training. The National Action Plan for Salinity and Water Quality has as its centrepiece the building of capacity at regional levels to address salinity and water quality issues.

Information: There has been important progress in improving the understanding of Australia's natural resource base. Several databases and geographical information systems have been developed and integrated. In addition a comprehensive National Land and Water Resources Audit (www.nlwra.gov.au) was undertaken from 1997 to 2001 as part of the Natural Heritage Trust. It will facilitate improved decision making for land and water resources management (www.nht.gov.au). Results of the Audit are available through the Australian Natural Resources Atlas (http://www.nlwra.gov.au/atlas). Australia is also developing indicators to assist in the sustainable management of its natural resources (www.ea.gov.au/soe/envindicators/index). Based on the Montreal Process, regional forestry agreements incorporate indicators to assist in the sustainable management of Australia's forest resources (www.affa.gov.au).

Research and Technologies: The Federal Government, in partnership with the respective rural industries, has established 12 industry based research and development corporations and companies (RDCs) which fund research and development activities to achieve improved international competitiveness and sustainability of rural industries as well as providing benefits to the wider community. In addition, there are two general RDCs that invest in new and emerging industries and broad natural resource management issues respectively. RDCs play a lead role in funding sustainability R&D that directly benefits primary industries and the community, investing up to 30% of their funding per annum. While one of the RDCs, Land and Water Australia, is charged with leading and managing investments in sustainability issues, sustainability outcomes are an objective for all RDCs.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further six years, from 2002-03 until 2007-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants.
Through the National Action Plan for Salinity and Water Quality in Australia, funding of AUD1.4 billion over seven years will be provided by the Commonwealth and the States principally to undertake targeted action in 21 highly affected catchments or regions.

Cooperation: The Federal Government is committed to trade liberalization, regarding it as the key to promoting global food security, given that freer global trade will enable countries to exploit their comparative advantages and encourage economic growth in both developing and developed countries. Accordingly, the Australian Government has contributed to world food security by pursuing reform of world agricultural trade policies and has been especially active in discussions within the World Trade Organization amongst other fora, on the importance of taking into account developing countries' needs within the reform process.
The Australian Government promotes collaborative research among Australian scientists and their developing country counterparts on key aspects of sustainable agriculture and also provides financial aid to developing countries to develop programmes and projects related to agricultural and rural issues. In addition, the Federal Government continues to pursue policies in line with the commitments it made during the World Food Summit to enhance global food security. Australia was a participant in the negotiation of the 1999 Food Aid Convention, which provides for a minimum food aid package of 4.9 million tonnes of grain from member countries. Under the Convention members will give priority in the allocation of food aid to Least-Developed Countries and Low-Income Countries, many of which are on the WTO list of Net Food-Importing Developing Countries. The Convention also maintains a mechanism for assisting in implementing the 1996 World Food Summit commitment to achieve food security for all and an ongoing effort to eradicate hunger.
Australia's overseas aid programme focuses on three key areas to meet the needs of the rural poor: increasing agricultural productivity; stimulating rural non-farm employment; and managing natural resources sustainably. In 2000-01, the aid programme provided an estimated AUD223.3 million for rural development, supporting 344 projects through AusAID and the Australian Centre for International Agricultural Research (ACIAR). The aid programme spent about AUD261.3 million on the cross-cutting issue of food security in 2000-01. This included not only rural development activities, but emergency food activities, and expenses related to agriculture scholarships. This contribution is part of Australia's pledge to provide AUD1 billion for food security activities in the four-year period ending 2001-02.

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: Protection of biodiversity and the maintenance of essential ecological processes and life support systems is one of three core objectives of the National Strategy for Ecologically Sustainable Development (www.ea.gov.au/esd/national/strategy/intro). The National Strategy for the Conservation of Australia's Biological Diversity was developed by Australia in 1996 and implements the Convention on Biological Diversity. It is a product of the spirit of cooperation engendered by the Inter-Governmental Agreement on the Environment and has been endorsed by all spheres of Government (www.ea.gov.au/biodiversity/publications/strategy. State and Territory governments also have individual conservation strategies at various stages of development or implementation.
The National Strategy for the Conservation of Australia's Biological Diversity is closely related to other national strategies, including the National Action Plan for Salinity and Water Quality, the National Forest Policy Statement and the National Principles and Guidelines for Rangeland Management. Contributions from industry, business, the scientific community and NGOs were particularly important to the development of the National Biodiversity Strategy. A Biological Diversity Advisory Committee comprising experts from these groups has been established to advise Government on biological diversity conservation issues. Many rangeland areas contain habitat for threatened species, have a significant number of endemic species or exhibit high species diversity. Biodiversity in these areas has been adversely affected by factors such as modification of habitat by grazing, vegetation clearing and land degradation. The Federal *Environment Protection and Biodiversity Conservation Act* 1999 introduces national environmental assessment processes for actions likely to have a significant impact on nationally threatened species and ecological communities, migratory species, Ramsar wetlands and World Heritage and Federal marine areas and an extensive statutory regime for the conservation of biodiversity and management of protected areas.

Programmes and Projects: Under the Natural Heritage Trust (http://www.nht.gov.au) support is provided to stimulate significant improvement and greater integration of biodiversity, land, water and vegetation management on public and private land. The Trust encourages management systems that bring long-term environmental, economic and social benefits. The Natural Heritage Trust has funded natural resource management activities from 1996-97 to 2001-02 under the themes of land, rivers, vegetation, biodiversity, coasts and marine through the partnerships between governments, communities and the private sector. From July 2002 to June 2008, there will be a fundamental shift in the Natural Heritage Trust towards more strategic investment, with a clear emphasis on outcomes at the regional level. Over this period, activities will be targeted at three overarching objectives, namely: biodiversity conservation; sustainable use of natural resources; and community capacity building and institutional change.
The Australian Biological Resources Study has continued to document Australian flora and fauna, and the Australian Virtual Herbarium is a promising new database on the distribution of species.
As an initiative funded under the Natural Heritage Trust, the National Land and Water Resources Audit (the Audit) commenced in October 1997 to provide data analysis and appraisal to facilitate improved decision-making on land, vegetation and natural resources management generally. One component of the Audit is an Australia wide Biodiversity Assessment initiative due for completion before June 2002, http://www.nlwra.gov.au. The Bush for Greenhouse Programme facilitates private investment in targeted native revegetation (http://www.greenhouse.gov.au/pubs/factsheets/fs_bush).

Status: Australia is one of the most biologically diverse countries in the world, with a large portion of its species found nowhere else in the world. About 85 per cent of flowering plants, 84 per cent of mammals, more than 45 per cent of birds, and 89 per cent of inshore, temperate-zone fish are endemic. Changes to the landscape and native habitat as a result of human activity has put many of these unique species at risk. Over the last two hundred years many species of plants and animals have become extinct. For the other species of plants and animals whose survival is threatened a range of management and conservation measures are in place. The Federal government is working in partnership with state, territory and local governments, non-government organizations, tertiary institutions and community groups to ensure the protection of Australia's native species.
The Federal mechanism for national environment protection and biodiversity conservation is *the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act provides strong protection for listed species and communities in Commonwealth areas (this includes threatened species and ecological communities, migratory and marine species); cetaceans in Commonwealth waters and outside Australian waters; protected species in the Territories of Christmas Island, Cocos (Keeling) Islands and Coral Sea Islands;

World Heritage properties; Ramsar wetlands; Biosphere reserves; Commonwealth reserves; and conservation zones.
Of the themes in the National Biodiversity Strategy, conservation of forest biodiversity is the most advanced. Ten Regional Forest Agreements have added 2.5 million hectares to Australia's forest reserves. They boosted the total area of forest in reserves by about 39 per cent, and brought the percentage of public land within reserves to more than 60 per cent in Agreement regions. The forests outside of reserves are available for wood production and other uses, while subject to regulation and control to ensure long-term sustainability and contribution to conservation of biodiversity values.

Capacity-Building, Education, Training and Awareness-Raising: Support for increased community involvement in biodiversity conservation activities and for the incorporation of biodiversity into educational programmes is a major objective of the National Biodiversity Strategy. Media organizations, government agencies, educational institutions, scientific establishments and conservation groups have all been active in recent years in promoting the conservation of biological diversity. Increased community interest in the topic has resulted in greater coverage in media and educational programmes. Through a number of grant programmes such as the Natural Heritage Trust, on-ground community involvement in rehabilitation, management and monitoring of biodiversity is an essential component of the projects. Both the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust have significant capacity building, training and education components at the regional level. Environment Australia has a broad environmental education programme which can be found at www.ea.gov.au/education/index.

Information: The National Vegetation Information System (NVIS) is a collaborative project involving Commonwealth and State and Territory agencies, which provides a cohesive national system for collating and disseminating native and exotic vegetation extent and condition information covering the whole landscape. Agriculture, Fisheries and Forestry - Australia, along with other Commonwealth, State and Territory agencies, is currently undertaking the National Vegetation Information and Analysis workplan (www.affa.gov.au/nvia) to further advance the capacity for provision of easily accessible, nationally consistent data to enhance decision making for an array of natural resource management issues including conservation of biodiversity and sustainable resource development activities. The National Forest Inventory (www.affa.gov.au/nfi) collects, analyses and communicates information on a wide range of Australia's native and plantation forest characteristics, including extent, type, age and tenure. Information on the biodiversity of forests is published in the 5-yearly State of the Forests Report and Montreal Process (i.e. criteria and indicators for sustainable forest management) reports, and is collated and synthesised for use in international reports such as the Global Forest Resource Assessment 2000 and the State of the World's Forests. Domestically, this information is used for monitoring the conservation of forest biodiversity and to support decision-making on forest resource management issues.
Australia's Biodiversity Clearing House Mechanism at the national level serves the information needs of those organizations involved in implementing the provisions of the Biodiversity Convention and the National Strategy. Environment Australia has developed the Clearing House Information Manager to raise awareness and understanding of both the Convention and the Strategy while also facilitating access to a range of related information (chm.environment.gov.au).
Under the *Environment Protection and Biodiversity Conservation Act*, a Collaborative Database on Protected Areas, a Directory of Important Wetlands and a nationally significant threatened and migratory species database, have been developed. The Australian Biological Resources Study has continued to document Australian flora and fauna, and the Australian Virtual Herbarium is a promising new database on the distribution of species.
The Virtual Australian Herbarium will provide live internet access to Australia's major collections of preserved plants. In conjunction with the Environmental Resources Information Network, the Australian National Botanical Gardens undertakes to catalogue the biodiversity of Australian plants by maintaining as an integral part of Integrated Botanical Information System the Census of Australian Plants and the Australian Plant Name Index and making this information available to researchers (www.anbg.gov.au). The National Wilderness Inventory project has completed the continental mapping of wilderness quality and is now continuing a programme of maintenance and update (www.heritage.gov.au/anlr/index).
The *Review of the National Strategy for the Conservation of Biological Diversity*, and *The National Objectives and Targets for Biodiversity Conservation 2001 –2005* provide the most recent information on the status of Australia's progress in relation to biological conservation (www.ea.gov.au). A State of the Environment Report will be released in 2002 that will address biological diversity conservation as a theme (www.ea.gov.au).

Research and Technologies: The National Biodiversity Strategy recognizes that major research initiatives are required in the areas of compilation and assessment of existing knowledge, conservation biology, achieving ecologically sustainable use in a range of sectors, rapid assessment and inventory, long-term monitoring and ethnobiology. Research plays an important part in the protection of biodiversity and in 2001, *Biodiversity Conservation Research – Australia's Priorities* was completed, identifying those priority areas requiring research to improve knowledge of and capacity to conserve biodiversity.
The Australian Biological Resources Study promotes studies in the taxonomy and distribution of Australia's flora and fauna (www.ea.gov.au/biodiversity/abrs/index). The aim of the study is to provide, through strategic partnerships, the underlying taxonomic knowledge necessary for the conservation and sustainable use of Australia's biodiversity. The Clearing House Mechanism provides biodiversity related links to scientific and technical information (chm.environment.gov.au/research/index).
A number of Cooperative Research Centres concerned with, for example, management of tropical rain forests, tropical savannas, marine reefs, coastal zone and sustainable forestry have also been established. See www.rainforest-crc.jcu.edu.au, www.pestanimal.crc.org.au and www.forestry.crc.org.au for more information.
The Bureau of Rural Sciences Forest and Vegetation Sciences Programme, with State and other Federal government agencies, are investigating new remote sensing technologies which will help monitor the conservation and utilization of biodiversity values in the forest estate. The Land and Water Resources Research and Development Corporation (Land and Water Australia), http://www.lwrrdc.gov.au/, conducts research on biodiversity as part of broader natural resource production management systems. The Commonwealth Scientific and Industrial Research Organization (CSIRO), http://www.csiro.gov.au/, also conducts research and development on biodiversity related matters.

Financing: The Natural Heritage Trust has enabled an unprecedented engagement of Australian people in community-based, collaborative activities for environment conservation and to foster sustainable development. More than AUD1.4 billion of Natural Heritage Trust and related programme funding has been approved for almost 12,000 projects around Australia since 1996, involving almost 400,000 Australians. Over AUD1 billion will be provided to extend the Natural Heritage Trust for a further five years, from 2002-03 until 2006-08, bring total funding since 1996 to AUD2.5 billion. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants.
Through the National Action Plan for Salinity and Water Quality in Australia, funding of AUD1.4 billion over seven years will be provided by the Commonwealth and the States principally to undertake targeted action in 21 highly affected catchments or regions.
Australia provides annual funding to the Trust Fund for the Convention on Biological Diversity (CBD) and a number of other multilateral and regional environment agreements that contribute towards the protection of biodiversity. Additional funding has been provided to assist delegations from developing countries to attend the COP. In 1996, Australia provided initial funding for an Indigenous person position within the CBD Secretariat. Australia contribute to the Global Environment Facility and through that contribution to the GEF's biodiversity conservation programme.

Cooperation: Australia signed the Convention on Biological Diversity in 1992 and ratified it in 1993. Australia ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora on 29 July 1976. In the ten years since Agenda 21, Australia's overseas aid programme has spent an estimated average of AUD21 million per year on activities in developing countries in which the conservation of biodiversity was an objective. Australia was one of the first signatories to the Ramsar Convention on Wetlands, under which it has supported a number of specific initiatives in the Pacific region to assist Pacific countries with scientific and technical training in identification and conservation and sustainable use of wetland biodiversity and particularly coastal and marine wetlands. Australia had a key role in developing (and implementing) the Asia Pacific Migratory Waterbird Conservation Strategy and associated Shorebird Action Plan. It is also a party to the Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA) and the Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment (CAMBA).

