AUSTRALIAN ACTIONS TO COMBAT DESERTIFICATION AND LAND DEGRADATION

NATIONAL REPORT BY AUSTRALIA
ON MEASURES TAKEN TO SUPPORT IMPLEMENTATION OF
THE UNITED NATIONS CONVENTION
TO COMBAT DESERTIFICATION

DECEMBER 2000

Purpose of this report

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.

As a developed, affected Party to the Convention, this national report is the first report from Australia required under Article 26 of the Convention. It is intended to provide an overview of actions in Australia in preparation for the Fourth Conference of the Parties to be held in Bonn, Germany (11-22 December 2000).

This report was prepared by the Commonwealth (Federal) Intergovernmental Working Group for the UNCCD. Due to the short timeframe between Australia's ratification of the Convention and preparation for COP4, this report presents an overview of actions rather than a comprehensive treatise of current activities. The report draws on information provided by the Working Group agencies, existing information prepared to support Australia's ratification of the Convention and published reports on the status of the Australian environment and natural resource management. These sources of information are listed in the 'References' section of the report.

Future reports will incorporate input from a broader range of stakeholders a more comprehensive summary of current actions.

All monetary figures are quoted in $AUD unless otherwise specified.

Commonwealth Intergovernmental Working Group for the UNCCD

Department of Environment and Heritage (Chair)

Department of Agriculture, Fisheries and Forestry

Department of Foreign Affairs and Trade

Australian Agency for International Development

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Summary

Australia's domestic initiatives in addressing the global problem of combating desertification are well established. The continent's erosion prone soils and climatic extremes have necessitated a coordinated and strategic approach to sustainable natural resource management. This approach focuses on collaborative approaches between all levels of government, industry and community in developing solutions.

Australian landscapes are ancient and not well suited to many of the land use and management practices imported from other continents over the last 200 years. The fact that agricultural and pastoral activity are critical components of our national economy has catalysed governments, research institutions, industry and communities to find soundly based and ecologically sustainable approaches to land management. As a result, Australia has amassed considerable experience and expertise in managing and, where feasible, reversing the decline in our natural resource base.

Australia has been proactive in assisting other affected countries with a range of financial, technology transfer and capacity building support measures.

Australian expertise in the management of arid and semi-arid landscapes has gained an international reputation for excellence. In southern Africa, internationally renowned Australian research on the El Nino/Southern Oscillation complex has been cooperatively applied by the Australian Bureau of Meteorology to develop drought forecasting systems. Through the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and other research institutions, Australia has had a long-term advisory role in desertification-related work in several Middle East countries, including Jordan, Iran and Libya. Australian expertise is also being engaged in cooperative research partnerships to address severe land degradation problems in a number of Asian countries. The National Land and Water Resources Audit is a member of the Working Group advising the World Bank led partnership across Conventions in designing the Millennium Assessment initiative.

Australia has developed a range of policy initiatives to encourage and build capacity in communities to address land degradation. The Australian "Landcare" model of community based action has been so successful it is being internationalised through the International Secretariat for Landcare (based in Hamilton, Victoria). It has been adapted in establishing 'Landcare South Africa' and interest in the movement from many other countries is growing.

Australia has, for many years, been working with developing countries affected by land degradation and desertification, including neighbours in our own Asia-Pacific region and Africa. Recognising 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 programs to combat desertification in developing countries worth approximately $43.9 million. Additionally, the Australian Government provides contributions to a range of multilateral organisations, 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 program, has funded a range of projects related to desertification. These projects, which are located primarily in southern Africa, China and India, run over the decade 1992-2002 and have a combined value of $11.5million.

Domestic Initiatives in Desertification Management

Environmental Issues and Challenges

Australia is one of the twelve most biologically diverse nations in the world, the only developed nation to have this 'megadiverse' status. Australia is also the world's driest continent, excluding Antarctica, and has a high degree of rainfall variability from one year to the next. Map 1 (Annexure 2) shows the average annual rainfall over a 30 year time span, while Maps 2a & b compare the continental 'greenness' (or satellite measure of green vegetation) during wet and dry times.

Very few of Australia's soils are naturally suited to agriculture, with most being shallow, high in salt stores and low in nutrients. Only 6 per cent of the land is arable without irrigation and large areas are naturally affected by salt, sodicity, waterlogging or acidity.

Australia's natural environment reflects the effects of at least 50,000 years of human management. Since the arrival of the Aborigines, their hunter-gatherer activities and use of fire have changed the environment and its flora and fauna. European settlement over the last 200 years has led to further, often very rapid, changes.

Agriculture is Australia's most extensive form of land use, occupying 60 per cent of the total land area (461 million hectares). Cities and towns take up less than 1 per cent (7.6 million hectares), but greater than 80 per cent of the Australian population live in these areas. Livestock grazing is by far the most extensive use of agricultural land, and areas of arid or semi-arid lands held under grazing licences make up 88 per cent of agricultural land use (406 million hectares) across the continent. Grazing intensity on these areas can be as low as one beast per 100 hectares. Other land uses, in order of area utilised, include conservation reserves, sown pastures, forestry, and other uses, such as urban.

Despite being one of the driest continents, Australia has the highest per capita consumption of water in the world. Some 70 per cent of this consumption is used to support agriculture. Average rainfall, at 469 mm/year, is not especially low, but only 12 per cent of this runs off to collect in rivers. River flow is also highly variable and these factors are exacerbated by a high degree of variability in climate.

Much of Australia's land remains publicly owned, with only 13 per cent privately owned. Most of Australia's agricultural activity takes place on long-term government (or Crown) leases that are managed by private individuals. In the rangelands, which encompass some 75 per cent (570 million hectares) of the continent, only a very small area is privately owned. The more fertile, coastal areas generally have a much higher proportion of privately owned land.

