



Drought and water policy in Australia: Challenges for the future illustrated by the issues associated with water trading and climate change adaptation in the Murray–Darling Basin[☆]



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ABSTRACT

This paper reviews historical and existing drought and water policy in Australia in order to gain a sense of the strengths and weaknesses in enabling effective adaptation to climate change. In particular, (a) the social, economic, and environmental costs and benefits of water trading and (b) the limitations of using 'market-based' instruments (MBIs), like water trading, for adapting to drought and water security related climate change impacts are investigated. It was found that water trading has potential as a climate change adaptation strategy with many benefits experienced in previous and current versions of water trading. However, there are also limitations and those negatively impacted by water trading are hit hard. These social impacts of water trading have not been thoroughly investigated and are not well understood. Significant uncertainty also exists around the impacts of water trading on the environment (e.g. changed hydrological regimes, underestimation of sustainable environmental flows etc.). Proper quantification of these impacts is needed, however, it is a complex task given Australia's large hydroclimatic variability and the current lack of understanding as to how to optimise water needs of the environment, humans, agriculture and other industries. It appears that 'cap and trade' quantity-based MBIs such as water trading will eventually do what they are designed to do (i.e. reallocate a resource to 'high value' users). However, given that the 'low value' users in this case are agriculture and town/urban water supply (not including drinking water) and the 'high value' users are mining, manufacturing, and electricity production (i.e. high greenhouse gas emissions), do we really want the water trading MBI to achieve its objective? And, what would the social and environmental ramifications of such a shift in water use within Australia be? These questions, along with the limitations and potential implications of using water trading (and MBIs in general) as a climate change adaptation tool, must be carefully considered if past Australian drought and water policy failures are not to be repeated.

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1. Introduction

Whilst the magnitude and impacts of anthropogenic climate change remain uncertain (e.g. Blöschl and Montanari, 2010; Montanari et al., 2010; Verdon-Kidd and Kiem, 2010; Kiem and Verdon-Kidd, 2011; IPCC, 2012), the need to address climate related risk and vulnerability continues to be both necessary and urgent, particularly in relation to drought and water security across much of urban and rural Australia (e.g. Nelson et al., 2008;

Fragar et al., 2010; Rickards, 2012; Kiem and Austin, 2013a). Unfortunately, there is widespread acknowledgement that past policy responses to drought and water resources management have not worked effectively and are unlikely to do so in the future (e.g. Edwards et al., 2009; Productivity Commission, 2009). As such, there has recently been a shift in the scale, priorities and strategies of traditional drought and water policy in Australia, best illustrated by the multiple revisions and major debate associated with the Murray–Darling Basin (MDB) Plan (www.mdba.gov.au/basin-plan). The MDB Plan proposes to change the way water is allocated between social, economic and environmental stakeholders within the Murray–Darling Basin, an area that is home to more than two million people and produces more than a third of Australia's food. Part of this involves the use of water trading as a market-based instrument (MBI) for climate change adaptation (i.e. to ensure water allocations set by the Murray–Darling Basin

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Authority are met). However, previous work (e.g. [Connell and Grafton, 2011](#); [Wei et al., 2011](#); [Kiem and Austin, 2013a, 2013b, 2013c](#)) has found (and debate surrounding earlier versions of the MDB Plan also illustrated) that there is confusion and uncertainty associated with existing and proposed water and drought policy, especially water trading – both with respect to what it means for stakeholders and whether it will actually be successful in reducing vulnerability to climate variability and change.

This paper first presents an overview of historical and existing drought and water policy in Australia in order to gain a sense of the strengths and weaknesses in enabling effective adaptation to climate change. Investigation is also conducted into the social, economic, and environmental costs and benefits of water trading with insights gained into the implications of using MBIs for climate change adaptation. Other limits and barriers to climate change adaptation uncovered while conducting this research are also discussed.

2. Drought and water policy in Australia: an historical overview

Management of Australian water resources has elicited an extensive and long-running response from successive governments. Drought policy existed in various guises throughout the 1900s, largely as a focus of broader agricultural policy frameworks (see [James, 1973](#)). Until the late-1980s, drought was thought to be a climatic abnormality and as such was treated with disaster relief policies and Exceptional Circumstances (EC) payments in a similar way to floods, earthquakes and cyclones ([Botterill and Wilhite, 2005](#)). During the late-1980s, however, the view of drought as a one-off, unpredictable and unmanageable natural disaster began to be questioned in scientific and policy circles. Drought was subsequently removed from national disaster relief arrangements, and a task force was initiated to shape the most appropriate response to drought.