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CHAPTERS 16 AND 34: ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING

Decision-Making:

Technologies: IP Australia is responsible for the administration of patents, trademarks and designs rights in Australia (www.IPAustralia.gov.au). The legislation administered by IP Australia includes the *Patents Act 1990*, the *Trademarks Act 1995*, and *Designs Act* 1906, and all associated regulations. Other categories such as copyright and circuit layouts are the responsibility of the Attorney General's Department (www.ag.gov.au) with copyright policy input provided by the Department of Communications, Information Technology and the Arts. The Department of Agriculture, Forestry and Fisheries administers Plant Breeders rights (www.affa.gov.au). A National Strategy for Cleaner Production is currently being developed that will address the need for the development and promotion of Environmentally Sound Technologies.

Biotechnologies: A new national regulatory system for genetically modified organisms (GMOs) came into force in Australia on 21 June 2001. The *Gene Technology Act 2000* is the result of extensive public consultation and of collaboration between the Federal Government and the governments of all Australian States and Territories. The new system regulates contained research of GMOs, field trials of GMOs, and the intentional commercial release of GMOs into the Australian environment. The new system replaces the voluntary administrative system overseen by the Genetic Manipulation Advisory Committee.

The overall responsibility for regulatory policy governing the use of gene technology in Australia rests with the Gene Technology Regulator, a statutory office established under the Federal *Gene Technology Act 2000* to administer and make decisions under the legislation. The Act that came into force in 2001, also established an Office of the Gene Technology Regulator (OGTR) within the Federal Department of Health and Ageing to provide administrative support to the Regulator. The Office is also responsible for a national scheme to regulate all dealings with genetically modified organisms. Three key advisory groups were also set up under the Act to assist the Regulator in making decisions. The Gene Technology Technical Advisory Committee provides scientific advice, the Gene Technology Community Consultative Committee provides advice on matters of general concern to the community and the Gene Technology Ethics Committee provides advice on ethical issues relating to GMOs. When making decisions, the Regulator must develop risk assessment and management plans and seek advice from a range of government authorities. A public consultation process must also be followed in the development of these plans and if a licence is issued certain details must be place on the internet (www.ogtr.gov.au).

The Australia New Zealand Food Authority has responsibility for administering the *Australia New Zealand Food Authority Act* 1991 which seeks to ensure that all foods, including genetically modified food, sold in Australia are safe for consumption. Other regulatory bodies with responsibility for products whose manufacture may involve the use of biotechnology, such as recombinant pharmaceuticals, include the Therapeutic Goods Administration (www.health.gov.au/tga) and the National Registration Authority (www.health.gov.au/tga/).

The Federal *Environment Biodiversity Protection and Conservation Act 2000* is currently being amended to legislate access to biological resources in Federal jurisdictions in Australia (www.ea.gov.au/epbc/about/amendments/biological). Mirror State legislation is also being developed.

The responsibility for non-regulatory biotechnology policy is widely dispersed among Federal and State Government ministries, particularly those responsible for health, agriculture and the environment. Primary responsibility for coordinating non-regulatory biotechnology activities for the Federal Government rests with the multi-departmental Government agency, Biotechnology Australia (www.biotechnology.gov.au).

Programmes and Projects:

Technologies: The Federal Government has a number of programmes that assist industry with the promotion of environmentally sound technologies. There are also initiatives concerning technology transfer programmes, which are run by various industry associations to promote the use of environmentally friendly technologies within Australia. These programmes range from seminars to the publication and promotion of environmentally sound products and practices in industry.

Biotechnologies: The Australian Government funds numerous research and development programmes designed to increase the quality and efficiency of production of food, fodder, and renewable raw materials. Biotechnology projects include work on improving yields, quality, and post-harvest life; diagnosing and combating plant and animal disease; reducing pesticide use; moving to more environmentally friendly herbicides; expanding plant capability to fix nitrogen, and improving food processing. Most biotechnology

projects for health and medical research are funded through the National Health and Medical Research Council (hwww.health.gov.au/nhmrc/index), the Cooperative Research Centre Programme (www.crc.gov.au), or the programmes under the Industry Research and Development Board. Biotechnology projects in agricultural industries are also funded by rural industries research and development corporations as well as the Commonwealth Scientific and Industrial Research Organization (www.csiro.gov.au) and State agricultural research institutes. Two recent major biotechnology initiatives in Australia are the Biotechnology Centres of Excellence Programme, and the Biotechnology Innovation Fund. The Excellence Programme is designed to help establish Australia as a regional and world centre for biotechnology innovation and application, while the Innovation Fund assists projects at the proof of commercial concept stage (www.biotechnology.gov.au). The Major National Research Facilities Programme has funded the establishment of several biotechnology related research facilities.

Status:
Technologies: Environmentally sound technology and non-technological solutions are required in a range of economic sectors in Australia. Given the dry nature of the Australian continent, water treatment, supply and reuse technologies are a high priority. Amongst other environment industry sectors, Australia also has particular expertise in waste management and consultant engineering services. Through the development and implementation of environmental standards there is, in general, an incentive to encourage environmentally sound technologies.
Biotechnologies: Environmental biotechnology research and applications in Australia currently include cleaner production, waste and wastewater management, bio-remediation of contamination, recycling, bio-monitoring and sustainable agriculture.

Capacity Building, Education, Training and Awareness-Raising:
Technologies: Environment Australia has sponsored a number of workshops, businesses delegations and staff exchanges between Australia and the Asia region that have facilitated information exchange on environment technologies. China and Indonesia have formed the major focus for these activities. Most universities in Australia have institutions associated with them that are responsible for technology marketing and transfer.
Biotechnologies: Biotechnology Australia, as part of its role of coordinating biotechnology activities for the Federal Government, also seeks to raise community awareness of biotechnology and gene technology issues through its public awareness programme. This is achieved by providing factual information to the community through distributing material to target audiences such as schools, local councils and libraries and making information available through the internet (http://www.biotechnology.gov.au/biotechnologyOnline). In response to a survey on information needs regarding biotechnology and gene technology, a Gene Technology Information Kit for Local Government Areas was developed for distribution to 2000 local councils and libraries throughout Australia. Information in the kits will assist local government in making decisions about genetically modified crop trials in their jurisdictions. Biotechnology Australia also hosts several community workshops and forums each year.

Information:
Technologies: Environment Australia has developed a network of databases called EnviroNET, which has information on Australian environment technologies as well as environment management expertise, education, and research and development (www.environet.ea.gov.au). Through EnviroNET, people can access information which will help them identify Australian solutions to environment problems. Australia's EnviroNET has many links to useful environment and technology internet sites.Environment Australia also produces a number of environment industry sector specific publications on environmental management in mining, water, and leading edge technologies as well as the quarterly Envirobusiness Update to provide information to industry on how to improve environmental performance (www.ea.gov.au/industry/innovation/eifu/ebu). In addition, Australia has been involved in setting up a Database for Sustainable Development via the Federation of Engineering Institutions in South East Asia and the Pacific.
Biotechnologies: The new Australian Gene Technology Regulator has as one of its functions to provide advice to the public on GMOs. As part of this function, a Record of GMOs and GM Product dealings is required to be kept by the Gene Technology Regulator. The record provides a centralised, publicly available database of all GMOs and GM products approved in Australia, including those approved by the other regulators. The Record, as well as other information on the regulation of GMOs, is available through the Office of the Gene Technology Regulator's website (www.ogtr.gov.au), or by contacting the OGTR at ogtr@health.gov.au.

A Gene Technology Information Service has also been established to increase public awareness and understanding of gene technology. This Service provides objective and reliable information to schools and the general public on gene technology, ranging from basic explanations of genetic modification to issues involving the regulation of products derived from gene technology and testing for food safety. Information is also provided on techniques, safety, risks, regulation, labelling and a host of other topics relating to gene technology. An online Directory has been established as a guide to business with the Australian Biotechnology sector (www.biotech.isr.gov.au). The Commonwealth Scientific and Industrial Research Organization runs workshops introducing biotechnology techniques to the public, while the Australian Biotechnology Industry Association publishes information pamphlets on various biotechnology topics (http://www.ausbiotech.org/).

Research and Technologies:
Technologies: See **Programmes and Projects**.
Biotechnologies: The Australian National Genomic Information Service, established in 1991, assists research and development in molecular biology, genetic engineering and biotechnology through providing a databank of sequence data from nucleic acids and proteins. The Biotechnology Centre(s) of Excellence will help establish Australia as a regional and world centre for biotechnology innovation and application. The development and application of critical technologies for biotechnology commercialization, and major collaborative projects will be a primary focus of the centre(s) (www.biotechnology.gov.au/Industry_Research/CoE/coe).

Financing:
Technologies: Public sector funding is provided for technology development and transfer through consolidated revenue and administered by a number of agencies. In November 1997, the Federal Government announced a package of measures intended to address greenhouse gas emissions. This package included funding over five years for the following: a Renewable Energy Innovation Investment Fund to provide funding specifically for the facilitation of commercialisation and application of renewable energy technologies; a Renewable Energy Technology Commercialisation Loans and Grants Programme to provide support and promotion of strategically important renewable energy initiatives that have strong commercial potential; and a Renewable Energy Showcase. A few leading edge "showcase" projects will be selected via competitive tender for seed funding and/or promotion. These could include projects, which are close to becoming commercial, such as tidal power projects, solar thermal projects and a central photovoltaic generation project in a technology park.
Biotechnologies: The Federal Government provides about AUD300 million per year in recurrent funding to biotechnology related programmes. In addition to this, AUD46.5 million over five years has been allocated to the Centres of Excellence Programme and AUD40 million over three years to the Biotechnology Innovation Fund. The Major National Research Facilities Programme has directed AUD70 million to biotechnology related research facilities.

Cooperation:
Technologies: With regard to international agreements, Australia is party to the following agreements and treaties: Convention Establishing the World Intellectual Property Organization; Paris Convention for the Protection of Industrial Property; Patent Cooperation Treaty; Budapest Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure; Strasbourg Agreement Concerning the International Patent Classification; Nice Agreement for the International Classification of Goods and Services for the Purposes of the Registration of Marks; Trademark Law Treaty; Madrid Agreement and World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights. The Australian Government has assisted with promoting the transfer of environment technologies and services through the Environmental Co-operation with Asia Programme. Development assistance has a crucial role to play in achieving ecologically sustainable development objectives and therefore the transfer of ESTs. The Australian Agency for International Development, AusAID, funds many bilateral and multilateral activities which play an important role in these areas.
Biotechnologies: Australia cooperates with FAO, WHO, CGIAR, the International Council for the Control of Iodine Deficiency Disorders and the International Centre for Diarrhoeal Disease in biotechnology issues. Among the health initiatives by Australians in underdeveloped countries are important programmes to combat blindness and chronic urinary infection in Africa. CSL Limited has been designated as a key WHO Collaborating Centre for Influenza, and now operates as an international reference centre. A novel drug to combat influenza is being developed commercially by Biota Holdings Limited; this very promising drug has almost completed clinical trials and could receive regulatory approval in 1997. A number of biotechnology related activities have been supported by AusAID and the Australian Centre for International Agricultural

Research. These include: development of a vaccine to control screw worm and malaria; development of transformation and regeneration systems for peanut and papaya to provide disease resistance in Indonesia and Thailand;, and training scientists from 14 countries in molecular biology techniques.

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CHAPTER 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, AND COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

Decision-Making: Responsibility for management of the coastal zone, its resources and the offshore waters, is shared between the Federal, State/Territory and Local Governments. State and Territory Governments are responsible for waters inside 3 nautical miles. The Federal Government has primary responsibility from 3 nautical miles to the outer boundary of the 200 nautical mile Exclusive Economic Zone and the edge of the adjacent continental shelf. In this area, Australia has the right to explore and exploit living and non-living resources and an obligation to protect and conserve the marine environment. Local Governments play a major role in coastal zone management as day-to-day managers, in providing infrastructure and facilities, and in land-use planning decisions.

Under the Australia's Offshore Constitutional Settlements (OCS), agreements have been made between the Federal and State Governments to enable fisheries to be managed by a single jurisdiction defined by fishery and fish stock boundaries, rather than administrative boundaries. Most commercial fisheries management has to undergo assessment for ecological sustainability within 3 to 5 years, in accordance with "Guidelines for the Ecologically Sustainable Management of Fisheries" (www.ea.gov.au/coasts/fisheries/assessment/guidelines)

Australia has implemented a range of integrated strategies and policies and legislation relating to the oceans, encompassing integrated coastal zone management, management of ocean resources, conservation and protection of species and designation of marine protected areas. These include the Federal Government's Coastal Policy, *Australia's Oceans Policy*, Federal Fisheries Policy, the *Environment Protection and Biodiversity Conservation Act 1999*, *Environment Protection (Sea Dumping) Act 1981*, and the *Fisheries Management Act 1991* (www.ea.gov.au/coasts/index). *Australia's Oceans Policy*, developed through widespread consultations with industry, government and the community, aims to ensure the long-term ecological sustainability of a wide range of ocean uses. Australia is now implementing its Oceans Policy, primarily through the development of integrated Regional Marine Plans that will provide a focus for coordination between existing and developing ocean uses and the range of sectoral and administrative agencies with responsibilities for marine systems (www.oceans.gov.au/index). A National Oceans Office has been formed to coordinate the development of Regional Marine Plans and the overall implementation and further development of *Australia's Oceans Policy.*

Programmes and Projects: Coasts and Clean Seas and Coastcare are major components of the Natural Heritage Trust (www.ea.gov.au/coasts/ccs/index and www.ea.gov.au/coasts/coastcare/index). Both programmes support the management, protection, rehabilitation and sustainable use of Australia's coastal and marine environment. Coast care supports community involvement, while Coasts and Clean Seas emphasises practical "hands on" projects. Activities under Coasts and Clean Seas include the Clean Seas Programme, Marine Species Protection Programme, Introduced Marine Pests Programme, and the Coastal and Marine Planning Programme. Other notable activities are the Australian Coastal Atlas, the Fisheries Action Programme and the National Wetlands Programme which is designed to assist the conservation, repair and wise use of Australia's important wetlands, with a focus on survey and identification of important coastal and marine wetlands sites, management planning and community awareness raising initiatives (www.ea.gov.au/coasts). Under the Oceans Policy, Australia is committed to the establishment of a National Representative System of Marine Protected Areas (www.ea.gov.au/coasts/mpa/index) and programmes such as the Federal Coastal Acid Sulfate Soil Programme, National Moorings Programme and Anti-fouling Programme (www.ea.gov.au/coasts/programmes/index). The Federal Government is also committed to the establishment of the National Representative System of Marine Protected Areas (www.ea.gov.au/coasts/mpa/nrsmpa). This involves Commonwealth, State and Territory governments working together to expand the existing system of marine parks and reserves (www.ea.gov.au/biodiversity/index).

The Australian Fisheries Management Authority (AFMA), which administers fisheries under Commonwealth jurisdiction has implemented a comprehensive suite of management arrangements for fisheries. Comparable arrangements are also in place where the resource is administered by a State jurisdiction. A key element of these arrangements is approaches to take account of ecosystem issues including bycatch, habitat impacts and interactions with associated and dependent species.