The semi-arid and arid rangelands include native grasslands, shrublands, woodlands and the tropical savanna woodlands. Map 3 represents the rainfall benchmark areas as defined by the Convention. Pastoral industries occupy 58 per cent of the rangeland area. However, the mining and tourism industries are now economically more significant than pastoralism and drive most of the infrastructure development. Aboriginal stewardship of lands is increasing, especially in central and northern Australia, with a move towards more traditional cultural use of their land. The Australian Defence Force also utilises extensive Crown pastoral leases for training purposes.

Much of Australia's agricultural land is under pressure from either soil erosion, loss of natural vegetation cover, over-use of irrigation water and the impacts of introduced invasive species. Problems such as soil salinity, acidification and rising groundwater all appear to be on the increase. The environmental impacts of agricultural activity are the result of a complex chain of biophysical and other factors, which are linked to the natural characteristics of the land. Soil fertility is declining in 33 per cent of all cropped land, more than offsetting the improvement in the fertility of 10 per cent of the land through

application of fertilisers. Map 4 highlights those areas of most concern with regard to salinity and water quality issues.

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.

Since the early 1970s, there has been an increasing awareness of and concern for environmental issues in Australia. These concerns have found expression in a broad range of community led activities. They have also led to legislation, regulation and expenditure by governments, at national, state and local level, to protect the environment.

Despite a dedicated effort from governments and the community and the range of policy initiatives to promote sustainable natural resource use, Australia still has some significant challenges ahead to achieve ecologically sustainable land management. The key challenge influencing progress is the recognised need to increase the involvement of regional communities and landholders in policy and planning initiatives to ensure ownership in and adoption of the outcomes.

There are no singular solutions for addressing land degradation and achieving ecological sustainability in Australia. The problems are numerous, varied and often site-specific and interrelated. Hence, Australia's response has been to develop an integrated package of mutually reinforcing measures that recognise this complexity. This package incorporates:

- Comprehensive and integrated regulatory frameworks;
- Processes to manage the use of surface and ground waters, including specific allocation for the environment;
- Measures to improve water quality;
- A range of incentives for improved vegetation management, retention and protection;
- Diversifying the commercial use of agricultural land;
- Measures to encourage conservation and remediation;
- Reform and strengthening institutional delivery;
- Programs to build decision making capacity at all levels through improved access to information; and
- A range of community based, voluntary programs targeted at reducing land degradation.

Legislative and Jurisdictional Arrangements

The Australian Constitution does not deal explicitly with environmental powers. Most responsibility for the environment rests with the State and Territory governments. The Intergovernmental Agreement on the Environment of 1992 coordinates the approach to environmental management by the three tiers of Australian government: federal, state and local.

At the Federal level, the Department of Agriculture Fisheries and Forestry - Australia and the Department of the Environment and Heritage are the main agencies responsible for environment and natural resource management policy. The Federal Government has responsibility for environmental issues of national significance, national environmental reporting and the implementation of international treaties and obligations.

States and Territory governments are involved in the management of land and water use and environmental protection. While the severity and extent of environmental problems vary across jurisdictions, they generally have similar land management and

environmental legislation and programs. The amount of land management and environmental legislation in each State and Territory is substantial, totalling some 300 individual Acts. All jurisdictions have legislation covering aspects of natural resource management, including land use planning, water quality and management, environmental protection, soil conservation and biodiversity conservation.

At the local and regional level, Local Government plays a key role in planning and management decisions, such as land-use zoning and tree preservation or clearing by-laws.

Coordination of environment and natural resource policies and decision-making within Australia is achieved in a number of ways. Ministerial Councils, which comprise Ministers from the relevant portfolios of the Federal, State and Territory Governments, play an important role. These Councils include:

- the Council of Australian Governments (COAG), composed of First Ministers from; Federal, State and Territory Governments and a representative of local governments
- the Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ);
- the Australian and New Zealand Environment and Conservation Council (ANZECC);
- the Ministerial Council of Forestry, Fisheries and Aquaculture (MCFFA) and
- the Australian and New Zealand Minerals and Energy Council (ANZMEC).

Another mechanism for coordination is through inter-governmental committees of officials, such as the Sustainable Land and Water Resources Management Committee, the Sustainable Resources Sub-Committee, the Standing Committee on Conservation, and the Australian New Zealand Land Information Council (ANZLIC).

National Strategies and Programs

Australia has in place a substantial body of legislation, programs and strategies for sustainable natural resource management at national, local and farm levels.

Australian governments seek consistency between policies and programs 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, 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. The **National Strategy for Rangelands Management** was prepared by a working group comprising representatives from key stakeholder groups, including government, industry, conservation, indigenous peoples and scientists. Rural and urban communities, industry and other interest groups provided significant input. The Strategy sets out a vision for Australia's rangelands based on the need for ecological sustainability and commercial viability of industry in the region. It identifies actions needed to protect and enhance the natural resources base that underlies most activity in the rangelands.

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. This initiative, being developed through a partnership between the Federal and State governments, is known as the Australian Rangelands Information System and provides a model for other countries as they establish systems to monitor the trend and condition of their resources while simultaneously providing management orientated information to resource users.

The **National Drought Policy** was agreed between the Federal, State and Territory Governments in 1992. The Policy aims to encourage primary producers and other sections of rural Australia to adopt self-reliant approaches to managing for climatic variability, maintain and protect Australia's agricultural and environmental resource base during periods of extreme climate stress and ensure early recovery of agricultural and rural industries, consistent with long-term sustainable levels. A review of drought measures triggered under the National Drought Policy was initiated as a result of the intensification of Australia's drought situation in 1994-95. Subsequent developments in drought policy have strengthened the emphasis on self-reliance and focused on the importance of drought research and development of programs aimed at maintaining a sustainable farming sector and minimising the impacts of drought on the environment.

