



Department of the Environment, Water, Heritage and the Arts

**Submission to the Productivity Commission Inquiry into
Government Drought Support 2008**

(11 September 2008)

Summary	2
Introduction	3
Implications of Drought for the Environment and Water Resources	4
<i>Environmental Management.....</i>	<i>4</i>
<i>Government Environmental Initiatives.....</i>	<i>4</i>
<i>Caring for our Country.....</i>	<i>5</i>
<i>Water Resources.....</i>	<i>6</i>
<i>Government Water Initiatives</i>	<i>7</i>
<i>National Water Initiative.....</i>	<i>7</i>
<i>Water for the Future</i>	<i>8</i>
<i>Commonwealth Water Act 2007.....</i>	<i>8</i>
Assessment of Drought Policy	9
Alternative Policy Approaches	10
<i>Land consolidation</i>	<i>10</i>
<i>Land use and land management change</i>	<i>11</i>
<i>Land Abandonment.....</i>	<i>12</i>
Conclusions	12
Table 1. Projected reductions in surface water availability in the Murray-Darling Basin.....	14

Summary

Drought poses a serious risk of environmental damage, particularly through vegetation loss and soil erosion, extreme pressures on natural water resources, and has long term implications for the sustainability of our natural environment and biodiversity. Water quality suffers, and toxic algae outbreaks may occur; native plants and animals are also threatened. Bushfires and dust storms often increase during extended dry periods and can have devastating effects on the natural environment⁴.

As noted in the Commission's Issues Paper, there are social, economic and environmental reasons why governments may want to help farmers prepare for, manage and recover from severe drought. Actions of farmers during drought have the potential to inadvertently damage land, water supplies, the marine environment and biodiversity. Droughts represent a time of environmental stress, and thus the natural resource base of a property can be particularly vulnerable and easily damaged.

The current 'exceptional circumstances' approach to drought policy was adopted in 1992 as part of a new National Drought Policy. Under the National Drought Policy, drought assistance is intended to help farmers prepare for, manage and recover from severe or exceptional drought. The policy has three objectives, including an environmental objective, to:

- Encourage primary producers and other sections of rural Australia to adopt self-reliant approaches for managing climatic variability.
- Maintain and protect Australia's agricultural and environmental resource base during periods of extreme climate stress.
- Ensure early recovery of agricultural and rural industries, consistent with long-term sustainable levels (Drought Review Panel 2004).

It is very difficult to demonstrate the direct cause and effect of National Drought Policy on Australia's natural environment and sustainable management of our natural resources, given the complexity of the issue and vast array of contributing factors. There is potential, however, for the existing drought support policy to have unintended, or perverse, consequences that encourage land managers to manage terrestrial and aquatic resources unsustainably. During periods of drought land use and human pressures on natural resources may exacerbate or irretrievably damage biodiversity. The immediacy of focusing on drought impacts may also prevent adequate planning and adaptation for the long term impacts of climate change on the natural environment.

Perverse environmental outcomes may occur because there are no measures within the current suite of drought support initiatives that explicitly address the national Drought Policy's stated objective to maintain and protect Australia's agricultural and environmental resource base during periods of extreme climatic stress.

Such perverse outcomes may also undermine other Australian Government initiatives aimed at encouraging sustainable management of Australia's natural environment and

⁴ Bureau of Meteorology website <http://www.bom.gov.au/climate/drought/livedrought.shtml>

water resources. In particular, the Australian Government's Caring for our Country initiative that aims to have an environment that is healthy, better-protected, well-managed, and resilient and that provides essential ecosystem services in a changing climate.

Ideally, the Government's policy settings on drought, water and other environmental outcomes such as biodiversity conservation should be mutually reinforcing. Positive environmental outcomes can be achieved alongside other drought policy objectives by directly encouraging and assisting land managers to protect, conserve and sustainably manage their natural resources through, for example, directing drought assistance to actions consistent with broader environmental goals. This approach would enhance, rather than weaken, the Government's investments in environmental initiatives to improve conservation and management of Australia's biodiversity and to promote sustainable access to, and management of water resources.