Status: Under the United Nations Convention on the Law of the Sea (UNCLOS) Australia has sovereign rights over 11 million square kilometres of ocean, and up to 15 million square kilometres when the claimable continental shelf is determined. This area is nearly twice the landmass of Australia. It is one of the most diverse

Exclusive Economic Zones (EEZs) in the world both in terms of its geographic spread and in its physical and biological diversity. It includes an almost complete range of oceanic realms — from the tropic to the Antarctic. It also borders the waters of five neighbouring nations. Federal Government responsibility extends from three nautical miles from the coastal baseline to the external boundaries of the Exclusive Economic Zone and continental shelf (200 nautical miles outside the territorial baseline). The area inside the three nautical mile zone generally falls within the primary jurisdiction of State and Territory Governments.
About 80 % of Australia's population resides in the coastal zone, most of it highly concentrated in coastal cities in the east, southeast and southwest placing many pressures on coastal and marine ecosystems, and resources. The marine environment supports the economically important industries of fishing, tourism and offshore petroleum production. It is also important for transport and recreation, with marine based tourism a rapidly growing and increasingly important economic sector. Major commercial fisheries are generally regulated through fishery management plans and, with the introduction of the new Federal environment legislation (www.ea.gov.au/epbc), are now subject to strategic assessments to determine their ecological sustainability (www.ea.gov.au/coasts/fisheries/index). Australia's management arrangements for fisheries are dynamic and have developed over time from a focus on resource development to a wider consideration of ecosystem and social issues.
In October 2001, the High Court for the first time recognized the existence of native title over areas of the seas. It found that native title claimants from Croker Island (in the Northern Territory) held non-commercial and non-exclusive rights over the seas adjacent to the island.

Capacity-Building, Education, Training and Awareness-Raising: In cooperation with stakeholders, fisheries jurisdictions have developed a range of initiatives to assist resource users and others in the wise use of Australia's marine living resources. Key initiatives include SeaNet – an education and awareness programme, and SaQual – a seafood quality initiative and several industry codes of practice. Similar education and awareness programmes are in place for occasional, charter and Indigenous use of marine resources. Coasts and Clean Seas and Coast care include capacity building initiatives covering professional development and training to meet the training needs of coastal managers(www.ea.gov.au/coasts). They also support development of industry codes of practice, including aquaculture, recreational fishing, planning and the tourism industry, and increase public access to coastal information through the Australian Coastal Atlas (www.ea.gov.au/coasts/atlas/index). Waterwatch Australia Programme, is a participative and educative community based programme that promotes total catchment planning and management and contributes to reducing land-based pollution (www.waterwatch.org.au). Oil spill information and educational material is provided by the Australian Marine Safety Authority (http://www.amsa.gov.au/me/edu/edu_ind.htm). Several universities and technical training facilities provide targeted education and training programmes on marine resource use, administration and research.

Information: The Federal Government has established a National Marine Data Group to facilitate the development of standards for the distributed management and exchange of marine data. The Group is working within the framework of the Australian Spatial Data Infrastructure Initiative (www.auslig.gov.au/asdi/). Access to information on marine and coastal data is already available through the Australian Spatial Data Directory (www.auslig.gov.au/asdd) and various Federal agency portals (www.ea.gov.au/coasts).
Status of the major Commonwealth (or jointly managed) fisheries is based on the most recent assessments carried out by a range of research agencies, including State agencies and the CSIRO, and is compiled by the Bureau of Rural Sciences at http://www.brs.gov.au/fish/status99/index.html .

Research and Technologies: Under joint Federal/State/industry initiative the Fisheries Research Development Corporation pursues targeted research into key fisheries and aquaculture resources and provides for ground breaking research into issues likely to impact on the future conservation and management of these resources. Similarly, Cooperative Research Centres have been established to ensure focused work on national priority issues, eg cooperation and management of reef resources (www.reef.crc.org.au) and aquaculture of finfish (www.aquacrc.uts.edu.au). The CRCs, which are designed to encourage collaboration between industry, educational institutes and government, are undertaking research to address ecologically sustainable development of the marine environment. For example, the Coastal CRC provides decision-making tools and knowledge necessary for the effective management and ecosystem health of Australia's coastal zone, estuaries and waterways. Details of projects can be found at www.coastal.crc.org.au. The Commonwealth Scientific and Industrial Research Organization website provides up to date information about its marine research activities (www.csiro.gov.au/index.asp?type=sector&id=Marine).

Financing: The Natural Heritage Trust, has been established to become the foundation for funding conservation of biodiversity and the ecologically sustainable management of Australia's land, marine and water resources. Funding has also been committed for the implementation of *Australia's Oceans Policy.*

Cooperation: The Federal Government has ratified the UN Convention on the Law of the Sea and the UN Fish Stocks Agreement. Australia's overseas aid programme assists countries in the region (especially South Pacific small island developing states and Papua New Guinea) to manage marine and coastal resources in a sustainable manner. Australia, for example, is a major donor to the South Pacific Forum Secretariat, the South Pacific Regional Environment Programme (SPREP), the Forum Fisheries Agency (FFA) and the South Pacific Applied Geoscience Commission (SOPAC). Australia is also a founding member of the International Coral Reef Initiative, and hosted its Secretariat from 1996 to 1998. Australia is currently working as Lead Shepherd of the Asia Pacific Economic Cooperation (APEC) Marine Resources Conservation Working Group and the International Maritime Organization (IMO) and is playing an important role in the development of the draft Ballast Water Management Convention and has recently endorsed the IMO Anti-fouling Systems Convention. Australia is also party to the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

Australia was one of the first signatories to the Ramsar Convention on Wetlands and has played a key role in developing (and implementing) the Asia Pacific Migratory Waterbird Conservation Strategy and associated Shorebird Action Plan. It is also a party to agreements such as the Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA) and the Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment (CAMBA). Australia is also a party to, and engaged in a number of, regional fisheries management organizations including the Commission for the Convention on Southern Bluefin Tuna, Convention on the Conservation of Antarctic Marine Living Resources, Indian Ocean Tuna Commission, United Nations Food and Agriculture Organization (FAO) Committee on Fisheries and the Central Western Pacific Tuna Convention.

Australia is currently working with its Pacific neighbours to establish the South Pacific Whale Sanctuary through the International Whaling Commission and is offering technical and legal assistance to South Pacific countries who wish to declare their EEZ's as domestic whale sanctuaries. Australia has played a leading role in the design and development of the FAO Code of Conduct for Responsible Fisheries and related international plans of action.

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CHAPTER 18: PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES

Decision-Making: The Federal Government provides national leadership and coordination to ensure common standards and consistent approaches to the use of water resources. However, the main responsibility for water resource management lies with State and Territory Governments. A wide range of planning legislation and water supply issues are also devolved to Local Governments. In many parts of Australia, community-based catchment organizations are becoming increasingly involved in water resources planning and management. The Federal Departments of Agriculture, Fisheries and Forestry (www.affa.gov.au) and Environment and Heritage implement Australia's major national environment protection and biodiversity conservation legislation (www.ea.gov.au/epbc/index). Overall coordination at the highest level is effected through the Council of Australian Governments (COAG), which comprises the Prime Minister, State Premiers, Territory Chief Ministers and President of the Australian Local Government Association. The Natural Resource Management Council and the Environment Protection and Heritage Ministerial Council and several other Ministerial Councils, such as the Murray-Darling Basin Ministerial Council and Lake Eyre Basin Ministerial Forum (www.mdbc.gov.au and www.ea.gov.au/water/basins/agreement) play important decision making roles in the integrated management of transboundary water resources at the river basin level.

Programmes and Projects: The ecologically sustainable management of Australia's water resources is a high priority for Australian governments. In 1994, the Council of Australian Governments agreed to implement a range of reforms to arrest degradation of Australia's water resources. The Water Reform Framework explicitly links economic and environmental issues within a coherent and integrated reform package. These reforms include: the separation of functions of regulation and resource management from water supply; separation of water entitlements from land title; clarification of water property rights; facilitation of water trading; recognition of the environment as a legitimate user of water; the allocation of water to the environment; devolution of management of irrigation schemes; adoption of pricing regimes based on full cost recovery and volume based pricing; removal or transparency of cross subsidies; implementation of integrated catchment management and community consultation; adoption of the National Water Quality Management Strategy (www.ea.gov.au/water/quality/nwqms/index); and economic viablility and ecological sustainability requirements for the development of new water resource infrastructure. A separate statutory body, the National Competition Council, is responsible for assessing the progress of state government jurisdictions in implementing the reforms (www.ncc.gov.au).

Australia's National Strategy for Ecologically Sustainable Development (www.ea.gov.au/esd/index) identifies the need to develop and manage all water resources using mechanisms to maintain ecological systems while meeting economic, social and community needs. The Strategy's objectives include developing policies based on an integrated approach to the development and management of water resources and developing and implementing the most effective mix of water resource management mechanisms (including pricing, regulation, monitoring, research, institutional arrangements and property rights).

In 2001, the Federal Government established the National Action Plan for Salinity and Water Quality (http://www.affa.gov.au/actionsalinityandwater). The National Action Plan represents the first concentrated and targeted national strategy to address salinity and water quality problems, two of the most significant issues confronting Australia's rural industries, regional communities and the environment. The National Action Plan builds on the Natural Heritage Trust's local project emphasis to address salinity on a catchment wide basis. It is a seven year programme which sees the Federal Government working with State and Territory Governments to motivate and enable regional communities in 21 priority areas, to use coordinated and targeted action to prevent, stabilise and reverse trends in dryland salinity affecting the sustainability of production, the conservation of biological diversity and the viability of infrastructure and to improve water quality and secure reliable allocations for human uses, industry and the environment. The 1997 Natural Heritage Trust of Australia was established to address land and water degradation and to conserve and repair Australia's unique environment (www.nht.gov.au). The Trust currently focuses on land, vegetation, rivers, coasts and marine resources, with additional funding being made available for water resource protection in urban and industrial areas under the Federal Government's Living Cities Programme (www.ea.gov.au/coasts/programmes/index). In addition, the National Action Plan for Salinity and Water Quality was launched in 2001 (www.affa.gov.au/actionsalininityandwater). The Federal Government is also supporting the sustainable

management of ground water resources in the Great Artesian Basin, which is Australia's largest ground water resource (www.gab.org.au).
In 2001, the Federal Government established the National Action Plan for Salinity and Water Quality (http://www.affa.gov.au/actionsalinityandwater). The National Action Plan represents the first concentrated and targeted national strategy to address salinity and water quality problems, two of the most significant issues confronting Australia's rural industries, regional communities and the environment. The National Action Plan builds on the Natural Heritage Trust's local project emphasis to address salinity on a catchment wide basis. It is a seven year programme which sees the Federal Government working with State and Territory Governments to motivate and enable regional communities in 21 priority areas, to use coordinated and targeted action to prevent, stabilize and reverse trends in dryland salinity affecting the sustainability of production, the conservation of biological diversity and the viability of infrastructure and to improve water quality and secure reliable allocations for human uses, industry and the environment.
Initiatives such as the Natural Heritage Trust and more recently initiatives such as the National Action Plan for Salinity and Water provide funds to implement on ground biological diversity conservation activities. For example the Natural Heritage Trust has provided significant funds to the National Reserve System Programme to achieve the Government's objective of having a national representative system of protected areas (www.ea.gov.au/parks/nrs). Other Natural Heritage Trust initiatives will contribute to off reserve management and rehabilitation of biological diversity.

Status: Considerable progress has been achieved in implementing the Water Reform Framework. New integrated water resources management legislation, which provides the basis for these reforms, has been enacted in most States and Territories. Urban water reforms, including consumption based pricing, are largely complete. Following separation of water entitlements from land title, water markets are now active in some areas allowing water to move to its highest value uses. The environment is now recognized as a legitimate user of water, although implementation of environmental allocations is generally incomplete. The latest assessment of progress in implementation of the Water Reform Framework is available at (www.ncc.gov.au/nationalcompet/assessments/assessment_of_state_and_territor).
To protect water quality and provide sufficient water for the environment, the Murray-Darling Basin Ministerial Council has introduced a cap on the amount of water that can be extracted from the river system. The Ministerial Council is now developing options for providing additional environmental flows to the River Murray (www.mdbc.gov.au). As part of Australia's National Water Quality Management Strategy (www.ea.gov.au/water/quality/nwqms/index), Commonwealth and State/Territory Ministers have released national guidelines for fresh and marine water quality and new guidelines for water quality monitoring and reporting. These documents provide the technical basis for protecting the quality of Australia's water resources.

Capacity-Building, Education, Training and Awareness-Raising: Both the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality have significant capacity building and community education components. These components focus on empowering local communities to restore land, rivers and wetlands and on improving regional communities' capacity to sustainably manage water resources. For example, Waterwatch (www.waterwatch.org.au) is a national community water monitoring programme sponsored by the Trust that aims to build community understanding of water quality issues, and to encourage monitoring groups to undertake constructive actions to rectify water quality problems in their catchment. Estimates indicate that over 50,000 volunteers are involved in Waterwatch activities, and that over 3500 groups are regularly collecting data and information from over 5000 sites across Australia. The high level of community involvement in Waterwatch is a result of the awareness raising and community education components of the programme. Waterwatch activities are highlighted during annual events such as National Water Week.
Under the Living Cities Programme and the Natural Heritage Trust the Federal Government has also supported a significant number of cleaner production and waste water reuse projects that demonstrate techniques to better manage and protect urban water resources (www.ea.gov.au/coasts/programmes/index). Industry organizations and environment organizations also play a key role in the management of water resources in Australia.

Information: The Federal Bureau of Meteorology operates a hydrological and meteorological data collection network in cooperation with State and Local Government agencies (www.bom.gov.au). National State and Local State of the Environment reports detail pressures, condition and management responses for Australia's water resources. The second national State of the Environment report focuses on a number of environmental themes, including detailed reporting of Australia's surface and ground water resources

(www.ea.gov.au/soe/index). Australia recently undertook a National Land and Water Resources Audit (www.nlwra.gov.au) and the Federal Government, in partnership with State Government agencies, has undertaken an Australia-wide assessment of river health using rapid bioassessment techniques (www.ea.gov.au/water/rivers/nrhp/index). This continent-wide assessment has monitored river health at over 6000 sites across Australia. In the Murray-Darling Basin and in south-western Australia, environmental audits of salinity and water have been conducted resulting in strategic policies and programmes. An ongoing and consistent process for assessing river health and ecological integrity across both the Murray-Darling and Lake Eyre Basins using biological, physical and chemical indicators is currently being trialed.

Research and Technologies: Major Federal investments in aquatic biodiversity and freshwater resource management are delivered through the Commonwealth Scientific and Industrial Research Organization (www.csiro.gov.au). Other Federal research and development programmes are undertaken by a variety of Cooperative Research Centres (www.crc.gov.au), industry specific research and development corporations, universities and museums. State Governments also make significant research and development investments through their environment protection and natural resource management agencies.