Federal State and Territory Governments have developed a **National Weeds Strategy** in an attempt to better coordinate control efforts by the different spheres of government and landholders in addressing nationally significant weed species. A number of weeds including Prickly Acacia (*Acacia nilotica),* Rubber Vine (*Cryptostegia grandiflora),* Mesquite (*Prosopis spp),* Parkinsonia (*Parkinsonia aculeata)* and Athel Pine (*Tamarix Aphylla*) are serious pests in the rangelands and have been included in the inaugural list of 20 Weeds of National Significance.

Management of total grazing pressure is of concern to rangeland pastoralists. Total grazing pressure comes from the grazing and browsing of herbivores including stock, native species and feral pests. Grazing intensity of stock can be managed through best practice grazing management, and populations of native species are regulated through natural processes. However grazing by feral animals has had an enormous influence on the ecology of the rangelands. Compounding this, the management of feral pests is very difficult over extensive areas. The 1996 release of the rabbit calicivirus disease has reduced the grazing impact of this pest species with subsequent environmental benefits. Efforts are also being made to better manage feral populations of the larger ungulates such as horses and donkeys by population reduction and exclusion from watering points. A greater challenge is the management of populations of the smaller herbivores, such as goats.

Many rangeland areas contain habitat for rare, threatened and endangered species and have a significant number of endemic species or exhibit high species diversity. Biodiversity in these areas has been adversely affected by factors such as feral animals and weeds, modification of habitat by grazing, vegetation clearing and land degradation. The **National Strategy for the Conservation of Australia's Biological Diversity** and the recently introduced *Environment Protection and Biodiversity Conservation Act 1999* are helping to address these issues.

Governments have invested in a range of natural resource and environmental management programs to address the issues involved in the sustainable use of our natural resource base. The principal Federal Government vehicle is the Natural Heritage Trust, with funding of $1.5 billion over six years. The Trust comprises some 18 programs covering all aspects of land and water management, including Landcare, Bushcare , Rivercare, Endangered Species, Invasive Species, Property Management Planning, Farm Forestry, and Coasts & Clean Seas. These programs are described in more detail in Annexure One. The Trust is administered through partnerships between the Federal, State and Territory Governments with the bulk of funding distributed through annual grants. The Trust has focussed 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.

There is concerted action to improve the health of Australia’s river and groundwater systems. The Federal, State and Territory Governments, through COAG, have agreed on a reform framework to achieve efficient and sustainable management of Australia’s water industry. This is supported by action at the regional level, such as agreements on water use and catchment management in the Murray-Darling Basin, and a $32 million initiative

to improve efficiency of water use in the Great Artesian Basin by capping bores and replacement of open bore drains with piping, and complementary changes in water user attitudes.

The **National Action Plan for Salinity and Water Quality 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. Dryland salinity and associated water quality are recognised to be among Australia's most severe natural resource degradation problems. The Action Plan aims to motivate and enable regional communities for coordinated and targeted action to prevent, stabilise and reverse trends in dryland salinity and improve water quality and secure reliable allocations for human uses, industry and the environment. An indicative set of priority catchments and regions has been suggested. Discussions are currently being held with State governments regarding implementation of the Action Plan, with particular attention being given to providing institutional arrangements which will allow effective regional level planning and action. Funding of $1.4 billion over seven years will be provided by the Commonwealth and the states principally to undertake targeted action in 20 highly affected catchments or regions.

Research and Monitoring

The strategic policy work of the Federal and State Governments is complemented by a range of research and monitoring work examining the effects and developing innovative approaches to reducing the impacts of land degradation.

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 Coorporation, 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). The Land and Water Resources Research and Development Corporation funds and manages research programs to help develop better and more sustainable use of Australia's natural resources and thus help to maintain the industries and people reliant on those resources. Meat and Livestock Australia, an industry and government funded organisation, manages a range of research and development activities in the rangelands focussed on improving productivity and environmental management in the grazing industry. The Australian and New Zealand Land Information Council is making geographical data more accessible to the community through the coordination of policy, the development of data standards and the implementation of a national data directory system. There are many other institutions and agencies that make a substantial contribution to our 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 organisations working in the rangelands of Australia.

The National Land and Water Resources Audit, a program 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, we are quickly 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.

Indigenous Issues

Indigenous peoples have a special relationship with the rangelands and are substantial stakeholders within the region, managing approximately 18 percent of the total land area. Indigenous peoples can have concepts of conservation and land use which differ from those of other rangeland users. Uluṟu-Kata Tjuṯa National Park, owned by the region's traditional Aboriginal custodians and managed jointly with Department of the Environment and Heritage, provides an example of how indigenous knowledge is being used in rangeland management.

Through the Natural Heritage Trust, funding has been provided for a support network of Aboriginal land management facilitators. Duties of the facilitators include: raising awareness and providing information on land and nature conservation issues; facilitating the formation of group activity appropriate to Aboriginal people; assisting groups to plan and implement enterprise development and landcare activities; and assisting in the development of linkages between community groups, government agencies, non-Aboriginal landholders and private enterprise.

The Trust has also provided funding for indigenous groups to improve the management of land under their control. Activities funded include: improving fire management, revegetation for dust suppression in semi-arid communities, fencing to exclude feral animals from water sources, and planting of species suitable as native bush food sources.

International Initiatives in Desertification Management

The Australian aid program aims to assist developing countries to reduce poverty and achieve sustainable development. The aid program supports activities that address environmental problems that are likely to have severe long-term impacts on those living in poverty in developing countries. Desertification is one of these problems.

Australia's development cooperation program supports capacity building in developing countries through a range of mechanisms, particularly in the area of human resource development. For many developing countries, the most pressing problems are lack of skilled personnel and technical and institutional capacity. Australia therefore considers human resource development accompanied by capacity building measures as crucial in assisting developing countries adopt and implement sustainable policies.