In making its recommendations on government drought support policy, the Australian Government Department of the Environment, Water, Heritage and the Arts (the Department) encourages the Productivity Commission to acknowledge the intrinsic relationship between drought, the environment and water access and availability and the need for policy settings to recognise this relationship.

In doing so, the Productivity Commission may wish to assess potential impacts on land use, and the implications of those impacts for the environment and the sustainable management of natural capital when considering alternative policy approaches to drought support. It would also be prudent to ensure any alternative policy approaches are connected with environmental datasets, as this would serve as a surrogate measure of how drought funding was serving to offset land managers' need to "draw down" their natural capital, and hence impact on the natural environment more broadly.

Introduction

The Department develops and implements national policy, programs and legislation to protect and conserve Australia's environment, water resources and heritage and to promote Australian arts and culture.

The Department addresses matters of national environmental significance, water resource management and Australia's Antarctic interests by:

- advising the Australian Government on its policies and programs for the protection, conservation and use of the environment, water resources and heritage
- administering environment, water resource and heritage laws, including the *Environment Protection and Biodiversity Conservation Act 1999*
- managing the Australian Government's environment, climate change, water resource and heritage programs including the Water for the Future Program, Caring for our Country, and a package of measures to respond to climate change
- working with government, industry, community stakeholders and international forums to protect and conserve the environment, improve the sustainable management and efficient use of water resources
- implement an effective response to climate change.

Throughout Australia, environment, water, heritage and arts issues are also managed by other levels of government. In this context, the Department has a specific interest in the National Drought Policy's objective to 'maintain and protect Australia's agricultural and environmental resource base during periods of extreme climatic stresses, as it directly relates to the Department's core responsibilities.

Implications of Drought for the Environment and Water Resources

Environmental Management

Regional Natural Resource Management Boards have expressed concern about the current drought's long term impacts on sustainable natural resource management. In particular, the recent drought has impacted on environmental issues including impact on soil condition, damage to exclusion areas, protection of fragile areas such as remnant vegetation and erodable creek lines and irreparable damage to groundwater⁵. Some parts of the environment are already under extreme pressure. For example, a recent assessment of the ecosystem health of the 23 valley systems in the Murray-Darling Basin showed that 13 were in very poor condition, seven were in poor condition, two were assessed as moderate and just one was in good condition.⁶

The current drought is also having a severe impact on native species and these impacts are likely to increase with the additional long-term pressures from climate change. For example, it is thought that some native bird species will move south in bigger numbers and for longer periods, while kangaroos, emus and wombats will move south and into adjacent farmland causing management issues.⁵ The impact and range of invasive species will also change, and their impact on plants and animals already affected by drought is likely to increase.

However, given the limitations of current data collection, it is difficult to provide definitive scientific data on the condition of the environment directly linked to the drought (other than water availability), or the government's response to it. It would also be very difficult to analyse the effectiveness of a single policy, such as drought support policy, in the prevention of environmental damage.

Government Environmental Initiatives

The drought has had a significant impact on the delivery of joint regional investments for conservation, protection and the sustainable management of natural resources over the last three years. This impact has been both in terms of significantly delaying the completion of and/or changing the outcome of natural resource management investments which were climate dependent. Common examples include extension of timeframes for completion of projects by up to two years, reduced outcomes for such

⁵ South Australian Natural Resource Management Council, Presentation from Natural Resources Management Council, Premier's Industry Leaders Forum on Drought, 14 November 2006, South Australia.

⁶ Davies P, Harris H, Hillman T & Walker K, 2008. *A report on the ecological health of rivers in the Murray-Darling Basin, 2004–2007*. Prepared by the Independent Sustainable Rivers Audit Group for the Murray–Darling Basin Ministerial Council.

investments (e.g. through the loss of plantings to improve native vegetation cover) and varied outputs to accommodate drought (e.g. instead of undertaking revegetation activities, fencing of riparian areas have been undertaken to achieve a similar outcome in terms of biodiversity protection/enhancement).