Financing: With the recent announcement of a five year extension to the Natural Heritage Trust, AUD2.5 billion will be spent by the Trust over 11 years (1996-2007). During the first phase of the Trust (1996 –2002) AUD407 million was spent on freshwater initiatives and a further AUD350 million will be spent over the next four years to protect Australia's water quality. The Federal Government will also spend an additional AUD700 million on water quality and salinity management under the National Action Plan for Salinity and Water Quality (2001-2007). In 2000-2001, Federal expenditure on the protection and rehabilitation of surface and ground water resources, including Trust investments, totalled AUD121.8 million. Significant funding contributions are also made by State and Local Governments, industry organizations and community groups. Through the National Action Plan for Salinity and Water Quality in Australia, funding of AUD1.4 billion over seven years will be provided by the Commonwealth and the States principally to undertake targeted action in 21 highly affected catchments or regions.

Cooperation: In the ten years since Agenda 21, Australia's overseas aid programme has spent an estimated average of AUD35.8 million per year on activities directly related to freshwater resources in developing countries. In addition, an estimated average of AUD34 million per year was spent on other projects and activities which also benefited the freshwater sector. Australia was an active participant in the development of the UN Environment Programme Water Policy and Strategy and has co-sponsored the UN General Assembly resolution designating 2003 as International Year for Freshwater. The Murray-Darling Basin Commission has been closely involved with the establishment and on-going development of the Mekong River Commission through the exchange of technical and administrative expertise.

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CHAPTER 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS, INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN TOXIC AND DANGEROUS PRODUCTS

Decision-Making: Australia has four national schemes to cover assessment and regulation of agricultural and veterinary chemicals, industrial chemicals, pharmaceuticals, and foods. The schemes are run by separate Federal Government agencies and operate in a complementary manner to ensure there is no duplication or any unnecessary regulatory burden on industry. The National Registration Authority for Agricultural and Veterinary Chemicals (NRA) (http://www.nra.gov.au/) has the primary decision-making powers in relation to registration or non-registration of agricultural and veterinary chemicals for sale in Australia, as part of the National Registration Scheme for Agricultural and Veterinary Chemicals (NRS). The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) (http://www.nicnas.gov.au/) is responsible for the administration of notification and assessment of industrial chemicals. The Therapeutic Goods Administration (TGA) (http://www.health.gov.au/tga/) is responsible for regulation of pharmaceuticals and poisons and the Australia New Zealand Food Authority (ANZFA) (http://www.anzfa.gov.au/) for food additives and contaminants, including maximum residue limit (MRL) standards.

Australia has implemented an extensive legislative and structural framework for the sound management of chemicals at federal, state and local levels. Federal Government agencies assess chemicals for their risks in terms of public health, OH&S, environment and trade. Assessment of a chemical's bioaccumulation, persistence and toxicity characteristics is included in these assessments. In collaboration with international organizations (e.g. the Organization for Economic Cooperation and Development (OECD) and the WHO/ILO/UNEP International Programme on Chemical Safety (IPCS)) and with the broader community, priorities for assessment of chemicals of domestic and international concern are set under each scheme. The Australian Federal Government collaborates with the State and Territory governments, who have primary responsibility for day-to-day regulation of chemicals, on national chemicals management policy. Interested stakeholders, including industry, academia and non-government organizations interested in various aspects of chemicals management, are consulted in the development of government policy. The Federal Government undertakes stakeholder consultations prior to developing government positions for international treaty negotiations.

Cooperation across Federal Government agencies involved in chemicals management has been enhanced through the Chemicals Clearing House (established 1994), which facilitates consultation, development of agreed national positions and dissemination of information on matters of cross-sectoral interest in respect of chemicals management. Also, the Interdepartmental Committee on Chemicals Treaties (established 1996) contributes to the coordination of Australia's position on relevant international treaties.

Programmes and Projects: Australia advocates the harmonization of classification systems and labelling wherever appropriate and has achieved a uniform national labelling system for agricultural and veterinary chemicals and pharmaceuticals. Programmes are in place for the assessment of industrial chemicals, agricultural and veterinary chemicals, therapeutics, and food additives and contaminants, under federal statutory assessment schemes. Australia has established a Chemical Review Programme (http://www.nra.gov.au/chemrev/chemrev.shtml) to review existing agricultural and veterinary chemicals against contemporary assessment standards, and a Priority Existing Chemicals programme (http://www.nicnas.gov.au/obligations/existing/index.htm) to perform a similar role in relation to the evaluation of industrial chemicals.

Status: See under **Programmes and Projects**.

Capacity-Building, Education, Training and Awareness-Raising: Government agencies with responsibilities for chemicals regulation have been expanding their web sites in recent years to provide a much greater range of information to the public on chemical control activities and policies; this is part of broader Australian Government policy to make government information on which decision-making is based more widely available to the population.

All States and Territories have research, extension and education activities aimed at reducing the risks from agricultural and veterinary chemical use and improving the efficiency and effectiveness of such use. Most of these programmes jointly involve State and Territory departments responsible for agriculture, primary industries and environment, grower organizations, industry groups and educational institutions.

NICNAS chemical assessment reports contain recommendations for the safe use of both new and existing industrial chemicals. A range of workplace education and training activities relating to hazardous substances are undertaken (usually at the State/Territory level) and occupational health and safety (OHS) legislation requires information provision and training for hazardous substances used in workplaces.

Information: Australia's National Drugs and Poisons Schedule Committee (NDPSC) (http://www.health.gov.au/tga/docs/html/ndpsc/ndpsc.htm) participates in the IPCS INTOX project, which aims to promote the development of poison information centres (PICs) in each country and to develop harmonized data services to assist PICs worldwide in the diagnosis, treatment and prevention of poisoning. Australian State and Territory governments have established comprehensive programmes to educate workers on chemical safety issues.
Australia has established a National Pollutant Inventory (NPI) (http://www.npi.gov.au), an Internet database designed to provide the community, industry and government with information on the types and amounts of certain substances being emitted to the environment. It includes emissions reported by industrial facilities, as well as government estimates of emissions from household activities. Currently 90 substances are included in the NPI.
The NRA publishes lists of approved active constituents, registered agvet chemical products and permits issued for trial, minor and emergency uses of agvet chemicals. In addition to these, the NRA publishes lists of chemicals under review and the status of each review. NICNAS publishes assessment reports on all industrial chemicals assessed by NICNAS. Health, safety and environment information is by law not confidential.

Research and Technologies: An extensive programme of research and development is being conducted by various national and state-based organizations, including the Commonwealth Scientific and Industrial Research Organization (CSIRO) and universities. Research activities include field evaluation of new products; efficacy trials to determine cost effective treatment and applications rates; alternative pesticides; integrated pest management technology; identification and evaluation of biological control agents and development and evaluation of pest and disease resistance in host plants and animals.

Financing: In the 2001-2002 Federal Budget, the commonwealth Government announced funding of AUD5 million over four years for a national programme to reduce dioxins and dioxin-like substances in the environment. ChemCollect, a AUD27 million programme, is being funded on a 50/50 basis between the Commonwealth, States and Norther Territory. Regulatory systems operate on a cost-recovery basis.

Cooperation: The Australian government is an active member of the Intergovernmental Forum on Chemical Safety (IFCS) and hosted the second Intersessional Group Meeting of the IFCS as part of its support for Forum activities on Chapter 19 of Agenda 21. Australia serves on the IFCS Forum Standing Committee and played a key role in developing the *Bahia Declaration on Chemical Safety*, endorsed by the third session of the Forum in September 2001. Australia is a lead country for a number of international risk assessment and risk management activities. Exchange programmes for assessment reports on therapeutic chemicals also exist between Australia and Canada, Sweden and New Zealand. Australia has taken the lead on the exchange of assessment reports on new industrial chemicals through the OECD Chemicals Programmeme and, since 1992, has participated in the OECD pilot pesticides project, the subsequent OECD Ad Hoc Exchange Programmeme for Pesticide Assessments, and is actively continuing to exchange assessment reports with other OECD countries. Within the OECD's Working Group on pesticides (WGP), Australia has been active in working towards harmonising guidelines for 'dossiers' (company data submissions for pesticides) and 'monographs' (country assessments of pesticide submissions). Australia provided the Chair for the OECD Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology from 1998 to 2000. Australia has participated actively in the development of the *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* and the *Stockholm Convention on Persistent Organic Pollutants* and is a signatory to both Conventions.

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CHAPTERS 20 TO 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID AND RADIOACTIVE WASTES

Decision-Making:

Hazardous Wastes: The Federal *Hazardous Waste (Regulation of Exports and Imports)* Act, 1989, implements the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Australia is also subject to the OECD Council Decision 92(39), which is an Article 11 arrangement under the Basel Convention. In 1996, the Act was amended to include wastes that possess financial value, usually destined for recycling and recovery operations. These amendments enabled Australia to meet all of its obligations under the Basel Convention. In 2001, the Act was amended to ensure that Australian companies cannot avoid the Act's requirements by selling hazardous wastes to foreign companies unless an export permit is in force. The Federal Government also implements hazardous waste prevention programmes, rather than end-of-pipe solutions for disposing of waste. Policy on hazardous waste and related issues has been developed in a highly consultative manner with input from environment and community groups, industry, unions, development cooperation groups and technical experts. Day to day responsibilities for managing hazardous wastes rests with the States and Territories.

Solid Wastes: State and Territory governments are responsible for the development of waste management strategies, legislation, standards and regulations for their jurisdictions. Local governments are responsible for the day-to-day management of waste collection and disposal. Coordination of national waste management issues is addressed through the Environment Protection and Heritage Council which is a Ministerial level council. The national approach focuses on working in partnership with industry and the community under a sectoral framework. This addresses the major waste to landfill streams including construction and demolition waste, green (or organic) waste, packaging, tyres and consumer goods such as electrical or electronic equipment. National waste initiatives include: the National Packaging Convenant – a voluntary agreement with industries in the packaging supply chain and governments to reduce the environmental impact of consumer packaging waste (this agreement is backed up by legislation to ensure broad participation in the programme); the WasteWise Construction Programme – a voluntary agreement with the construction and demolition industry to reduce the amount of building waste going to landfill; a national Cleaner Production Strategy; and the green and organic waste management strategy for Australia.(www.ea.gov.au/industry/waste/).

Radioactive Wastes: In 1999, the *Australian Radiation Protection and Nuclear Safety Act* established the Australian Radiation Protection and Nuclear Safety Agency that regulates the Federal Government's use of radioactive materials and provides advice on the use and management of radioactive substances (www.arpansa.gov.au). The *Environment Protection (Sea Dumping) Amendment Act (1986)* prohibits the dumping into the sea and the incineration at sea of radioactive material. The Commonwealth/State Consultative Committee on Management of Radioactive Waste provides an opportunity for Governments to review a range of radioactive waste management issues. Safe storage, transportation and disposal of radioactive wastes are promoted in Australia through national codes of practice promulgated in State and Territory regulations. The Codes have been developed on a federal consultative basis and follow international standards and guidelines developed by the International Atomic Energy Agency.

Programmes and Projects:

Hazardous Wastes: Waste prevention programmes are being pursued at Federal, State and Local levels. Some states are moving to very long-term storage options for controlled wastes rather than landfill the waste (www.ea.gov.au/industry/waste/).

Solid Wastes: In Australia, organic waste constitutes around 40% of landfilled waste. A range of projects have been funded under the Natural Heritage Trust Waste Management Awareness Programme to address most of the major impediments to recycling of organic wastes and encourage organic recycling in remote areas. Projects relate to industry infrastructure and information sharing and dissemination, product standards and industry competencies, the use of recycled organic material in agriculture and recycling trials in rural and remote areas (www.nht.gov.au/programmes/wasteman).

Radioactive Wastes: In 1994, the Federal Government commenced a project to rehabilitate the former British nuclear test sites at Maralinga (South Australia). The project was completed in 2000, to the standards agreed at the start of the project by the Federal and South Australian governments, and traditional owners. The Australian Nuclear Science and Technology Organization is continuing with research into some aspects of the effectiveness of a rehabilitation project at the former Rum Jungle uranium site in the Northern Territory.

Australia is working on projects to site national facilities for management of its radioactive waste. It is planned to establish a national repository for low-level waste, and a national store for intermediate level waste.

Status:
Hazardous Wastes: The Australian Government has not approved the export of hazardous wastes for final disposal to any developing countries or countries in transition since 1992. One movement of aluminium alkyls has been sent to the US for final disposal. Since the amended Act entered into force in December 1996, only one permit has been granted for an export of hazardous wastes from Australia to a non-OECD country and this was subject to rigorous environmental scrutiny. Prior to that, significant quantities of recyclable wastes such as used lead-acid batteries and zinc ash had been exported to developing countries in Asia. Such exports were outside the scope of the Australian Act at that time and no permit was required.
Solid Wastes: The National Environment Protection Measure for Used Packaging (NEPM) has now been implemented in most States and Territories. It provides legislative back-up to the National Packaging Covenant by requiring non-Covenant signatories to 'take-back' a certain percentage of their used packaging. The National Packaging Covenant, a voluntary product stewardship agreement which shares the responsibility for managing packaging waste through the entire packaging supply chain, has about 500 signatories and covers approximately 80% of the Australian market. Further information on the Covenant and NEPM can be obtained from www.ea.gov.au/industry/waste/covenant. Phase two of the Waste Wise construction programme was recently complete and a report is currently being prepared on the outcomes.
Radioactive Wastes: In January 2001, a preferred site and two alternatives were identified in South Australia for a national low-level waste repository. The sites are currently undergoing environmental assessment. In August 2000 and February 2001, a separate process was announced to site a national store for intermediate level waste produced by Federal Government agencies on Federal land. The selection criteria to be used in the siting work are currently being developed, taking into account public comment.

Capacity-Building, Education, Training and Awareness-Raising:
Hazardous Wastes: Australia is helping with a Basel Convention project to train enforcement officers in the Asian Region, and in awareness-raising and implementation activities of the Waigani Convention, which regulates the movement of hazardous waste in the South Pacific Region.
Solid Wastes: The Australian Government committed over $1.2 million from the Natural Heritage Trust Waste Management Awareness Programme to undertake projects that promote the use of recycled organics and help remove identified impediments to its recycling. The projects identify and address industry and product standards, training and competency standards, industry coordination and communication, and identify and demonstrate solutions to logistical, technical, material contamination, and consumer awareness issues. All projects are expected to be completed by March 2003. Governments and industry are continuing to work on developing national strategies for used tires and electrical and electronic products.
Radioactive Wastes: The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) provides advice to Government and the community on radiation protection and nuclear safety (www.arpansa.gov.au/is_idx).The Radiation Health Committee, established under the ARPANS Act in 1999, is currently reviewing publications produced in the NHMRC Radiation Health Series, and under the Environment Protection (Nuclear Codes) Act 1978 (now repealed). ARPANSA will progressively publish the new documents in its Radiation Protection Series. Some publications currently in preparation are: Code of Practice for Disposal of radioactive waste by the User; Code of Practice for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing; and Code of Practice for Pre-disposal Radioactive Waste Management.