Australia's experience in tackling land degradation has been important in helping other countries address their resource management problems. This is most apparent in our development assistance program and also through participation in internationally relevant research projects.

The Government's Australian Agency for International Development (AusAID) is currently supporting a range of programs to combat desertification in developing countries worth approximately $43.9 million. Additionally, the Australian Government provides contributions to a range of multilateral organisations, which either directly or indirectly combat desertification.

The Australian Government through the Australian Centre for International Agricultural Research (ACIAR) funds agricultural research activities that address desertification in developing countries. ACIAR funds research projects executed by Australian research institutions and International Agricultural Research Centres on subject areas that are of high priority to developing countries, and Australia. ACIAR also manages Australia's contributions to the core activities of International Agricultural Research Centres, including those active in desertification related research.

At present there are eight bilateral projects related to desertification totalling $7,966,039. The activities are concentrated in China, India and southern Africa. ACIAR provides an additional $2,754,948 to desertification related projects executed by International Agricultural Research Centres. In addition, Australia has distributed $1,670,000 to international research centres active in desertification research.

Desertification related activities currently supported by the Australian Government through AusAID

Bilateral Partnerships

Country	Activity Name	1999/00 Actual Expenditure	2000/01 Estimated expenses	Total Estimated Expenses ($millions)
China	Alxa Environment Rehabilitation Project	$1,327,911	$996,697	$12.3
China	Inner Mongolia Grassland Conservation	$1,390,477	$390,846	$6.8
China	Tarim Basin II	$2,190	$0	$3.9
Pakistan	Agroforestry/Salinity Control	$562,879	$820,842	$4.2
India	Watershed Development	$280,206	$208,398	$0.5
Nepal	Community Resource Management Conservation	$1,856,871	$2,806,173	$11.8
Zimbabwe	IFAD-Smallholder Dry Areas Resource Management	$1,157,761	$1,230,281	$4.3
Total		**$6,578,297**	**$6,453,237**	**$43.9**

China: Alxa Environment Rehabilitation Project

Estimated commencement 2001; estimated completion Unknown.

This project is expected to begin implementation shortly. It aims to control desertification, and eventually restore ecological balance to degraded land through improved environmental management techniques. It is intended that this will improve living standards of the rural poor. This should especially be the case in the desert fringe areas where poverty leads to overexploitation of natural resources and puts excessive pressure on already degraded eco-systems.

China - Inner Mongolia Grasslands Conservation

Commenced March 1994; estimated completion November 2000

The objectives of this project are: to introduce a range of sustainable and profitable village level enterprises (particularly for women and the under-employed); to assist with the development and implementation of policies and strategies designed to govern and control animal numbers and improve the sustainable management and utilisation of the grasslands; to upgrade the standards of animal husbandry applied by farmers and herders and expand the breed base of flocks and herds; and to strengthen the Xingan Animal Husbandry Bureau which provides services to farmers and herders.

China - The Tarim Basin II Project

Commenced July 1998; estimated completion August 2000

The Tarim Basin II Project, located in Xinjiang Uighur Autonomous Region, is intended to: increase incomes of poor minority farmers through sustainable irrigated agricultural development (irrigation system rehabilitation, land reclamation and low yield improvement

using water saved due to system improvements); establish mechanisms for sustainable development and management of water resources in the Tarim Basin; and, partially restore the "green corridor" (riverine forests and pastures in the lower reaches of the Tarim River). The total cost of the Tarim II project is around $US 300 million, the majority of which is being financed by the World Bank. Australia is contributing $US 2 million.

Pakistan: Agroforestry/Salinity Control

Commenced April 1998; estimated completion March 2003

The goal of the project is to improve community livelihoods in the Punjab province by developing and promoting sustainable biological systems for reclamation and rehabilitation of saline-affected and waterlogged lands. The major benefits of the project are expected to be: the gradual restoration of salt affected and water logged soils to productive farmland; increased community awareness of the problem and a capacity to take ameliorative measures; a strengthening of relevant Government of Pakistan institutions; and increased incomes for the communities involved.

India - Watershed Management Pre-Feasibility Studies

Commenced June 1999; estimated completion September 2000

Large areas of the states of Madhya Pradesh, Rajasthan and Himachal Pradesh need environmental protection. Tree cover has been depleted, soil erosion has increased and water tables have fallen. A pre-feasibility study is examining three sites for possible watershed management projects intended to alleviate poverty and promote sustainable land use and development.

Nepal - Community Resource Management Conservation

Commenced May 1997; estimated completion September 2002

This project is implementing activities aimed at income generation for the poor, increasing subsistence production, improving community self-reliance and conservation of the environment. The project will build upon the literacy, water supply and community forest management activities of the Nepal Australia Community Forest Project Phase 4 that was completed in April 1997.

Zimbabwe: Ifad-Smallholder Dry Areas Resource Management

Commenced March 1995; estimated completion April 2001

This project aims to provide poorer people living in selected Communal Areas with enhanced food security and incomes, based on sustainable and drought-tolerant resource management by local communities. Specific activities include the provision of improved seeds, draft animal power, micro-irrigation development and funds for credit.

Multilateral Partnerships

The Australian Government, through AusAID, provides annual contributions to a range of multilateral agencies, which either directly or indirectly combat desertification. These agencies include development banks, international environment organisations, United Nations agencies and United Nations specialised agencies.

For example, Australia provides support to the World Bank, whose assistance in controlling land degradation totalled $US 1.8 billion for the period 1990-1999. Additionally, Australia provides support to the Global Environment Facility, which has allocated since 1991 more than $US 350 million to combat desertification and deforestation.

Other specific multilateral agencies that deal with desertification and receive AusAID funding include the United Nations Environment Program and the International Fund for Agricultural Development.