The need to encourage better management of environmental impacts during periods of drought has been recognised over recent years in regional environmental and natural resource management investments. To address this need there has been a significant increase in targeted property-scale planning, linked to incentives and training for landholders to achieve improved land management including conservation and management of high value biodiversity.

Caring for our Country

The Australian Government has recognised that there is a pressing need to protect Australia's unique natural environment and to improve the sustainable management of our natural resources. Consequently, it has refocused its natural resource management programs in the new \$2.5 billion Caring for our Country initiative to better target national priorities.

The goal of Caring for Our Country is to have an environment that is healthy, better-protected, well-managed, resilient, and that provides essential ecosystem services in a changing climate. Caring for our Country focuses on achieving strategic results and will invest in six national priority areas:

- a National Reserve System
- biodiversity and natural icons
- coastal environments and critical aquatic habitats
- sustainable farm practices
- natural resource management in remote and northern Australia
- community skills, knowledge and engagement.

Caring for our Country incorporates a range of programs that build on previous environmental and natural resource programs, and takes advantage of current thinking and that of indigenous knowledge of protecting and managing land and sea country.

In 2003 the Reef Water Quality Protection Plan⁷ identified unsustainable land-based activities as the main source of pollutants entering the Great Barrier Reef. Large sediment plumes occur with drought breaking rains, impacting on the water quality of the Reef. Reduction of erosion at these times is a high priority with significant areas of cleared grazing land in the catchment being susceptible, particularly with overstocking.

The Reef Rescue Plan, a component of Caring for our Country, seeks to address the combined threats of climate change and declining water quality on the Great Barrier Reef. Actions to retain nutrients and sediment within the catchment are one of the means identified to improve the quality of water that runs off into the Great Barrier

⁷ Reef Water Quality Protection Plan website <http://www.reefplan.qld.gov.au/>

Reef. Leading practice grazing management, including assessment of stock carrying capacity and de-stocking where necessary, is acutely important during drought events.

The National Reserve System, Australia's network of parks, reserves and other protected areas, is a vital component of the national effort to conserve Australia's native plants and animals. The three aims of the National Reserve System are to:

- Buy high priority land to be turned into a protected area
- Establish protected areas on privately owned high priority land
- Develop cooperative arrangements between Indigenous groups and nature conservation agencies for the management of protected areas.

The National Reserve System includes national criteria for accrediting protected areas on private land. The National Reserve System is of particular relevance to farmers who may be looking at adjustment options resulting from the pressures of managing land during extended drought periods.

A National Framework is soon to be developed to guide farmers and other stakeholders, who establish, plan for, manage and/or support National Reserve System protected areas on private land. The Framework will aim to accelerate and improve the management of protected areas on private land and will:

- establish a framework for administering philanthropic and/or market-based sources of funds secured to promote National Reserve System objectives
- develop a branding system for accrediting National Reserve System level protected areas on private land to:
 - better recognise and acknowledge landholder contributions to the National Reserve System
 - facilitate access to funds and other incentives
 - provide certainty for landholders seeking to maximise their access to any future benefits from revisions to the taxation system.

It is not the intent of Caring for our Country and other environmental programs to address the deficiencies in the current drought support policy in respect of maintaining and protecting the environment during periods of drought. However, such programs do play a significant role in protecting and improving the sustainable management of Australia's natural capital. Every effort should be made when considering alternative drought policy approaches to avoid perversely undermining investments made under the \$2.5 billion Caring for our Country and other environmental initiatives.

Water Resources

The current extended drought affecting a large portion of Australia has caused significant adjustment pressures in recent years and the associated reductions in water availability are having a significant impact on both the irrigation sector and the environment. The current drought has seen water availability fall below that projected under longer term climate change, which has seen some communities experience dislocation and economic stress, particularly in the Murray-Darling Basin.

The CSIRO Sustainable Yields project⁸ currently underway suggests that there will be significant reductions in water available in the Murray-Darling Basin primarily as a result of climate change (see Table 1).