Information:
Hazardous Wastes: A system of National Hazardous Waste Management Guidelines has been developed. It involves a mechanism for prior notification, classification of hazardous wastes and transport documents and enables governments to collect information on the production of hazardous wastes (www.ea.gov.au/industry/hwa/index). This information is incorporated in the Australian Waste Database. A series of information and guidance papers has been prepared to provide a resource to people and organizations concerned with the export or import of hazardous waste under the Hazardous Waste Act. Copies of these papers can be located at www.ea.gov.au/industry/hwa. A National Pollutant Inventory has been established to collect information on emissions and transfers of wastes and pollutants (www.npi.gov.au).
Solid Wastes: Brochures, fact sheets and development guidelines are available to promote and assist participation in the National Packaging Covenant. Information on the Covenant is also available through

www.ea.gov.au/industry/waste/covenant. The Web page includes information on Covenant signatories and their action plans together with a report on the economic, social and environmental costs of recycling in Australia Guidelines, reports, management guides and a survey of jurisdictional waste management arrangements are available to promote waste minimization in the building and construction sector. Further information is available from http://www.ea.gov.au/industry/waste/construction/index.html.
Radioactive Wastes: The Radiation Health Committee, established under the ARPANS Act in 1999, is currently reviewing publications produced in the NHMRC Radiation Health Series, and under the Environment Protection (Nuclear Codes) Act 1978 (now repealed). ARPANSA will progressively publish the new documents in its radiation Protection Series.

Research and Technologies:
Hazardous Wastes: Australia on a national level encourages minimization strategies and alternative technologies. Some of these programmes are at www.ea.gov.au/industry/sustainable/index.html
Solid Wastes: The Cooperative Research Centre for Waste Management and Pollution Control focuses on waste reduction and minimization, sewerage and water quality, site remediation, instrumentation and monitoring (www.crcwmpc.com.au).
Radioactive Wastes: The Australian Nuclear Science and Technology Organization undertakes research into the assessment and management of radioactive wastes. It is also involved in the development of advanced waste forms for the immobilization of such waste (www.ansto.gov.au).

Financing:
Hazardous Wastes: The Product Stewardship Arrangements for Waste Oil were introduced to encourage better management and economic recycling of waste oil. A tax of 5 cents per litre has been collected on base lubricant since early 2001. This revenue is used to pay volumetric benefits to oil recyclers as an incentive to collect and recycle more waste oil. In addition to these arrangements an industry transitional assistance fund of AUD15 million is being provided by the Federal Government over a four year period (www.ea.gov.au/industry/waste/oilrecycling/index).
Solid Wastes: The National Packaging Covenant includes an industry transitional funding arrangement of AUD34 million, which is funded by industry contributions and matched by governments. It aims to develop a more sustainable, market-based recycling system. The fund also supports studies and other measures to improve the cost effectiveness of the kerbside collection programme, and to strengthen and expand markets for collected materials.
Radioactive Wastes: Australia set aside AUD1.29 million in the 1996/97 budget for contribution to the Technical Assistance Cooperation Fund of the International Atomic Energy Agency for the 1997 calendar year.

Cooperation:
Hazardous Wastes: Australia ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in February 1992. Australia has also ratified the Regional Convention on Hazardous and Radioactive Waste (the Waigani Convention) which entered into force in 2001 and export from Australia of hazardous and radioactive wastes to countries and territories in the Convention area (except New Zealnad) will be banned. Australia has assisted in facilitating workshops to discuss the establishment of Regional Centres in Beijing and Jakarta for the treatment of hazardous wastes in the Asian-Pacific Region.
Solid Wastes: Australia funds a number of projects with sanitation components through the development cooperation programme including: UNICEF Water/Sanitation project in Malawi, Waste Management Technology in India, East Timor Water Supply and Sanitation project, Visayas Water and Sanitation in the Philippines, Tarawa Sanitation in Kiribati, South Pacific Sanitation project and the Wei Hai Sewerage Treatment Plant in China. These projects include elements of technology transfer, institutional strengthening and training.
Radioactive Wastes: Australia signed the International Atomic Energy Agency Joint Convention on the Safety of Spent Fuel Management and Safety of Radioactive Waste Management in 1998, and is working towards its ratification. The Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Radioactive Wastes within the South Pacific Region has been ratified by Australia, but has not yet entered into force. Australia actively supports efforts within the International Atomic Energy Agency to introduce international radioactive waste safety standards, guidelines and codes of practice. ARPANSA represents Australia at IAEA WASSC meetings to develop international recommendations on management of radioactive waste.

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CHAPTERS 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

Women: Decision-Making: Australia continues to address the issue of increasing the influence of women in ecologically sustainable development decision-making in a number of ways. These include supporting the involvement of women and their organizations in policy processes. Australia's National Strategy for Ecologically Sustainable Development requires the development of ecologically sustainable development related policies, programmes and actions, incorporating the particular concerns of women, and ensuring that actions to achieve ESD do not have inequitable effects on women (www.ea.gov.au/esd/national/strategy/index). The Office of the Status of Women, in the Department of the Prime Minister and Cabinet, provides policy advice on issues affecting women in Australia. In particular, its role is to influence policy, and decision-making to ensure women's interests are considered (www.osw.dpmc.gov.au/index). Programmes and Projects: The Australian Government has a policy of integrating gender issues into mainstream government activities. Australia's wide range of programmes promoting sustainability do not specifically include a specific component on women's issues. Cooperation: Australia ratified the Convention on the Elimination of All Forms of Discrimination Against Women on in 1983. To promote equal opportunities for women and men as participants and beneficiaries of development in partner countries, Australia's overseas aid programme, managed by the Australians Agency for International Development (AusAID), incorporates strategies to address gender inequalities in aid activities. The aid programme provides assistance to increase women's access to education, health care and economic resources, to encourage women's participation and leadership in decision-making at all levels and to promote the human rights of women and eliminate discrimination against women. AusAID provides funding to a number of UN agencies that work closely with women, including the UN Fund for Population, the UNEP and the UN Development Fund for Women.. Australia's participation in the United Nations Fourth World Conference on Women, held in Beijing in September 1995, also reflected a commitment to fully integrating the principles of ecological sustainability into all aspects of development and to ensuring that women participate on an equal basis in this process.

Children and Youth: Decision-Making: The Government consults with young people through the Australian Youth Policy Action Coalition, the national non-government peak youth organization. Programmes and Projects: As part of Australia's National Programme of Action for Children, the development cooperation programme places greater emphasis on priority areas for children through measures such as improving access to primary health care and services, quality basic education, nutrition and food security, and initiatives to address the impact of HIV/AIDS. Australia's humanitarian and refugee assistance also includes a focus on tracing and reunifying families, counselling programmes for traumatised children, centres for unaccompanied children, and community rehabilitation projects supporting demobilised child soldiers. Australia continues to work with partner countries and agencies to address child exploitation through programmes aimed at combating the commercial sexual exploitation and trafficking of children and women, and minimising the exposure of children to dangerous work in hazardous occupations. Ensuring gender considerations are incorporated into development cooperation programmes is central to measures aimed at improving the well-being of children. Capacity-Building, Education, Training and Awareness-Raising: In January 1997, the Federal Government announced the Green Corps Programme, which provides young people with full-time training, for up to twelve months, on community based environmental projects. Projects include land care, eco-tourism and restoration activities, and survey and data collection work. Training associated with projects is linked, where possible, with career opportunities in fields such as environmental management, science, conservation and restoration (http://greencorps.ballarat.net.au). Cooperation: Australia ratified the United Nations Convention on the Rights of the Child in December 1990 and the World Declaration on the Survival, Protection and Development of Children in May 1991. On 10 December 2001, the Government announced that Australia will sign the Optional Protocol to the Convention on the Rights of the Child on the Sale of Children, Child Prostitution and Child Pornography. Internationally, Australia's commitment to education and training issues is reflected through: bilateral and regional programmes with developing countries; participation in multilateral fora such as APEC and the OECD; support for the United Nations' specialised agencies including WHO and UNICEF; support and contributions to the World Bank and Asian Development Bank; provision of consultancy services to regional projects funded by international finance institutions; and the establishment of the Australian International Education Foundation.

Indigenous People: Decision-Making: The Aboriginal and Torres Strait Islander Commission is a statutory authority delivering programmes similar to those provided by departments of state. It is elected by Indigenous

people and is the government's primary source of advice from an Indigenous perspective. Aboriginal groups have for some time been jointly managing a number of national parks, including the major parks of Uluru-Kata Tjuta, Kakadu, Gurig and Nitmiluk in the Northern Territory (www.ea.gov.au/parks/index). The Federal Government has fully recognized the importance of strengthening the role of Indigenous peoples through the enactment, in 1989, of the *Aboriginal and Torres Strait Islander Commission* Act. *Status:* Australian Aboriginal and Torres Strait Islander peoples are among the most disadvantaged groups within the Australian community. They comprise approximately 2.1% of the total Australian population. Approximately 15% of the land is Aboriginal owned or controlled as a result of various Commonwealth or State statutory schemes pre-dating common law recognition of native title in the Mabo judgement.

Non-Governmental Organizations: Decision-Making: For the purpose of ensuring that the views and interests of the community are taken into consideration, the Government has created a range of channels for consultation. NGO advisers, from both environment/development and business, join Australian delegations to the majority of major environmental meetings. Some government agencies hold annual information/consultative sessions for non-government organizations to discuss current environment issues. All major policy making processes include periods of public consultation and often working groups are formed, that include non-government organizations, to steer or advise the policy makers. Programmes and Projects: Environment Australia administers a programme of grants to voluntary environment and heritage organizations (the GVEHO Programme). The Programme aims to help community-based environment and heritage organizations to value, conserve and protect the natural environment and cultural heritage by assisting these organizations with their administrative costs (www.ea.gov.au/pcd/ppu/gveho/index). In 2000-01, Australia's overseas aid programme provided AUD44.1 million to support NGOs and volunteer programmes. The AusAID NGO Cooperation Programme (ANCP) supports development activities of accredited Australian NGOs that directly alleviate poverty in developing countries. Volunteer programmes and the Australian Youth Ambassadors for Development (AYAD) programme placed Australian volunteers on development assignments in key sectors of the aid programme.

Local Authorities: Decision-Making: There are approximately 750 Councils in Australia, which vary in size, population, geography and budget. Local Government responsibilities also vary depending on the State/Territory jurisdiction, but include land use planning and management, and infrastructure and service provision. Each State and the Northern Territory has a Local Government Association that represents Local government views to the State/Territory Government. The Australian Local Government Association (ALGA) represents these associations nationally. ALGA's core business is intergovernmental relations, and includes representation on the Council of Australian Governments and involvement in policy development processes. The Federal Government is a major contributor of funds to Local Government and coordinates its involvement in local government issues through the National Office of Local Government in the Department of Transport and Regional Services. Programmes and Projects The Federal Government is working in partnership with Local Government through its Environmental Resource Officer (ERO) and Local Agenda 21 (LA21) programme to promote sustainable development at the local government level. The ERO Scheme places dedicated officers in the peak local government associations in each State and the Australian Local Government Association, to assist local government to better manage their local environments. The Local Agenda 21 programme assists local governments to apply the framework from Agenda 21 for local government in order to integrate environmental, economic and social objectives. Elements of the LA21 Programme include: a National Local Leaders in Sustainability Forum, corresponding State and Territory fora, pilot projects to test regional approaches to sustainable development and to develop appropriate models for the implementation of LA21 on a regional basis, a Local Agenda 21 Award, and a national Local Agenda 21 Conference. The Federal Government is also developing a national framework of milestones for adoption and use of LA21 by local government.

Workers and Trade Unions: Decision-Making: Australian trade unions play an important role in reducing the economic and human costs associated with poor occupational health and safety and environmental performance through their activities in specific workplaces. Development of the National Strategy for Ecologically Sustainable Development brought together trade unions, industry, conservation and community groups in an effort to address their mutual interests and concerns for ecologically sustainable development (www.ea.gov.au/esd/national/strategy/index). The Australian Council of Trade Unions (ACTU) has participated in a range of consultative processes with respect to both domestic and international issues. The ACTU participated in the Australian Government's NGO Forum on International Environmental Issues and the

National Greenhouse Advisory Panel. In addition, the ACTU participated in Australian delegations to the Commission for Sustainable Development and to the First Conference of the Parties to the Framework Convention on Climate Change (FCCC).

Business and Industry: Decision-Making: The Government has involved industry closely in the development of strategies and initiatives aimed at promoting ecologically sustainable development. Business and industry representatives are included on delegations attending international meetings on environmental issues. Programmes and Projects: Environment Australia aims to facilitate environment protection in Australia and the region by bringing Australian technological and managerial solutions to environmental problems. A key focus is to facilitate the growth of Australia's environment management industry based on both domestic and export markets (www.ea.gov.au/eifu). Environment Australia works collaboratively with the environment management industry and has a good working relationship with the peak industry body, the Environment Business Australia (www.emiaa.org.au). Status: There is a wide range of initiatives occurring within government and industry to encourage more sustainable practices. Industry has shown it can provide leadership in demonstrating best practice approaches, such as Alcoa's rehabilitation programme at a Western Australian mine site, which was recognized by the United Nations Environment Programme for its excellence and is now part of the Global 500. The Government has also provided assistance to industry to promote the adoption of environmentally sound practices.

Scientific and Technological Community: Decision-Making: The Agriculture, Fisheries and Forestry Australia portfolio has a specialised agency, the Bureau of Rural Sciences, which is responsible for managing the interface between science and policy and interpreting scientific knowledge for the benefit of decision makers (www.affa.gov.au). Distinguished scientists and engineers provide advice on environmental issues to all spheres of government through the Australian Science and Technology Council and the Prime Minister's Science and Engineering Council. The Government has developed stringent guidelines for work in hazardous areas like nuclear science, toxic chemicals and genetic manipulation. Programmes and Projects: The Research and Development Corporations are research funding and investment agencies, financed by government and industry. Many contribute by disseminating information to industry and the public on sustainable land use and agricultural practices, again improving the interface between science and decision-making, as well as the implementation of scientific results. Status: Australia has a long tradition of independent research and a well-organised and often vocal scientific and technological community, and these contribute to the essential public debate about science and its importance to the economy and the environment.

Farmers: Decision-Making: The Government has involved farmers closely in the development of strategies and initiatives aimed at promoting ecologically sustainable development. Programmes and Projects: There is an increased emphasis on broad-based community consultation in Government policies and programmes for rural communities. The success of this approach has been demonstrated through programmes funded under the Natural Heritage Trust. Natural Heritage Trust activities contribute to the sustainable management of land, water and vegetation, in line with regional State and national strategies. The FarmBis Programme provides a framework for promoting education and training as a positive approach to change across the primary production sector (http://www.affa.gov.au). Status: The Government recognizes that rural communities do not have the same capacity as urban areas to raise public revenue; yet rural industries are major export earners in the Australian economy. A community-based approach, especially through the Land care movement, directly involving farmers and rural community groups, supported by government, has proved to be the most effective model to effect progress in sustainable development in regional and rural areas. This is consistent with the market-based approach to agricultural development and the achievement of self-reliance of farmers.