Desertification related activities currently supported by the Australian Government through ACIAR

Active Bilateral Projects

TITLE	COUNTRY	DURATION	FINANCIAL LIMIT
A tropical forage and ley-legume project for southern Africa	Zimbabwe	Jan 1999 – Dec 2002	1,108,833
System modeling at ICRISAT: Increasing the effectiveness of research on agricultural resource management in the semi-arid tropics by combining cropping systems simulation with farming systems research	Ethiopia, Kenya, Malawi, Mali, Niger, Nigeria, Sri Lanka, Syria, Zimbabwe	Jan 1996 – Dec 2000	1,550,000
Regional water and soil assessment for managing sustainable agriculture	China	July 1997 – Dec 2001	1,051,513
Tools and indicators for planning sustainable soil management on semi-arid farms and watersheds	India	July 1996 – June 2001	1,657,263
Sustainable mechanised dryland grain production	China	Jan 1997 – Dec 2000	795,566
Enhanced resource-use planning for tropical woodland agro-ecosystems	Zimbabwe	Jan 1999 – Dec 2001	819,558
Capturing the benefits of seasonal climate forecasts in agricultural management	Indonesia, Zimbabwe, India	Jan 1999 – Dec 2001	982,933
Integrative technologies for assessing the extent and cause of degradation in arid community rangelands	India	Jan 2000 – June 2003	372.807
TOTAL			**7,966,039**

Multilateral Unrestricted Contributions and Projects

Multilateral Contributions	**Financial limit**
IBSRAM – International Board for Soil Research and Management	$300,000
ICARDA - International Center for Agricultural Research in Dry Areas	$220,000
ICRAF – International Center for Research on Agroforestry	$200,000
ICRISAT- International Crops Research Institute for the Semi-Arid Tropics	$650,000
IWMI – International Water Management Institute	$300,000
TOTAL	**$1,670,000**

Restricted Grants to International Agricultural Research Centres

Title	**IARC**	**Australian Collaborators**	**Country**	**Duration**	**Financial limit**
Increasing the effectiveness of research on agricultural resource management in the semi-arid tropics by combining systems simulation with farming research systems research	ICRISAT	APSRU – Agricultural Production Systems Research Unit, CSIRO Tropical Agriculture	India, Kenya and Zimbabwe	5 years (1/1/96 – 31/12/00	$1,550,000
Conjunctive water management for sustainable irrigated agriculture in South Asia	IIMI	CSIRO Land and Water	Pakistan	3 years (1/7/98 – 30/6/01)	$625,818
Integrated Nutrient Management in Tropical Cropping Systems: Improved Capabilities in Modeling and Recommendations	IBSRAM TSBF ICRISAT CIAT	APSRU, CSIRO Tropical Agriculture	Kenya Zimbabwe	3 years (1/1/99 – 30/6/02)	$434,130
Training program on the principles and practice of sustainable cropping systems	CIMMYT	none	Kenya India	2 years (1/1/99 – 31/12/00)	$145,000
TOTAL					**$2,754,948**

Glossary

ACIAR	Australian Centre for International Agricultural Research
AFFA	Department of Agriculture Fisheries and Forestry - Australia
ANZLIC	Australian & New Zealand Land Information Council
AusAID	Australian Agency for International Development
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Landcare	Landcare is a Federal Government initiative, first introduced in 1990 as a community-based grants scheme to assist landholders to improve land management activities. In 1997, the Program model was adopted to develop a diverse range of programs, utilising funding available from the Natural Heritage Trust.
NHT or the Trust	The Natural Heritage Trust

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Related Agency Websites

Australian Centre for International Agricultural Research
http://www.aciar.gov.au/

Department of Agriculture, Fisheries and Forestry (AFFA)
http://www.affa.gov.au/

The Australian Agency for International Development (AusAID)
http://www.ausaid.gov.au/

Commonwealth Scientific and Industrial Research Organisation (CSIRO)
http://www.csiro.au/

Department of Foreign Affairs and Trade (DFAT)
http://www.dfat.gov.au/

Department of the Environment and Heritage (Environment Australia)
http://www.environment.gov.au/

Environmental Resources Information Network (ERIN)
http://www.environment.gov.au/psg/erin/index.html

Land and Water Resources Research and Development Corporation (LWRRDC)
http://www.lwrrdc.gov.au/

National Land and Water Resources Audit
http://www.nlwra.gov.au

Natural Heritage Trust (NHT)
http://www.nht.gov.au

Annexure One: Natural Heritage Trust Programs

Natural Heritage Trust Program funding was first provided in 1996. The first stage of the Trust runs until mid 2002. Programs funded under the Natural Heritage Trust are listed below. Further information about the Trust and sites for each of the following programs can be found through links at:
http://www.nht.gov.au

Air Pollution in Major Cities Program

The program's goal is to reduce the impact of air pollution in urban areas and, in doing so, to contribute to the development of sustainable urban environments.

Bushcare

Bushcare is Australia's major program to conserve native vegetation. The goal of Bushcare is to reverse the long-term decline in the quality and extent of Australia's native vegetation cover.

Coasts and Clean Seas Program

The goal of Coasts and Clean Seas is the conservation, sustainable use and repair of Australia's coastal and marine environment. It provides the opportunity to conserve coral reefs, mangroves, seagrasses and significant populations of endangered species.

Endangered Species Program

The goal of the Endangered Species Program is the protection and conservation of Australia's native species and ecological communities in the wild. A feature of the program is that it addresses key threatening processes, such as introduced pests, as well as action on individual species and ecological communities.

Farm Business Improvement Program (FARMBIS)

The intention of FarmBis is to encourage individuals or groups to increase their participation in the learning activities they identify as priorities. FarmBis contributes to the costs of a farmer's participation, and will promote continuous learning by making training more accessible to those managing farm businesses.

Farm Forestry Program

The aim of the Farm Forestry Program is to encourage the incorporation of commercial tree growing and management into farming systems for the purpose of wood and non-wood production, increasing agricultural productivity and sustainable natural resource management.