Noting that the impacts of water scarcity will affect other regions outside the Murray-Darling Basin, the CSIRO Sustainable Yields project is being extended to other states including south-western Western Australia, Tasmania, and the Northern Australia.

In future, water availability for productive use is expected to be further reduced by climate change and policy changes to return more water to the environment. Reduced water availability will thus continue to be a key driver for change, particularly in the irrigation industry. Efficient and more productive water use will become increasingly important over the coming decades as increasing water pressures impact upon the continued sustainable production by Australia's rural sector, urban communities and Australia's natural environment.

Government Water Initiatives

A well developed national water policy framework exists to assist farmers adjust to drought and climate change, principally through the National Water Initiative reforms (e.g. entitlement security, planning and trading in particular), Water for the Future investments (e.g. assisting people with efficiency measures in particular) and the *Commonwealth Water Act 2007*. These initiatives recognise that sustainable access to, and management of, water resources is imperative to a healthy natural environment and water system.

As with the Australian Government's environmental initiatives, it is not the intent of these water initiatives to address any deficiencies in the current drought support policy in respect to improved water management and use, and to maintaining and protecting the environment during periods of drought.

Ideally, the government's policy settings on drought, water and the environment should be mutually reinforcing. For example, it is clear that improving the operation of water markets in Australia will support decisions by irrigators to reduce production of irrigated products (i.e. sell their annual water allocation), or to maintain/increase production by buying water. The sale of water can provide an additional source of income for irrigators in dry years. Over the medium and longer term, irrigators may decide to sell their ongoing water entitlement. The efficient operation of water markets can therefore support adjustment by this means.

National Water Initiative

The National Water Initiative (NWI) is Australia's blueprint for national water reform. The overall objective of the NWI is to achieve a nationally compatible

⁸ CSIRO Murray-Darling Basin Sustainable Yields website
<http://www.csiro.au/partnerships/MDBSY.html>

market, regulatory and planning based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes. The NWI is therefore a reform agenda designed to set the framework across the nation for long term sustainable water management. The Australian Government and all states and territories are Parties to the agreement.

Key elements of the NWI are:

- Water access entitlements and planning framework
- Water markets and trading
- Best practice water pricing
- Integrated management of water for environmental and other public benefit outcomes
- Water resource accounting
- Urban water reform
- Knowledge and capacity building
- Community partnerships and adjustment.

Water for the Future

On 29 April 2008 the Minister for Climate Change and Water, Senator the Hon Penny Wong announced the Government's new \$12.9 billion national plan 'Water for the Future' that aims to secure the long term water supply of all Australians. The overarching objectives of Water for the Future are to take action on climate change, use water wisely, secure water supplies and support healthy rivers and waterways. Water for the Future will strengthen the role of the NWI as the blueprint for continuing water reform.

This initiative includes the following programs relating to rural and regional Australia:

- The Restoring the Balance in the Basin program will purchase water entitlements from willing sellers \$3.1 billion will be spent on water purchase under this program over ten years.
- The \$5.8 billion Sustainable Rural Water Use and Infrastructure program will be investing in infrastructure improvements and other projects to help communities make an early adjustment in anticipation of the new Murray-Darling Basin cap. Where a share of water savings is acquired by the Government these entitlements will also be managed as part of the environmental water holdings.

Commonwealth Water Act 2007

The *Commonwealth Water Act 2007* (The Act) commenced on 3 March 2008. The Act implements key reforms for water management in Australia and will enable water resources in the Murray-Darling Basin to be managed in the national interest, optimising environmental, economic and social outcomes. Based on the Australian Government's own constitutional powers, the Act establishes:

- an independent Murray-Darling Basin Authority and statutory Basin Plan
- a sustainable integrated limit on diversions
- the Commonwealth Environmental Water Holder (CEWH)
- best practice water pricing through charging and market rules (Australian Competition and Consumer Commission)
- standard water information, collection and use (Bureau of Meteorology).