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

Decision-Making: The Federal Government recognizes the need to provide a secure funding base for initiatives addressing Australia's environmental and ecologically sustainable development challenges. Financing sustainable development involves both expenditure to prevent or ameliorate poverty and environmental degradation, and the use of fiscal instruments (such as taxes, charges, licence fees) to improve decision-making by incorporating social and environmental costs into price signals.

Programmes and Projects: Australian jurisdictions have a number of specific environmental taxes and charges in operation, including load based licensing, and the Federal Government is exploring issues associated with the use of emissions trading systems in the context of meeting Australia's climate change commitments. A number of implicit historical subsidies to natural resource use have also been identified, and policies are now in place, which have eliminated or are reducing these. Environment Australia has identified a number of possible economic and environmental subsidies to the use of natural resources, some of which may contribute to unsustainable activities or practices. Forms of economic subsidies included public outlays, favourable tax treatment, concessional financing, under-recovery of the cost of resource management by public sector agencies and an absence of user charges. However, the significant financial subsidies identified relate to past decisions and government polices are now in place which have eliminated or are reducing these subsidies. Significant direct foreign investment in Australia must be approved under *the Foreign Acquisitions and Takeovers Act 1975*. Foreign investment proposals that may have environmental implications are forwarded to the relevant government agencies (such as Environment Australia) for advice and comment. If it is considered that the proposed investment may be environmentally significant, it triggers the Environmental Protection and Biodiversity Conservation Act 1999.
Recognising the importance of the health of the environment to economic, social and conservation objectives, the Federal Government has established a Natural Heritage Trust (www.nht.gov.au) which has provided funding of about AUD1.5 billion over six years from 1996-97 until 2002. From July 2002 to June 2007, a further AUD1 billion will be provided to the Natural Heritage Trust for more strategic investment targeted at three overarching objectives, namely: biodiversity conservation; sustainable use of natural resources; and community capacity building and institutional change.

Status: There are a number of environment-related taxes or levies in operation in Australia. At the Federal Government level these include the jet aircraft noise levy. Numerous Australian jurisdictions make use of specific environmental charges, including the federal Great Barrier Reef environment management charge levied on tourists (1998 onward), the Sydney Water Board Special Environmental Levy (1989-93), and a range of local government levies and charges used to fund various activities. There was also an excise differential favouring unleaded fuel until leaded fuel was banned. There are also a number of fiscal measures beneficial to the environment such as tax concessions for alternative fuels and conservation covenants.

Capacity-Building, Education, Training and Awareness-Raising: From July 2002 to June 2007, a further AUD1 billion will be provided to the Natural Heritage Trust for more strategic investment targeted at three overarching objectives, including community capacity building.

Information: Australian reporting to international or intergovernmental bodies on issues related to financing sustainable development occurs predominantly in the context of Australia's contributions to the Global Environment Facility and other aid contributions to environmental organizations and programmes. More detail on Australia's contribution to financing sustainable development through overseas development assistance is provided on the AusAID Internet site (www.ausaid.gov.au). A number of official reports and papers touching on these issues have also been produced as part of domestic processes: Australian Greenhouse Office, 1999, National Emissions Trading: Issuing the permits Discussion paper 2; Canberra (www.greenhouse.gov.au/emissionstrading); Environment Australia, 1997, Environmental Economics Round Table Proceedings, Environmental Economics Research Paper 6, Environment Australia, Canberra (www.environment.gov.au); Practical issues in the design of environmental taxes in Australia, Department of the Treasury, Canberra (www.treasury.gov.au); Productivity Commission, 1999, Implementation of Ecologically Sustainable Development by Federal Departments and Agencies, Draft Report, Canberra (www.pc.gov.au).

Research and Technologies: No information available.

Cooperation: Over the decade 1991/2 to 2000/01, Australia's Official Development Assistance (ODA)/GNP ratio averaged an estimated 0.30% or around AUD1.4 billion (constant 1999/2000 prices) per year. The development assistance programme focuses on several key result areas to reduce poverty and promote sustainable development. These include building effective partnerships with developing countries, promoting effective governance, improving access to and quality of education and health, improving agricultural and rural development, providing essential infrastructure, delivering humanitarian and emergency assistance, promoting gender equity, and promoting environmental sustainability. Development assistance to address environmental sustainability has focused on areas outlined in Agenda 21 including, among others, water and natural resource management, oceans, atmosphere, biological diversity, deforestation and desertification.
The objective of Australia's overseas aid programme is to assist developing countries to reduce poverty and achieve sustainable development. This is achieved through the integration of economic, environmental and social considerations in the delivery of all activities. The environment is a cross-cutting issue that must be considered in the design and implementation of all AusAID projects. AusAID's activities are implemented following strict environmental assessment guidelines. Actions completed in 2000-2001 to ensure the implementation of ecologically sustainable development and environmental matters under the Environment Protection and Biodiversity Conservation Act 1999 included completion of a review of AusAID's environmental assessment guidelines and internal management systems to ensure they meet the requirements of the Act. In its bilateral programme, Australia is building a portfolio of projects and partner country profiles with specific environmental objectives. The Australian aid programme also supports a range of international environment organizations and programmes that help address environmental concerns at the cross-border, regional and global levels. This includes support for the Montreal Protocol Fund (AUD28.2 million contributed through regular replenishments of the Fund); the Global Environment Facility (over AUD116 million committed since 1991), UNEP (AUD0.6 million FY 2000-2001), and the South Pacific Environment Programme (AUD1.2 million annually). Funding is also provided to the Multilateral Development Banks (AUD113.4 million to the International Development Association and AUD120.2 million to the Asian Development Fund FY 2000-2001) and United Nations development organizations, which have an environment focus in many of their programme activities.

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: The National Strategy for Ecologically Sustainable Development outlines a sectoral and intersectoral approach to sustainable development (www.ea.gov.au/esd/national/strategy/index). The Strategy was endorsed and released by the Council of Australian Governments which is the pre-eminent body for national, or federal, decision-making. It incorporates science into policy development through working groups, expert reports and expertise from the government research agencies.

The Federal Government has a number of science advisory bodies, including the Chief Scientist, the Prime Minister's Science, Engineering and Innovation Council, the Australian Science, Technology and Engineering Council, the Coordination Committee on Science and Technology, and the Gene Technology Technical Advisory Committee (www.industry.gov.au/science/). The Australian Science, Engineering and Innovation Council provides independent advice to the Federal Government on a wide range of policies and programmes related to science and technology. The Australian Research Council also advises the Government on research funding and policy and manages the National Competitive Grants Programme (www.arc.gov.au). The Commonwealth Science and Industrial Research Organization is one of the largest and most diverse research institutions in the world. It often provides independent advice to the government and plays an important role in science and technology policy development.

The Department of Agriculture, Fisheries and Forestry incorporates two professionally independent research bureaus within its structure; these are the Bureau of Rural Sciences (BRS) and the Australian Bureau of Agricultural and Resource Economics (ABARE), while the Department of Industry, Tourism and Resources receives advice from Geoscience Australia. The Australian Institute of Marine Science (AIMS) was established by the Commonwealth government in 1972 to generate the knowledge needed for the sustainable use and protection of the marine environment through innovative, scientific and technological research. Other important sources of scientific advice include the Australian Antarctic Division, Bureau of Meteorology and the Office of the Supervising Scientist within Environment Australia. Science and research-based institutions play a significant role in providing advice for national decision-making on sustainable development issues. This occurs through both formal and informal mechanisms and in relation to both policy and programme development.

Programmes and Projects: The Regional Forest Agreement programme implemented by the Federal and State governments is a model of the role science plays in the sustainable development of Australia's resources. Regional Forest Agreements (http://www.rfa.gov.au/) provide a mechanism for achieving an equitable balance between conservation and sustainable use of the natural and cultural, and economic and social values of Australia's forests. Comprehensive Regional Assessments provided the underpinning of scientific information, analytical methods and consultation mechanisms necessary to develop durable and credible Agreements. Australia's approach to Comprehensive Regional Assessments and Regional Forest Agreements has been used as a case study of the "ecosystem approach" under the Convention on Biological Diversity (http://www.biodiv.org/doc/case-studies/cs-ecofor-au-management.pdf).

Status: Australia has an advanced science base, and, in many fields, Australia's scientists are at the leading edge of research. The development of links between Indigenous knowledge and modern science is a relatively new field in Australia and is an increasingly urgent task. There is an increasing recognition of the links between ecology and health. The National Health and Medical Research Council has an increasing interest in research in environment and health. The Commonwealth Scientific and Industrial Research Organization (CSIRO) conducts over AUD120m of research annually into environmental areas, a great deal of it related to the objective of sustainable use and management of natural resources. The Federal Government supports a broad range of greenhouse science research and activities under the Australian Greenhouse Science programme in order to advance understanding of global and regional climate change (www.greenhouse.gov.au/programme/index).

Capacity-Building, Education, Training and Awareness-Raising: Under the National Action Plan for Salinity and Water Quality, announced in November 2000, AUD300M is allocated for capacity-building initiatives to regional communities that have to develop integrated catchment management plans. Amongst the programmes covered is the application of airborne geophysical techniques (developed by Commonwealth institutions led by the Bureau of Rural Sciences) to salt hazard mapping and the support of management actions

on the ground. This technology is being transferred to state institutions and regional bodies through collaborative work and the development of expert systems for applications on the ground.

Information: Most public and private national and state institutions with an interest in sustainable development issues, have either developed or are planning to develop, web sites as part of their communication strategies. The Federal Government has recently established a science portal that contains links to government information and services for researchers, industry and investors (www.scienceandindustry.gov.au/science/index). Environment Australia is developing a set of environmental indicators that, properly monitored, will help to track the condition of Australia's environment and the human activities that affect it (http://www.ea.gov.au/soe/envindicators/index). Environment Australia is currently managing the development of a set of scientifically-credible indicators for State of Environment reporting, and has coordinated the development of a national set of Headline Sustainability Indicators. Within sectors, a National Reporting Framework for Australian Fisheries is being developed to report on sustainable development (www.fisheries-esd.com) and Australia has completed its assessments of ecologically sustainable forest management through the RFA approach and through reporting on the Montreal Process Criteria and Indicators for sustainable forest management (http://www.affa.gov.au/forestry). The reports by the Standing Committee on Agriculture and Resource Management (1998) 'Sustainable Agriculture: Assessing Australia's recent performance' and the Land and Water Resources Audit (http://www.nlwra.gov.au/) also provide information on sustainable land and water management.

Research and Technologies: See above. In addition to a number of independent government research organizations, the Federal Government supports 64 Cooperative Research Centres (CRCs) that establish strong collaborative links between researchers and industry and other research users to create a multi-disciplinary, multi-institutional research environment focussed on addressing industry and user needs (www.crc.gov.au).

Financing: The Australian Research Council is the primary funding agency for universities and funds research projects while the National Health and Medical Research Council funds health-related research (www.health.gov.au/nhmrc/research/index). CSIRO devotes over 10% of its budget specifically to environmental research and a number of large multidisciplinary programmes (see www.scienceandindustry.gov.au/Science/grants). Additionally, the Research and Development Corporations fund research into the sustainable development of Australia's primary industries and natural resource sectors.

Cooperation: Australian scientists are involved in a broad range of international bodies of relevance to sustainable development. They take part in international meetings charged with developing or implementing international conventions (e.g. Desertification, Biodiversity, Climate Change, fisheries regimes etc) particularly, but not only through science sub-groups such as the International Panel on Climate Change and the 'Montreal Process' Working Group. Internationally, Geoscience Australia is currently working on the mitigation of threats from volcanic eruptions in Papua New Guinea. Similarly, it has also conducted work on rural water resources planning in the Republic of South Africa and has contributed to a range of other studies aimed at alleviation of rural poverty. The Australian Centre for International Agriculture Research coordinates agricultural, forestry and fisheries projects in developing countries to contribute to sustainable development of resources. The Bureau of Rural Sciences also is contributing to the sustainable development of other countries, for example through the transfer of scientific experience in forest inventory (Papua New Guinea) and exploitation of groundwater resources for irrigation (Argentina).

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CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: The Federal Government provides national leadership in raising the profile of major environmental challenges and implementing solutions. Education is an essential activity, as a sustainable future cannot be achieved without a concerned and ecologically literate citizenry. In July 2000, the Federal Government released a National Action Plan for environmental education (http://www.ea.gov.au/education/nap/index.html). The purpose of this Plan is to address in a substantive and effective way the current needs of environmental education in Australia. The Plan delivers a national environmental education strategy which provides for a higher profile for the environmental education, better coordination, enhanced professional development for teachers and others involved in environmental education, improved resources and the integration of environmental education into mainstream education and training activities. Collaborative networks are encouraged with peak industry bodies to develop specific strategies for industry sectors. The Plan is intended to provide leadership to the many different sectors involved in environmental education activities and to promote better coordination of these activities. It is also intended to be a starting point for an enhanced national effort in support of Australia's ecologically sustainable development (ESD).
The major initiatives identified in the Plan include:

- National Environmental Education Council;
- Federal, State and Territory inter-governmental environmental education network;
- Australian Environmental Education Foundation.

As part of the National Strategy for Ecologically Sustainable Development (NSESD), ministers agreed to the incorporation of ESD principles into the formal education system as a cross curriculum perspective in the national curriculum framework (www.ea.gov.au/esd/national/strategy/index). Each State and Territory has primary responsibility for determining the content of their formal education curriculum, and principles of ESD are agreed within Common and Agreed National Goals for Schools and as part of the National Strategy for ESD. In the National Numeracy and Literacy Plan, the goal is that every child leaving primary school should be snumerate, and able to read, write and spell at an appropriate level. The Victorian Department of Education is reviewing the content of the 1990 Ministerial Policy Environmental Education documents.

Programmes and Projects: the Federal Government supports education activities and programmes across many sectors including the formal education sector, industry, community, government and vocational education. Many of these programmes are supported by the Natural Heritage Trust. The Trust is the largest environmental rescue effort ever undertaken by an Australian Government with funding of AUD2.5 billion. It targets five key environmental themes - land, vegetation, rivers, coasts and marine, and biodiversity. The major community education programmes include Bush care, Coast care, Land care, Water watch and threatened species. These programmes fund public networks to promote active community involvement in recovery programmes. Initiatives often involve both federal and state/territory governments promoting local solutions to environmental issues.
The Coast care Programme is being implemented under tripartite Federal, State and Local Government Memoranda of Understanding to provide opportunities for communities to work with their local land managers to identify problems. The National Wetlands Programme has been providing funding to the World Wide Fund for Nature (Australia)(WWF) to undertake the Tri-national Wetlands Cooperative Management Programme. The Commonwealth, through the Endangered Species Programme, funds public networks to promote active community involvement in recovery programmes for threatened species. Natural Heritage Trust funded programmes involve both Federal Government and State/Territory governments in promoting the total catchment management/integrated catchment management approach to natural resource management. A range of environmental education programmes has been developed (enviroquest; Australian Ways; a capacity building programme for coastal managers; the Environment Protection Agency's Cleaner Production workshop series; and the Australian Heritage Commission's primary school teaching resource, Special Places). The National Environmental Education Network is a key initiative of Environmental Education for a Sustainable Future, a National Action Plan for environmental education in Australia. The network is made up of representatives from Commonwealth, state and territory environment and education agencies. It aims to help governments coordinate the delivery of environmental education, promoting a more efficient use of scarce resources and achieving better outcomes http://www.ea.gov.au/education/nap/neen.html.