Subsequently, the National Drought Policy (NDP) was established in 1992 through collaboration between State and Commonwealth Governments. The NDP was based on principles of self-reliance, risk management and an understanding that drought is an inherent feature of the Australian environment ([Nelson et al., 2010](#)). Despite a focus on the agricultural sector assuming greater responsibility for climate risks, provisions were included for EC whereby applications for assistance could be made in times of severe drought. The primary avenue for government assistance was the Rural Adjustment Scheme (RAS, previously termed the Farmers' Debt Adjustment scheme and also the Rural Reconstruction schemes) and the Farm Household Support Scheme (FHSS). The RAS adopted structural adjustment initiatives to improve farm productivity, profitability and sustainability. These initiatives included interest rate subsidies, commercial borrowings, and small grants, all of which were subject to substantial increases under a provision of EC. The FHSS, however, was aimed at encouraging unviable farmers to exit the industry ([Botterill and Wilhite, 2005](#)). Together, the policy framework was viewed as a holistic response to recurrent drought events.

However, during the 1990s, drought policy faced challenges and debates resulting both from the accumulated effects of decades of inadequate drought response and from the most recent concerted attempts to address policy shortcomings and establish farming self-management and sustainability. Along with considerable political pressures from welfare, academic and influential industry groups, the challenges facing governments included:

- widespread inconsistency, abuse and normalisation of EC declarations;
- increasing focus on government intervention rather than self-management and sustainability;
- the situation where EC payments artificially kept unviable and/or poorly managed farm businesses afloat – this view of EC payments as “*money wasted on people that shouldn't be farming anyway*” emerged frequently throughout the [Kiem and Austin \(2013a, 2013b, 2013c\)](#) interviews, surveys and workshops and is consistent with [Burke \(2010\)](#);
- evidence of widespread welfare gaps in the farmer support system ([Botterill and Wilhite, 2005](#)).

Successive reviews and amendments of the NDP and RAS occurred throughout the late-1990s and 2000s. Changes included: further clarification and separation of EC declarations and processes; adjustments to interest rate subsidies; Exit Grants (a one-off payment of up to \$150,000 for farmers who sold their farm enterprise); income support; and increasing access to social and economic support services. However, despite these changes, many of the issues surrounding drought and water management policy in the 1990s have continued into the 21st century (for further details refer to recent reviews of Australian water and drought policy by [Henderson \(2012\)](#), [Botterill \(2013\)](#) and [Botterill and Cockfield \(2013\)](#)).

Drought and water policy makers in Australia are now faced with a number of recommendations which, in line with a strengthening focus on climate change adaptation, recognise more than previous efforts the critical importance of moving beyond crisis management towards supporting long-term, sustainable and coordinated drought policies. Importantly, there is now a recognised need to rethink the NDP and particularly the EC provisions, which are ineffective and inequitable, perversely encourage poor management practices, create unnecessary stress for families, and provoke resentment between farmers and farming regions based on inclusion criteria in the scheme ([Drought Policy Review Expert Social Panel, 2008](#) (also known as the Kenny Report); [Productivity Commission, 2009](#); [Kiem and Austin, 2013a, 2013c](#)). The reviews also emphasise the need to help farmers improve their self-reliance, preparedness and drought management and/or adaptation practices.

In addition, the three reviews suggest that the government programmes used to support an adaptive response need to affirm that prolonged periods of drought are natural and routine, as opposed to an unexpected event. It is also necessary to ensure that decision-making on drought response is undertaken independently of extreme drought events when public emotions and political effects are heightened. Similarly drought adaptation strategies should not be shelved during periods of above average rain. Drought and flood adaptation strategies need to co-exist – one should not replace the other as the climate oscillates between its wet and dry phases. This coexistence of strategies is especially important given the anthropogenic climate change projections for Australia which suggest that increases in the frequency and duration of droughts could be associated with increases in the frequency of short-lived but intense rainfall events (e.g. [IPCC, 2007, 2012](#)).

The reviews advised government to produce coordinated programmes of support that move beyond overlapping and short-term initiatives towards long-term, sustainable, proactive and flexible approaches to drought and equitable distributions of drought support services across regions. For example, the Productivity Commission Review ([Productivity Commission, 2009](#)) suggests the replacement of the NDP with an extended version of Australia's Farming Future – which focuses on adaptation, research and building the skills of farmers. As another

- prolonged, expanding and worsening drought conditions across significant agricultural producing regions (e.g. [Verdon-Kidd and Kiem, 2009](#));

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