The Murray-Darling Basin Authority is charged with ensuring that water resources of the Basin are managed in a sustainable way in the national interest. The CEWH is charged with managing the Australian Government's environmental water entitlements to protect and restore the health of environmental assets, such as our valuable rivers and wetlands, in accord with international agreements.

The Act provides for the creation of a plan for water resource management and water rights trading in the Murray-Darling Basin and rules that govern water market behaviour and water charges in the Basin. The plan will be enforced by the Murray-Darling Basin Authority and the rules by the Australian Competition and Consumer Commission. The Bureau of Meteorology has a responsibility under the Act to collect and publish water information and establish a National Water Account.

As a result of the signing of the Intergovernmental Agreement (IGA) on Murray-Darling Basin Reform at the 3 July 2008 meeting of COAG, amendments to the Act will now be progressed, including enabling the Basin Plan to provide arrangements for critical human water needs. To give effect to these and other specific reforms agreed through the IGA, the Australian Government will amend the Act as well as the Basin State Governments passing legislation providing for a limited text referral of powers to the Australian Government.

Assessment of Drought Policy

Of the suite of initiatives under the current drought support policy, none directly address the policy's objective to maintain and protect Australia's agricultural and environmental resource base during periods of extreme climatic stress. The current initiatives may in fact be exacerbating environmental degradation as a result of farm businesses delaying necessary structural adjustment. For example Australian Bureau of Agricultural and Resource Economics (ABARE) notes that⁹:

The current business support measures under the drought assistance program include interest rate subsidies and exit grants. These can distort the decisions that farmers might otherwise make to pursue productivity gains, encouraging the accumulation of excessive levels of debt or delaying adjustment decisions. These measures also appear to reduce the incentive that farmers have to use risk management tools, such as farm management deposits, to manage fluctuations in cash flow caused by climate variability.

Recent Centrelink data on Exceptional Circumstances Relief Payment (ECRP) in the Murray-Darling Basin on the extent of assistance being provided to the irrigation sector supports ABARE's position. Of approximately 5,105 Murray-Darling Basin irrigators receiving ECRP, only 20 irrigators have accessed the exit grant component of the program since Murray-Darling Basin irrigators become eligible for ECRP in September 2007. This could suggest that the range of other incentives available to irrigators encourages them to stay on the land, rather than exit when agricultural and horticultural land uses become unsustainable.

⁹ ABARE, 2008. 'Australian Agriculture: Opportunities and Challenges in the Medium Term', *Australian Commodities March Quarter* Vol 15 No 1, p 28.

Drought assistance programs have been shown in the past to provide significant perverse incentives that often keep stock on the land longer, through for example supplementary feeding, exacerbating the environmental impacts of a drought and increasing the likelihood of downstream impacts e.g. within the Great Barrier Reef catchment.¹⁰

Well managed land is preferable for environmental, economic, cultural and social outcomes. Apart from natural stresses which drought puts on the land, it obviously puts stress on land managers and reduces their financial and other capacity to manage the land effectively. Over the long term, drought support may also decrease incentives for farmers to adjust by changing land use or exiting. This delayed adjustment may be maintaining economically inefficient levels of overall water use in the irrigation industry, exacerbating broader environmental pressures and undermining government environmental and water initiatives, by:

- limiting or delaying de-stocking of grazing land, resulting in over grazing and environmental degradation
- lost opportunity for sound management of water resources and natural capital through changes in land use and /or farm consolidation.

Alternative Policy Approaches

Questions about policy settings become more pressing if drought support policy is seen through the prism of adaptation to climate change. In other words, if exceptional circumstances are no longer exceptional, then policy settings need to enable not simply adjustment but specific short-term, medium and longer term adjustment options for farmers. The manner in which this adjustment occurs – its pace and form – will be critical to environmental values and farmers' capacity to adapt to climate change.