In addition to the activities of the Federal Government, there are many other public and private providers of environmental education programmes. Education Network Australia provides an online Directory Service that provides users with access to quality sites in a comprehensive range of education fields, including Sustainable Development. Many departments are funding sectoral projects and programmes that integrate support for ongoing education and training in sustainable development.

Status: Education is available to all sectors of the community irrespective of socio-economic status. The public education system provides free education up to Year 12 secondary level. Fees are payable for tertiary education. At the school level, research has shown that young people' s participation in education, their level of ability influences the workforce and society significantly in literacy and numeracy. The major factors, which are usually seen as placing educational outcomes at risk, include socio-economic disadvantage, poverty, low parental expectation, disability, a language background other than English, family or personal difficulties, geographic isolation, Indigenous background and gender.

Information: Environmental education is also delivered in Australia by agencies and organizations other than the Federal Government. These include state and local governments, academic institutions, voluntary organizations, advocacy and public interest groups, churches, the media, professional institutes, and individuals. These and other institutions and organizations often also provide environmental education activities that are auxiliary to their main functions. The Australian government often provides support for such activities through funding or advice.
The National Resources Information Centre (NRIC) has a Web site related to sustainable development and through its purpose-built training facility, the Advanced Systems Institute, offers 'best practice' focused training in the use of information systems as enabling technologies for sustainable development.

Research and Technologies: The National Environmental Education Council provides expert advice to the Federal Government on the effectiveness and profile of the Commonwealth's environmental education activities and environmental education issues generally. It is currently undertaking research into various sectors in order to provide strategic advice on the most effective ways of providing environmental education within each sector. Within the formal education sector, the National Environmental Education Council affirmed the needs identified in the National Action Plan to provide accessible professional development for teachers working to promote ESD and to provide quality environmental education materials to schools as a priority. The Council is currently undertaking a process to identify national priority areas and to analyse curriculum documents for environmental education content.
The Council has identified the importance of eco-innovation to the Australian economy. As far as the Australian business/industry sector is concerned, one of the main impediments to the adoption of sustainable practices is the lack of real impact of environmental considerations in boardroom decision making. Another major impediment to change in the business sector is that environment is treated primarily as a regulatory compliance issue - despite education campaigns that focus on the economic benefits of eco-efficiency. The Council is researching parallels that may be instructive on how sustainability issues might be made more central to boardroom deliberations.

Financing: Commonwealth funding for schools is in the order of AUD6.4 billion. Over the 2001-04 quadrennium it will be over AUD25 billion. Within this some AUD1.4 billion will be provided as targeted funding for educationally disadvantaged students, with a focus on improving literacy and numeracy outcomes and assisting students with a disability.
In relation specifically to environmental and sustainability education, the Federal Government is contributing substantial funding to provide Australian communities with the skills and knowledge to restore the Australian environment through the Natural Heritage Trust. The Trust is the largest environmental rescue effort ever undertaken by Australian Government with funding of AUD2.5 billion. The Trust is a partnership bringing together the efforts of individuals, communities and governments.

Cooperation: With education fundamental to the achievement of sustainable development, Australia's overseas aid programme aims to increase access to, and improve the quality and relevance of, education and training for the most vulnerable in developing countries, particularly in the Asia-Pacific region. Basic education, particularly focusing on disadvantaged groups, and technical and vocational education are priorities. Assistance is also provided for higher education, distance education and institutional strengthening. In 2000-01, the aid programme provided support for 257 activities with a primary focus on the education sector, at an estimated

cost of AUD272 million. In addition, a further AUD302.3 million was spent on projects in other sectors that have significant benefits for the education sector.

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CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR CAPACITY-BUILDING IN DEVELOPING COUNTRIES

Decision-Making: The Australian development cooperation programme delivered by the Australian Agency for International Development (AusAID) represents the key national mechanism for international cooperation for capacity-building in developing countries.

Programmes and Projects: Through the aid programme Australia assists developing countries, particularly in the Asia- Pacific region, to deal with the challenges of poverty reduction and sustainable development. Australia's development cooperation programme, indeed by its very definition, is devoted to capacity-building in developing countries. The way in which Australia, through the aid programme, strengthens international cooperation for capacity building in terms of priority setting, project identification and formulation as well as project administration and management is referred to in AusGUIDE (a guide for AusAID staff, contractors and others involved in aid delivery (http://www.ausaid.gov.au/ausguide/index.html).
To present one example, the Australian aid programme's support for good governance targets four priority areas: improving economic and financial management; increasing public sector effectiveness; strengthening law and justice and developing civil society. Some specific projects in capacity-building for good governance in 2000-01 included:

- Building the capacity of the East Timorese administration, which has contributed to significant achievements in key areas such as budgeting, taxation, customs and land administration;
- Improved capacity for strategic planning, management and decision-making in the Public Service Commissions of Samoa and Vanuatu;
- Strengthening institutions responsible for revenue collection, customs, immigration, land management, asset management and census administration in several countries, particularly in the Pacific region;
- Support for the process of decentralization in Indonesia, through training and expert advice in resource allocation and service delivery.

Status: Australia is committed to a strong and effective international development cooperation programme that focuses on the priority needs of partner governments and maintaining dialogue that leads to enhanced shared objectives of poverty alleviation and sustainable development.

Capacity-Building, Education, Training and Awareness-Raising: The Australian aid programme is geared towards promoting capacity-building opportunities in partner countries. In particular, the development cooperation programme aims to increase access to, and the quality of, education and training for the most vulnerable in the developing countries of the region. Basic education and technical and vocational education are priorities, with selective assistance also given for distance and higher education and institutional strengthening. The Australian Government also engages in a range of educational and training programmes targeting experts and professionals in international relations including diplomatic training programmes, trade negotiation courses, funding and professional support for international seminars, and engagement with professional international organizations.

Information: Australia's Overseas Aid Programme Statistical Summary' (Green Book), and the 'Australia's Overseas Aid Programme Official Expenditure' (Blue Book), are published each year and both provide detailed information on international development cooperation expenditure (www.ausaid.gov.au/publications/pubs). Australia operates an open and accessible system in the dissemination of information. Key public documents such as the Government White Papers are available to the public on request and are widely disseminated to academic, research and international bodies and other interested parties (www.dfat.gov.au/ini/wp). Newsletters and bulletins regarding Australia's commitment to sustainable development, along with other information are available through websites. Material and information are sent to schools, higher education and research institutions, media outlets and non- government organizations at both the national and international level. A wide array of focus groups and interests are invited and welcomed at open forums.

Research and Technologies: The Australian overseas aid programme helps partner countries to build capacity, develop enabling environments and gain access to innovative and environmentally sound technologies, particularly renewable energy technologies.

Financing: Australia commits substantial resources to international development cooperation, including for capacity-bu8ilding. At the same time, Australia has emphasised the importance of efficient and effective use of resources, including domestic resources, in the interests of development.

Cooperation: Australia is a Party to a large number of international conventions and treaties related to environment and sustainable development. The Australian aid programme supports a range of multilateral agencies for a number of diverse activities related to sustainable development.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

This issue deals mainly with activities undertaken by the UN System.

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CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

This issue has been covered under **Cooperation** in the various chapters of this Profile.

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CHAPTER 40: INFORMATION FOR DECISION-MAKING

Decision-Making: Australia has a range of Ministerial Councils which oversee integrated decision making on key policy areas at the national level, including a number of Councils addressing sustainable development matters. The Councils have representation from all Federal and State/Territory governments. A notable recent development is the formation of a new Ministerial Council on Natural Resource Management, which integrates aspects of previous, separate Ministerial Councils for the Environment and Agriculture. The Ministerial Councils all have working groups and taskforces reporting and advising on matters of specific interest. The working groups and taskforces generally draw their membership from government agencies at the Federal and State/Territory level and are a critical point for information support for the development of policy directions at the national level. Information on the Ministerial Councils involved with environmental and development can be found at web-site address www.dpmc.gov.au/briefing/doc/Compendium.pdf and, for more information on the Australian system of government and related mechanisms, www.dpmc.gov.au/comm_state_index.html.

Increasingly, development decisions are being made on informed processes integrating economic, social and environmental information and involving open and full participation of stakeholders. These typically utilize an adaptive management approach that entails compilation of available information, assessment of practical management options, including identification of information gaps, and decision-making based on testing and assessment of the management approaches that builds on the information base. Modelling techniques to assess options and analyse risk and monitoring and evaluation against stated objectives, all with stakeholder consultation, are essential elements of the process. Specific examples of this approach include sustainable forestry through binding regional agreements, natural resource management programmes and initiatives in sustainable fisheries.

Primary responsibility for the collection and collation of national economic and social information in Australia rests with the Australian Bureau of Statistics, while information on sectoral or regional bases is collected and collated by numerous Federal and State/Territory agencies. Environmental and industrial development information is collected and maintained by a diverse range of institutions, including agencies from all levels of government, research institutions and the private sector. A range of mechanisms and processes have been established to provide integrated information products and datasets to support ESD decision making and to track Australia's progress in sustainable development. Examples are the five yearly national State of the Environment Reports (www.ea.gov.au/soe), the National Land and Water Resource Audit (www.nlwra.gov.au) and certain reports of the Productivity Commission (www.pc.gov.au) all of which integrate social, environmental and economic information. Community participation is encouraged through a wide range of opportunities for public comment and consultation. The Internet is used as a primary vehicle to provide access to important information such as agricultural statistics, biological resources, landscape health, water resources condition, forestry, biodiversity, legislation, land and water resources, pollutant inventory and natural heritage.

Programmes and Projects: There are numerous projects being undertaken by government agencies at the Federal and State level in research institutions and in non-government organizations, which are aimed at developing methods of integrating economic, social and environmental information with a view to better understanding the sustainable development implications of human activity. Information is frequently compiled through collaborative programmes based on agreed information standards. These include the development of headline and sectoral indicators of sustainable development, state of environment reporting, methods for resource auditing and valuation and systems of environmental and natural resources accounting (www.ea.gov.au/soe/index, www.abs.gov.au) ANZLIC, the Spatial Information Council, has played a key role in coordination of spatial information across jurisdictions, and in both the private and public sectors. The year 2002 is seeing a significant advance in the amount and quality of information relevant to sustainable development with the release of the second national State of Environment report (http://www.ea.gov.au/soe/2001/contents.html), a national report on Sustainability Indicators, the National and Water Resources Audit (www.nlwra.gov.au) and results from the National Carbon Accounting System – these will provide a significant new base for informed decision making.

The National Land and Water Resources Audit (NLWRA), a programme of the Natural Heritage Trust, is developing a comprehensive national appraisal of Australia's natural resource base for seven Audit themes of water availability, dryland salinity, vegetation, rangeland monitoring, agricultural productivity and sustainability, capacity for change, and ecosystem health. Key information products developed through the Audit are available to the public through the Australian Natural Resources Atlas web site (www.audit.ea.gov.au/ANRA/atlas_home.html). Much of the data collected by the Audit is available from the

Australian Natural Resources Data Library in the Bureau of Rural Sciences (http://adl.brs.gov.au). Other relevant projects include the National Vegetation Information System, the National Forests Inventory (www.affa.govau), the Greenhouse Gas Inventory (www.greenhouse.gov.au/inventory/index) and the National Carbon Accounting System, the National Pollutant Inventory (www.npi.gov.au), sustainable industry initiatives and national accounts for water, energy, fisheries, forests, minerals, education.

Status: There is no single overall information network structure relating to sustainable development. Rather, information networks are established on a specific or sectoral basis. Australian institutions are generally making the transition from sectoral-based policies, programmes and data management regimes to more integrated approaches supporting sustainable development. While technical and financial constraints exist, the greatest challenges are in breaking down barriers to inter-institutional collaboration, and freeing up access to existing data.

The Spatial Information Council (ANZLIC) provides an overarching framework within which other national bodies contribute to objectives for a comprehensive spatial information infrastructure. The key objective is to ensure that land and geographic information from both the public and private sectors is readily available to different spheres of government and the private sector for analysis and integration. ANZLIC is developing a comprehensive community of coordination arrangements, policies, standards and procedures that will ensure that land and geographic information is available to meet essential needs for effective management of the nation's land-related resources.

Collaborative frameworks such as those established by the Spatial Information Council under the Australia Spatial Data Infrastructure have greatly facilitated the capacity to draw comprehensive data sets together across a number of social, economic and environmental themes. Investment under these frameworks has increased markedly over the past 5 years, and there is a substantive improvement in the availability and quality of information (www.auslig.gov.au/asdi/).

The National Land and Water Resources Audit has made considerable investment into this infrastructure, and recently reported on the state of Australian Natural Resources Information. The report recommended a number of areas where better management of investment is needed, including building fundamental data, providing community access, maximising value for money and reporting of progress.

Capacity-Building, Education, Training and Awareness-Raising: Australia possesses considerable capacity in education, training and awareness raising in relation to information to support decision making for ecologically sustainable development. Most government agencies with a role in decision-making are well supported with information technology and access to relevant information sources. Access to the Internet, and the rapid development of on-line databases and information products is enhancing the flow of information to decision makers. Australia is actively addressing the significant challenge of providing wider Internet access across the community, particularly in remote areas. This progress is significantly enhancing the capacity of people in these areas to access relevant social and environmental information and actively participate in decision-making processes for sustainable development.

The Spatial Information Council is leading and coordinating the development of the Australian Spatial Data Infrastructure while National and State agencies are developing capacity for information networks to support decision making on sustainable development. Departments and government agencies undertake a large number of programmes and initiatives relevant to capacity building for the various aspects and sectors of sustainable development. Increasing attention is being given to capacity-building at regional and local scales through programmes such as the National Action Plan for Salinity and Water Quality. Major achievements in awareness-raising have been sustained through initiatives such as the National Soil Conservation Programme and National Land care Programme, together with Bush care, Dune care and many others.

Research and Technologies: The range of drivers for new information technology to support ecologically sustainable development in Australia include the need for increased quality and quantity of information to support decision making at a range of scales and the need to integrate disparate datasets, particularly through the development of distributed databases. The availability, quality and use of remotely sensed (aircraft and satellite data) is an area of rapid progress in information technology for ecologically sustainable development. Its use is particularly powerful in informing natural resource management decisions, for example in vegetation management, greenhouse accounting (www.greenhouse.gov.au/ncas) and salinity management.