The Fisheries Action Program

The Fisheries Action Program aims to rebuild Australia's fisheries to more productive and sustainable levels through:

- fish habitat restoration and protection,
- encouraging community participation in activities to improve fisheries ecosystems,
- aquatic pest control,
- ensuring that fishing by commercial and recreational fishers is sustainable and responsible,
- raising community awareness, and
- promoting related research encouraging integrated approaches to fisheries resources management and habitat conservation.

Murray-Darling 2001 (MD2001) Program

MD2001 seeks to promote the sustainable management of the land, water and other environmental resources of the Murray-Darling Basin for the national benefit of present and future generations.

National Feral Animal Control Program

The program aims to develop and implement, in cooperation with State, Territory and local Governments, a program to reduce the damage to agriculture and the environment from feral animals.

National Land and Water Resources Audit

The Audit is a NHT Program in partnership with States, Industry and Community Groups to provide an independent, objective assessment of the extent of natural resource degradation and include an economic analysis of each problem.

National Landcare Program

Projects which contribute to an integrated program of sustainable management of land, water, vegetation and biological diversity are supported by the National Landcare Program (NLP). The NLP supports collective action by communities to manage natural resources sustainably, in partnership with government.

National Reserve System

The National Reserve System will establish and maintain a comprehensive, adequate and representative system of protected areas across Australia that will contain all major ecosystems and include significant environmental values.

National Rivercare Program

The National Rivercare Program (NRP) is a major investment that is aimed at ensuring progress towards the sustainable management, rehabilitation and conservation of rivers outside the Murray-Darling Basin and to improve the health of these rivers. The NRP seeks to encourage the development of strategic and integrated responses to address identified river issues. Its focus is on inland rivers.

National River Health Program

The program's goal is to provide the information needed to reverse the degradation of Australia's inland waters.

National Weeds Program

The program is aimed at helping reduce the impact of weeds on the environment and agricultural production.

National Wetlands Program

The National Wetlands Program focuses on implementing Australia's obligations under the Ramsar Convention on Wetlands and supporting the objectives of the Wetlands Policy of the Commonwealth (Federal) Government of Australia and State and Territory wetland policies. The goal is to promote the conservation, repair and wise use of wetlands across Australia.

Oceans Policy

Australia's Oceans Policy is a major initiative aimed at developing an integrated and ecosystem-based approach to planning and management for all ocean uses in areas under Australia's jurisdiction.

Riverworks Tasmania

Riverworks Tasmania is the public name of the Tasmanian Regional Environmental Remediation Program, a wide-reaching initiative designed to improve and protect the unique environment of Tasmania by reducing and removing sources of pollution.

Waste Management Awareness Program

The goal of the Waste Management Awareness Program is to promote the benefits and practicalities of effective waste management and recycling, with an emphasis on community based activities. Projects will target those waste management and recycling issues where there is a need for national action and where support can most make a difference.

Waterwatch

Waterwatch Australia is a national water quality monitoring program that involves more than 50 000 people across Australia.

World Heritage Area Management

The World Heritage Area Management and Upkeep program's goals are to identify, protect and present Australia's World Heritage Properties.

Annexure Two: Descriptive Maps

Map 1. Average annual rainfall across the continent

This map shows the annual rainfall of Australia based on a 30 year climatology (1961-1990), state boundaries and major cities and towns in Australia. The analysis was computer generated using the Barnes successive correction technique which applies a weighted average to data reported within set grids (25 kilometres²) across Australia. The map is best printed in colour.

For more information visit
http://www.bom.gov.au/climate/austmaps/

Maps 2a & b: Normalised Difference Vegetation Index (NDVI) maps showing continental greenness during wet and dry times.

These maps show the NDVI, which is a satellite measure of green vegetation. Map 2a shows the maximum NDVI values recorded at each 1km square at any time between July 91 to June 2000 and map 2b shows minimum values of the same.

NDVI values vary with absorption of red light by plant chlorophyll and the reflection of infrared radiation by water-filled leaf cells. In most cases NDVI is correlated with photosynthesis and because photosynthesis occurs in the green parts of plant material, the NDVI is normally used to estimate green vegetation. Red indicates low greenness, through yellow, green, blue to purple which indicates high greenness.

For more information visit
http://www.environment.gov.au/psg/erin/land/monitoring/ndvi.html

Map 3. Indicative application of UNCCD rainfall benchmarks to identify Australian arid and semi arid areas as defined by the Convention

This indicative map illustrates the areas of Australia where the ratio of annual precipitation to potential evapotranspiration is between 0.05 and 0.65 as per the Desertification Convention.

The source data for the analysis comprised Mean Monthly Rainfall and mean Monthly Evaporation data at 0.025 of a degree resolution.