Thought should be given to the broader issue of what happens to the land if changes are made to the current incentive structure. There are at least three possible adjustment options for farmers, all of which have natural resource management implications:

1. Land consolidation
2. Land use and land management change
3. Land abandonment

Land consolidation

Land consolidation is often an ideal method for profitable land managers to maintain and/or improve their operations and management of their natural capital due to economies of scale. However, current drought support policy often impedes this expansion due to the support given to less viable neighbouring farms, which may discourage them from making land available for sale.

¹⁰ Reef Water Quality Protection Plan website <http://www.reefplan.qld.gov.au/>

A further impediment for the exit of unviable farmers from the industry is that of local planning regulation, which generally restricts the division of the family home and the remainder of the property. Such regulations do not allow a farmer to remain in the family home and sell the remainder of the property. While this issue is not directly related to Australian Government drought support policy, it is exacerbated during times of drought and could be considered in future drought policy approaches.

Due to these constraints, land may be poorly managed due to lack of resources or capacity, or left unmanaged, encouraging weed infestation and feral animal numbers to increase. It would be beneficial for alternative policy approaches to take these impediments into account.

Land use and land management change

Under land use change, the profit mix of a farm is expected to change. This may include such activities as:

- reconfiguring of the farm away from irrigation to dry land cropping, allowing the sale of water entitlements
- the provision of conservation services through land stewardship, or other management improvements such as farm-based planning for sustainable agriculture that is sensitive to the broader landscape context.

Water trading has played a vital role in assisting (irrigation) farmers during this period of ongoing drought and very low water allocations, and gives them much greater flexibility in the way they operate their businesses and manage their risks.

For example, the market allows high value horticulturalists and farmers with permanent plantings to purchase additional water and maintain production. Farmers with relatively low value crops can maintain an income by selling their annual water allocation and leaving their farm temporarily fallow.

Water trading also allows farmers in marginal areas or those looking to leave the land to permanently sell their water to higher value areas and exit the industry with additional resources for adjustment. In many instances, sale of a farmer's water may be worth much more than the land itself.

The Australian Government's water purchasing program "Restoring the Balance in the Basin" also provides an opportunity to those irrigators who desire to sell their water entitlements in order to reduce their ongoing involvement in irrigation agriculture, while remaining on the land.

It is important that land stewardship initiatives to maintain and protect Australia's natural capital are continued during periods of drought. Stewardship schemes include land management practices such as fencing of riparian zones, whole farm planning, rehabilitation of degraded land, water point distribution, and feral animal and noxious weed control.¹¹

¹¹ South Australian Natural Resource Management Council, Presentation from Natural Resources Management Council, Premier's Industry Leaders Forum on Drought, 14 November 2006, South Australia.

The Australian Government has recognised the benefits of incentive-based schemes to improve environmental conservation and management. The Government already has a scheme to purchase high value conservation outcomes for the public good, in the Environmental Stewardship Program under the Caring for our Country initiative.

The objective of the Environmental Stewardship Program is to maintain and improve the quality and extent of targeted high public value environmental assets on private land. Environmental assets are targeted from the following matters of National Environmental Significance as listed under the *Environment Protection and Biodiversity Conservation Act 1999*:

- nationally endangered or vulnerable species and ecological communities
- migratory species and wetlands for which Australia has international responsibilities
- natural values associated with world and national heritage places.

The Environmental Stewardship Program engages private land managers in long-term (up to 15 years) contracts to manage these assets, using a range of market based approaches where appropriate. Through these contracts the Government aims to secure enduring improvements to land management practices to protect and enhance environmental assets.

Land Abandonment

Farmers broadly provide intrinsic environmental benefits through their legislative requirements to management land appropriately (e.g. duty of care) and it is generally considered that this level of care is of greater value to society than if land was simply abandoned. However, the Government has a significant role to rehabilitate and effectively manage unoccupied land, or land that is no longer used or viable for productive purposes, for conservation outcomes. A key example of the Government's role in this regard is the growing number of ex-farming properties protected and managed under the National Reserve System for national biodiversity conservation objectives.