Research organizations (both public and private sector), universities, and other agencies have pioneered many innovative techniques for data collection and compilation. Particular emphasis has been placed on rapid, cost-effective methods for regional surveys. Techniques for data storage, management, analysis and access,

developed by universities and research agencies, are being widely adopted by governments and the private sector. Geographic information, remote sensing, modelling and related systems are being increasingly used for policy development and programme implementation. These tools are progressively being placed directly in the hands of decision-makers and their stakeholders. Geographic information products and systems are becoming increasingly and directly available to decision-makers and the wider community, via the Internet (see, for example, http://www.nlwra.gov.au/atlas).

Financing: There are no consolidated estimates of the funds allocated to managing information about sustainable development, but the Australian spatial information industry has a turnover in sexcess of AUD1 billion per year. The majority of investment in development/improvement of the Australian national information system comes from the public sector. A Spatial Information Action Agenda has been established to advance the capacity of the private sector to deliver information services in GIS and remote sensing. The Natural Heritage Trust has funded a number of programmes which are collecting information on natural resources. Significant investment has been made through the National Land and Water Resources Audit, the National Carbon Accounting System and National State of the Environment Reporting.

Cooperation: Australia has signed Memoranda of Understanding (MoU) for bilateral cooperation with a number of countries to enable mutual exchange of information on environmental and sustainable development issues, including information management. Australia participates in a number of international sustainable development forums and shares its sustainable development knowledge and expertise with other countries. Australia contributes funds to key international institutions promoting ecologically sustainable development and including in their activities capacity building for information collection, maintenance and use in decision-making. Among these organizations and programmes are the: Global Environment Facility; Montreal Protocol Multilateral Fund; United Nations Environment Programme; World Health Organization; United Nations Fund for Population Activities; United Nations Development Fund for Women; OECD; World Bank; World Meteorological Organization; United Nations Development Programme; International Maritime Organization; United Nations Education and Scientific Cooperation Organization; United Nations Food and Agriculture Organization; International Tropical Timber Organization; and the international agricultural research centres, including the sixteen centres of the Consultative Group on International Agricultural Research. Australia is also a member of the Development Gateway Foundation, a World Bank initiative aimed at knowledge dissemination to developing countries.

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CHAPTER: INDUSTRY

Decision-Making: The Australian Government recognizes the central role played by business and industry in the economy and in efforts to move towards a more ecologically sustainable pattern of development. The Federal, State and Territory Governments involve industry closely in the development of strategies and initiatives aimed at promoting ecologically sustainable development, and work cooperatively with industry to implement them. There are a number of Ministerial Councils and associated fora, which are concerned with particular industry sectors. The Environment Protection and Heritage Council and the National Health and Medical Research Council have facilitated the development of guidelines and standards for water quality, air quality and contaminated land, consulting other Ministerial Councils as appropriate.
Some industries have developed their own environmental codes of practice. For instance the Minerals Council of Australia has developed a Minerals Industry Code for Environmental Management. Industry growth strategies have also been developed for a number of industries including dairy, horticulture and sugar industries (www.minerals.org.au). These strategies aim to improve farming systems and strengthen the linkages with the manufacturing sector through downstream value adding and export orientation. With respect to agricultural industry, the Federal Government is pursuing the development of a comprehensive national Business Plan for Australian Agriculture and in the food sector the Government's new Supermarket to Asia Strategy is bringing together government and industry leaders to work on further improving the competitiveness of Australian industry. Federal and State governments assist small to medium enterprises to develop Environmental Management Systems for their enterprises through the AusIndustry Environmental Management System modules.

Programmes and Projects: The National Greenhouse Strategy provides the basis for coordinated action on climate change by all Australian Governments. Programmes to encourage and support industry to take actions to reduce emissions feature prominently in the climate change response strategies adopted by all jurisdictions. Increasingly effective regulation of industrial waste discharges and the adoption of effective environmental management systems and eco-efficiency principles have reduced the problems associated with industrial discharges.
Through the Business of Sustainable Development Programme, Environmental Australia assists the development of the Australian environment industry sector facilitating opportunities for commercial outcomes. The Department works with companies and industry associations across a range of sectors, including air quality and emissions reduction, water and waste treatment, environmental management in mining, recycling and cleaner production for mainstream industry. Also, through this programme, the Government is developing voluntary eco-efficiency agreements with industry associations, who in turn promote eco-efficiency to their members, and measures change over time. Environment Australia works collaboratively with the environment management industry and has a good working relationship with the peak industry body, the Environment Business Australia (EMIAA).
Consideration of environmental issues is incorporated in Industry Action agendas developed through the Federal Industry Portfolio, including sectors such as renewable energy, light metals, building and construction, automotive and LNG. The Australian Greenhouse Office also runs a number of cooperative programmes with industry, the largest of which is the Greenhouse Challenge. This is a voluntary, non-regulatory programme aimed at reducing greenhouse gas emissions from the industrial sector through improvements in energy efficiency, process efficiency, sink enhancement and more effective use of resources (www.greenhouse.gov.au/challenge/).
Together with the Department of Industry, Tourism and Resources and environment industry representatives, Environment Australia initiated an Environment Industry Action Agenda, which seeks to develop the Australian environment industry and to address sustainability issues that will impact on all Australian industry sectors.

Capacity-Building, Education, Training and Awareness-Raising: Australian governments run a number of programmes aimed at educating industry and raising awareness amongst consumers of the impacts of consumption and production. These include provision of educational information through various media, demonstration programmes and design for environment programmes.

Information: Environment Australia has developed a network of databases called Australia's EnviroNET, which has information on Australian environment technologies as well as environment management expertise, education and research and development. Australia's EnviroNET is located at www.environet.ea.gov.au.

The National Pollutant Inventory is a database of pollutant emissions from local industrial facilities, and everyday activities that lead to diffuse emissions, such as use of motor vehicles (www.npi.gov.au). Through the NPI, the community has access to year by year geographically-linked estimates of emissions throughout Australia. The National Environment Protection Measure on Ambient Air Quality has established national standards to monitor emissions of the six substances— carbon monoxide, nitrogen dioxide, ozone precursors, sulfur dioxide, lead and particulate (www.nepc.gov.au). The Australian Greenhouse Office maintains a renewable energy website to promote the use of renewable energy and develop the renewable energy industry (http://renewable.greenhouse.gov.au/).

Research and Technologies: Apart from Government policies and programmes that cover all agricultural sectors such as those under the Natural Heritage Trust, the Government looks to promote sustainable growth within specific industries through agencies such as research and development corporations. Within the dairy industry the government supports the Dairy Research and Development Corporation (www.drdc.com.au/). The Australian primary industry R&D Corporation (RDC) model features a high level of industry involvement and priority setting, funding and management of research. The development of sustainable rural industries is one of the key objectives in the legislation establishing the RDCs.

Financing: The Renewable Energy Equity Fund provides venture capital for small innovative renewable energy companies (www.greenhouse.gov.au/renewable/renew4.html).

Cooperation: The Australian aid programme's mix of policies, such as training programmes and infrastructure improvement, and newer initiatives, including support for micro-enterprise development and assistance to adjust to the post-Uruguay Round trading environment, provide a strong basis for encouraging private sector growth. Australia also participates in the Cairns Group of agricultural exporting nations, with APEC and WTO. Australia also pursues agricultural trade issues on a bilateral basis. A Review Meeting of the OECD Sustainable Consumption and Production Programme was hosted by Australia, in Sydney in 1997, to discuss progress to date on the Programme and provide future directions. Australia hosted an OECD Eco-Efficiency workshop in Sydney in 1999.

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SUSTAINABLE TOURISM

Decision-Making: The Department of Industry, Tourism and Resources within the Federal Government has responsibility for the co-ordination of tourism policy and programmes at the national level (www.industry.gov.au/sport_tourism). In pursuing an economically, socially and ecologically viable tourism industry the Federal Government works closely with the tourism industry, research organizations, State/Territory governments, and other relevant Federal Government agencies to promote sustainable tourism development. The Tourism Ministers' Council's main role is to facilitate consultation and policy co-ordination on tourism matters.

All States/Territories have developed strategies directed at fostering sustainable tourism development and work closely with the Australian Tourist Commission (a Federal agency) to promote Australia as an international tourism destination. The objectives of the Tourist Commission include promoting the principles of ecologically sustainable development and raising awareness of the social and cultural impacts of international tourism in Australia. All major strategic tourism policies and programmes undertaken by the Federal Government involve extensive consultation with relevant stakeholders. Stakeholders can be involved in the decision making for sustainable tourism at the local level by their participation in State and Local Government tourism forums, community organizations, industry associations, and through funding programmes.

The Federal Government has developed a National Tourism Action Plan that identifies careful management of the environment along with sensitivity to local social needs and effective business systems as essential to the long-term viability of the tourism industry (www.industry.gov.au/sport_tourism/publications/ticket/index.html).

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) provides protection and conservation of nationally significant aspects of the environment including identified World Heritage areas which form an important resource for tourism. Australia's fourteen World Heritage properties are subject to the management planning and regulatory mechanisms administered by the relevant management agencies. The EPBC Act specifically protects World Heritage Properties by ensuring that an environmental impact assessment process is undertaken for proposed actions that will, or are likely to, have a significant impact on the World Heritage values of a property.

Australia is strongly supporting the International Year of Ecotourism 2002 and is using this opportunity to position its nature and ecotourism industry as the champion of sustainable practices and an inspiration for other types of tourism to become more sustainable (www.ecotourism.org.au/IYE2002/).

The Great Barrier Reef Marine Park Authority is developing a Reef-wide plan for sustainable tourism management throughout the Marine Park see (www.gbrmpa.gov.au).

Programmes and Projects: The Federal Government assists with sustainable tourism outside major metropolitan centres through the Regional Tourism Programme. The Regional Tourism Programme funds both infrastructure projects as well as initiatives to promote best practice. Examples of projects which have been funded include a project to assess the potential for nature based tourism on privately owned land, development of environmentally responsible camp sites and an ecotour guide training video (www.industry.gov.au/sport_tourism/Programmes/RTP/rtp). The Government has also been supporting industry associations to develop accreditation schemes to improve quality across the tourism sector. National standards have the potential to encourage the tourism industry towards world's best practice. The Nature and Ecotourism Accreditation Programme is a world first. It was developed by industry to provide industry, protected area managers and consumers with an assurance that accredited products were committed to best practice environment management and the provision of quality experiences. In 2001, *Successful Tourism for Heritage Places*: *A Guide for Tourism Operators, Heritage Managers and Communities*, was released. The Guide provides guidance on the responsible use of heritage places for tourism and incorporates key elements of international and national tourism research, strategies, guidelines and codes of practice (www.ahc.gov.au/explore/tourism/index). A Guide to sustainable tourism development in the coastal zone has also been developed (www.ea.gov.au/coasts/information/reports/coastaltourism/index.)

Status: Tourism is one of Australia's most important growth sectors. Formal recognition of its economic significance was provided by the Australian Tourism Satellite Account, which was launched in October 2000. The Satellite Account figures for the year 1997-98 show that the Australian tourism industry directly accounts for 4.5 % of GDP (more than AUD25 billion per annum). Tourists consume AUD58 billion in goods and services each year, with domestic tourists accounting for 45.5 billion of this consumption, and international visitors accounting for the remaining 12.8 billion. Tourist demand directly generates the employment of more

than 513,000 people representing 6 % of total employment. This represented 11.2 % of total export earnings, making it the largest service sector exporter and the fourth largest contributor of any industry (www.abs.gov.au/ausstats). Tourism also makes a significant indirect economic contribution with the Bureau of Tourism Research estimating that tourism expenditure indirectly contributed a further AUD23.5 billion per annum to GDP, and another 340,600 jobs.
Nature based and cultural tourism is growing in popularity with many Indigenous tourism products having been developed on a sustainable basis. All sites in Australia listed as World Heritage Areas act as models for sustainable tourism because they have strict management regimes, monitor impacts, and use adequate forecasts. Adoption of environmental management systems is becoming increasingly popular with hotels and other tourist establishments.

Capacity-Building, Education, Training and Awareness-Raising: An extensive tourism training sector is supporting skill development in the tourism industry. Most States and Territories in Australia offer, mainly through the tertiary education systems, a variety of courses ranging from short courses of less than one week to three-year university degrees. The Federal Government promotes care of the natural environment by tourists and supports the development and dissemination of information on best practice sustainable tourism. The Government is also working to build professional standards for outdoor recreation leaders and tour guides.

Information: At the national level, the Bureau of Tourism Research, the Tourism Forecasting Council and the Australian Tourist Commission provide industry and government with economic, statistical and research advice to promote informed decision making to benefit sustainable tourism development. Information is also made available through State/Territory conservation and natural resource management agencies, local tourism information centres and at the entrance to tourism areas. Australia has developed a framework of regional (sub-national) level criteria and indicators based on those of the Montreal Process. The framework includes a number of indicators focusing on recreation and tourism. Australia has developed a website for the 2002 International Year of Ecotourism at www.ecotourism.org.au/IYE2002/.

Research and Technologies: In addition to that mentioned above, sustainable technologies have been implemented in tourism enterprises across Australia. These include: sun and wind generated energy, co-generation, wastewater and sewage treatment plants and design of buildings for recycling. The Commonwealth Scientific and Industrial Research Organization (CSIRO) has a significant national role in helping to develop a research culture in the Australian tourism industry and a tourism research discipline with a strong environmental emphasis. The research ministries fall under four categories: information technology for the travel industry; resort planning and management; integrating tourism into regional environment, society and economy; and evaluating future choices for the tourism industry (www.csiro.gov.au). The Cooperative Research Centre for sustainable tourism brings together researchers from universities, CSIRO and other government laboratories, and private industry or public sector agencies, in long-term collaborative arrangements which support research and development and education activities in the sustainable tourism sector (www.crctourism.com.au).

Financing: The Australian tourism industry is primarily a private sector activity. Australian Governments work with the tourism industry to respond to identified market failure and to promote objectives such as environment protection and sustainable development. Government programmes and spending to promote sustainable tourism development satisfies both criteria. The national tourism portfolio, including research agencies and advisory bodies, is funded as part of the national budget. The Regional Tourism Programme administered by the Federal Government provides funding of AUD16 million for sustainable tourism projects. All successful applicants under the Programme must provide matching funds or an in-kind contribution for the project. The Australian Tourism Commission is jointly funded by the Australian Government and the tourism industry costing approximately AUD123 million annually.

Cooperation: Australia is a member of the Asia Pacific Economic Cooperation Tourism Working Group, which addresses sustainable tourism issues as a major priority. It is also a signatory to the UNESCO World Heritage Convention (http://www.ea.gov.au/heritage/awh/index.html). Tourism activities within Australia's World Heritage properties are generally encouraged, provided they are consistent with the principles of ecological sustainability and protection of World Heritage values. Australia also supports the Asia Pacific Focal Point for World Heritage, which provides assistance to partners in the region on World Heritage planning and management issues in close collaboration with UNESCO.

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