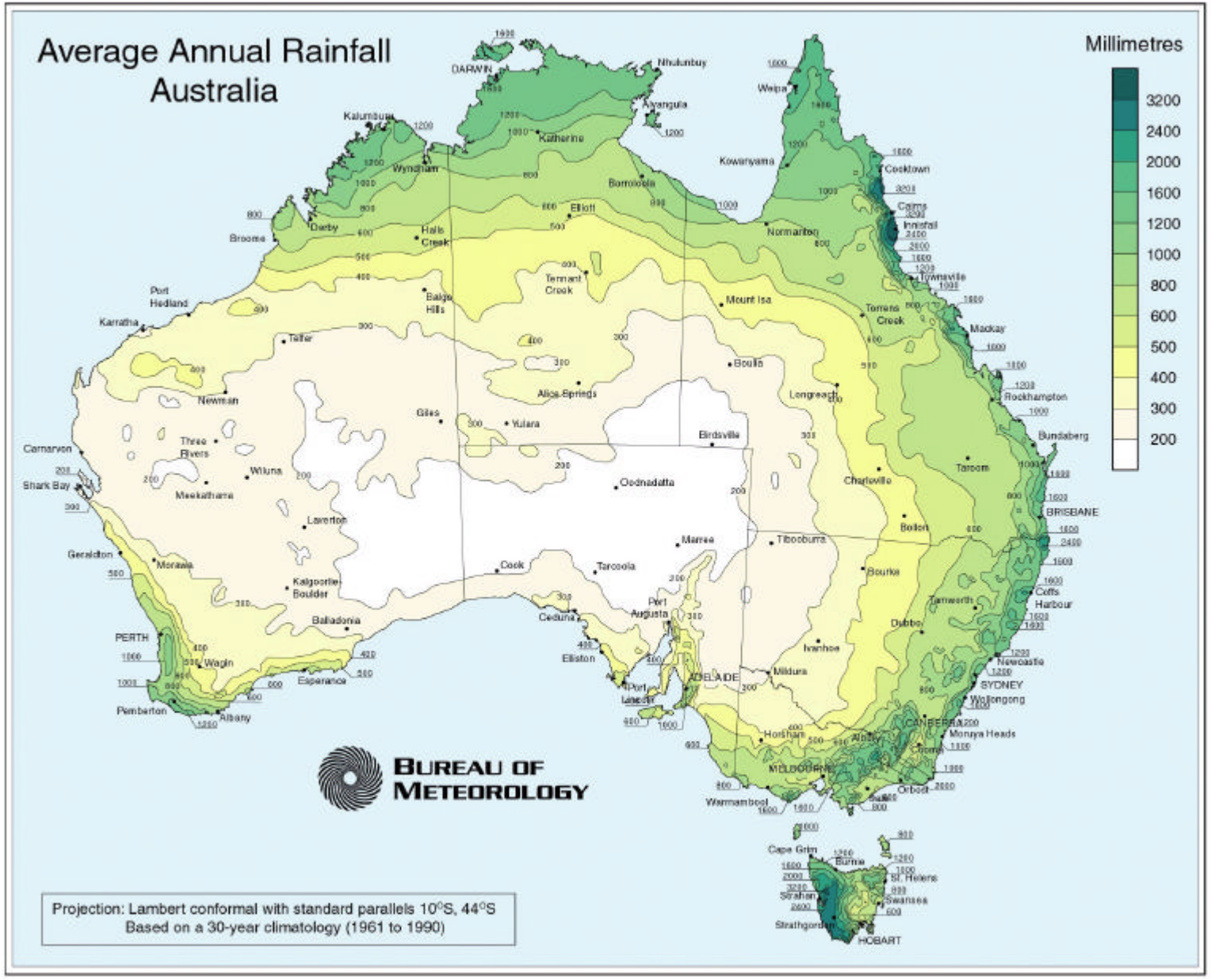
Map 4. Areas of concern from the effects of dryland salinity and reduced water quality

The salinity threat zone was determined by considering those areas where:

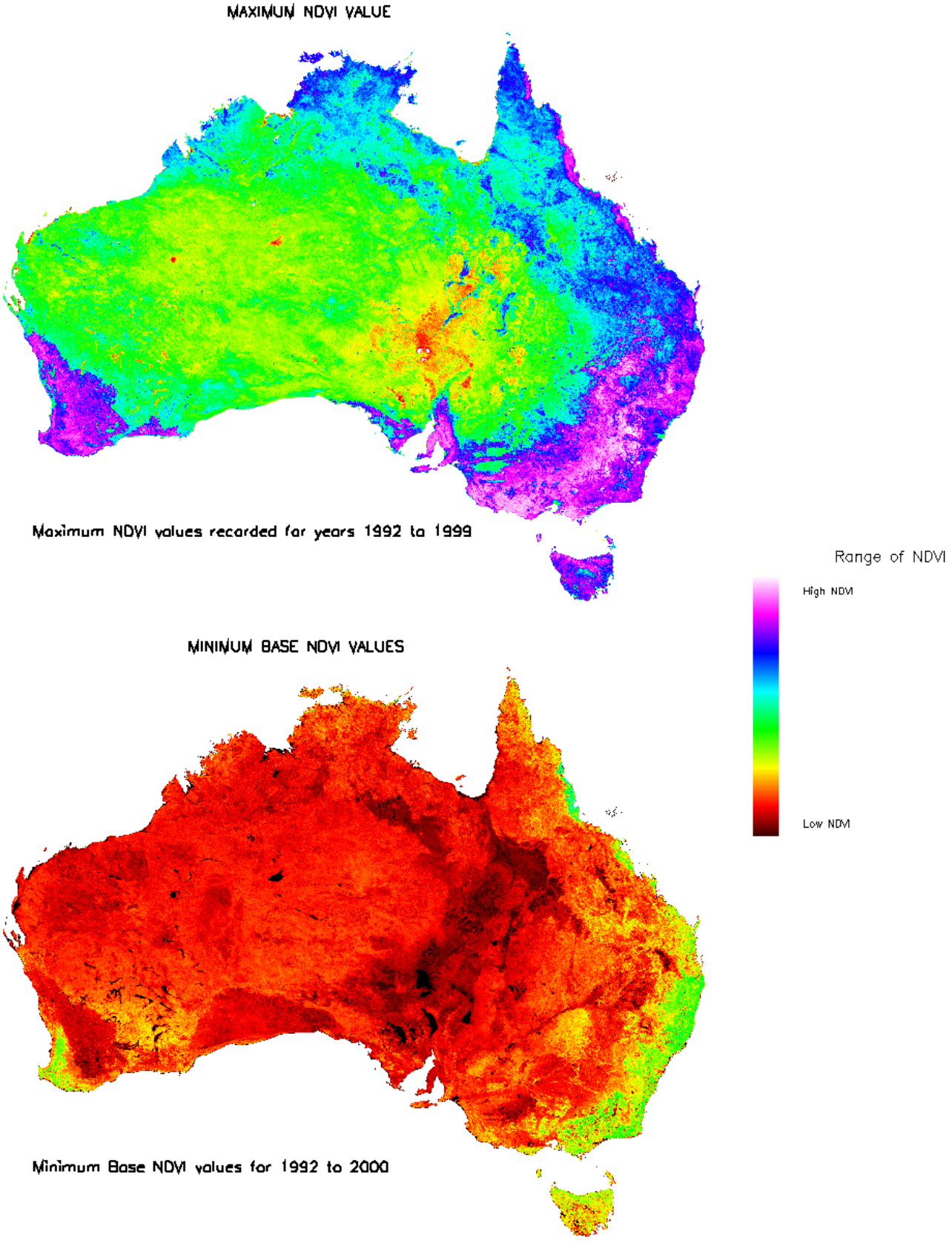
- The soil is saline (from the Digital Atlas of Australian Soils (BRS after CSIRO, 1991))
- The annual rainfall surplus over estimated evapotranspiration is between 0 and 125 mm*
- It falls within the intensive land use zone (ILZ) (from Dean Graetz et al "Looking Around: a contemporary assessment of landcover disturbance for the Australian continent" (CSIRO, 1995)).