Where incentive or potential for land abandonment was increased by an alternative policy approach, consideration of the environmental implications of this drought policy strategy at the property and landscape scale would be required. How such a policy approach supports the broader objectives of government environmental and natural resource management programs would also require investigation.

Conclusions

The Government's policy settings on drought, water and other environmental outcomes such as biodiversity conservation should be mutually reinforcing. The Department encourages the Productivity Commission to acknowledge the intrinsic relationship between drought, the environment and water access and availability, and the need for policy settings to recognise this relationship.

The existing National Drought Policy and drought support measures do not adequately reflect the potential environmental consequences of assistance to farmers, and thereby gives rise to the likelihood of perverse incentives. In so far as the current policy settings distract the capacity of farmers and other property managers to reflect the full environmental costs and benefits in their production costs and revenues, substantial decisions are likely resulting in longer term distortions manifested as adverse environmental outcomes. Similarly, with access to and use of water, particularly irrigation, drought assistance could result in continued water allocations to properties that are, in the medium to long term, most likely unsustainable.

A revised National Drought Policy should recognise these potential perverse outcomes. It should focus on avoiding inefficiencies in support to the agricultural sector so that rural industry adjustment occurs in response to actual revenues and production costs, including full environmental costs. Policy settings must also allow the agricultural sector to incorporate into production decisions the scarcity value of water and the ecological value of environmental flows, without water price signals being undermined by drought relief.

Positive environmental outcomes can be achieved alongside other drought policy objectives by concurrently encouraging and assisting land managers to protect, conserve and sustainably manage their natural resources. This approach would enhance, rather than weaken, the Government's investments in environmental initiatives to improve conservation and management of Australia's biodiversity, and to promote sustainable access to, and management of, water resources during times of drought.

In the future, it would be prudent to connect drought support policy decisions to regional scale assessments of land cover, soil carbon and other appropriate measures of environmental health. This would serve as a surrogate measure of how drought funding was serving to offset land managers need to 'draw down' their natural capital, and hence impact on the environment more broadly.

Alternative drought policy mechanisms should include incentives and support for farmers to adopt sustainable land management practices in the recognition that the ecologically sustainable management of natural resources is a public good, and not purely a private benefit. This would involve promoting public good outcomes as one of the commodities land managers can provide in addition to the traditional set of commodities such as food and fibre. Enterprise level and landscape scale planning should be included in the sustainable land management techniques that are encouraged by incentives.

A revised drought support policy should recognise that there are a number of policy objectives to be delivered through drought policy and drought assistance to farmers. The impacts on water and the natural environment during extended periods of extreme climate stress and variability need to be part of this matrix. There is scope in the future for a more balanced National Drought Policy that achieves sustainable environmental outcomes alongside other social and economic objectives.

Table 1. Projected reductions in surface water availability in the Murray-Darling Basin

Region	Area of MDB	Population	Irrigated area in 2000 (hectares)	Projections on surface water availability, percentage change from historical average (1895-2006)	
				If 1997-2006 climate continues	Best estimate of future climate by 2030
Warrego	7		300	na	-7
Paroo	3.4	700		na	-3
Border Rivers	4	50,000	75,300	na	-10
Namoi	3.8	88,000	112,000	na	-5
Gwydir	2.3	26,500	85,000	na	-10
Macquarie-Castlereagh	6.9	180,000	77,500	na	-8
Condamine-Balonne	13	182,000	112,000	na	-8
Barwon-Darling	13	50,000	63,000	na	-8
Moonie	1.4	1,700	6,200	na	-12
Eastern Mount Lofty Ranges	<0.1	52,000	13,200	-23	-18
Wimmera	3	50,000	6,000	-53	-21
Ovens	0.7	46,000	7,700	-27	-13
Lachlan	8	90,000	47,900	na	-11
Goulburn-Broken	2.1	144,000	177,600	-41	-14
Loddon-Avoca	2.3	142,000	127,000	-50	-18
Campaspe	0.4	42,000	32,500	-54	-16
Murrumbidgee	8.2	500,000	426,400	-30	-9
Murray	19.5	309,000	539,900	-30	-14