The resulting map shows the zone where there is the potential to export salt due to rainfall surplus (based on cropping or pasture as the land use), not necessarily where the export of salt will occur. The rivers under water quality threat are primarily those rivers located within the salinity threat zone.

Map 1. Average annual rainfall across the continent

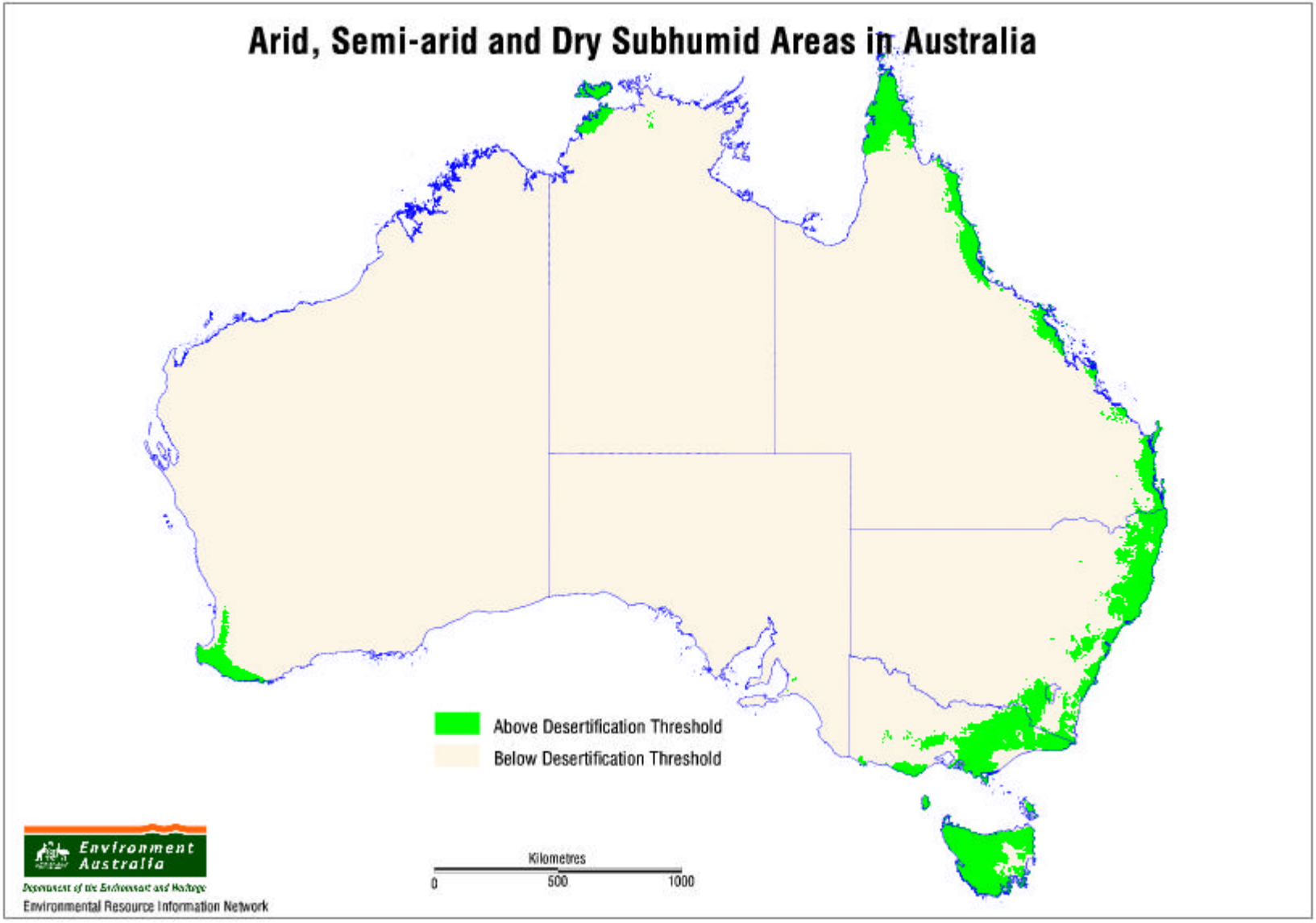


Map 2a & b. Normalised Difference Vegetation Index maps showing continental greenness during wet and dry times



Environmental Resources Information Network
Nov 23 2000

Map 3. Indicative application of UNCCD rainfall benchmarks to identify arid and semi arid areas as defined by the Convention



Map 4. Areas of concern from the effects of dryland salinity and reduced water quality