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Linda Courtenay Botterill

University of Canberra, Linda.Botterill@canberra.edu.au

Michael J. Hayes

University of Nebraska - Lincoln, mhayes2@unl.edu

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Drought triggers and declarations: Science and policy considerations for drought risk management

Linda Courtenay Botterill¹ and Michael J. Hayes²

¹ Faculty of Business, Government & Law, University of Canberra, Canberra, ACT 2601, Australia; *corresponding author* — email Linda.Botterill@canberra.edu.au

² National Drought Mitigation Center, University of Nebraska, PO Box 830988, Lincoln, NE 68583-0988, USA (email: mhayes2@unl.edu)

Abstract

This paper explores the value of triggers and declarations in the management of drought, bringing together two disciplinary perspectives, those of the public policy scholar and the climate scientist. These two perspectives highlight the complexity of the development and use of triggers in drought risk management by drawing on the experience of the United States, which has the most sophisticated system of drought triggers in the world, and that of Australia that has the most developed and longest standing national drought policy based on principles of risk management. The paper explores the advantages and disadvantages of triggers in managing drought, concluding that triggers are useful risk management tools at the individual level but become problematic and can lead to perverse outcomes when linked to some forms of government support programs.

Keywords: Drought, Triggers, Policy, Australia, USA

This paper stems from several decades of inter-disciplinary collaboration between researchers in Australia and the United States on the application of a risk management approach to drought. The researchers have diverse backgrounds, but both start from a normative position that preparedness, risk management and mitigation are preferable approaches to managing the impact of drought compared to ad hoc crisis responses. One of the challenges of inter-disciplinary collaboration is that the authors view the problem of institutionalizing a risk management paradigm through different disciplinary lenses, and at times, these lenses raise areas of debate about the best way forward. National differences also affect the way we view these issues, and we have given a great deal of thought to how we best present these different perspectives. One such area of debate is the question of the use of triggers in drought policy. The (American) scientist in this collaboration argues that drought risk management requires relevant,

comprehensive, and timely information about a drought event with triggers related to severity in order to provide efficient responses for the inevitable drought impacts when they occur. For the (Australian) policy specialist, there are concerns that some policy instruments that rely on these triggers, even when using the best available scientific information, can undermine the risk management objective and therefore produce undesirable outcomes. Indeed, Australian policy makers are currently debating changes to Australian drought policy, which will remove drought declarations from national policy. Australia and the United States provide us with two important case studies that potentially provide lessons for other countries. Australia is the only developed nation with a risk management-based national drought policy, and the United States is in the position of having the most developed and sophisticated drought monitoring system in the world. The ideal drought policy probably involves a combination of the two.

This paper is an attempt to bring these different perspectives together. The paper is set out as follows. We begin with an explicit statement of our different starting positions with respect to both the nature of achievable drought policy within a risk management paradigm and also a smaller, but important point about the focus of drought policy in Australia and the United States. At this point in our discussions, it became clear that our different perspectives are more based in the different stages of development of drought policy in our respective countries than in a fundamental disciplinary difference. This is encouraging as a small “industry” has arisen in academia devoted to the issue of the interface between science and policy (see for example Pielke 2007) and the difficulties of speaking across jargon-laden disciplinary boundaries. Much of this discussion of the relationship between science and policy has been in the context of the recent emphasis on evidence-based policy making and the different incentives and constraints that face researchers and policy practitioners (Botterill and Hindmoor accepted; Head 2010; Nutley et al. 2007; Pawson 2006). Our small example suggests that sometimes differences of approach reflect different contexts rather than different paradigms. Our second section turns to the perspective of the US-based scientist and makes the case for improved drought monitoring and the use of triggers in the US policy context. We then discuss the situation in Australia, the only country so far to have implemented a national drought policy based on the principle of risk management. This section examines the Australian experience with drought declarations and “lines on maps” and highlights some of the problems associated with declarations based on triggers when applied within a policy explicitly aiming to treat drought as a risk to be managed. We conclude with an attempt to reconcile the different perspectives and a suggestion that effective triggers and a risk management approach can coexist as long as the triggers are used for risk management by individuals and not by policy makers as a signal to provide financial relief.

1 Two different perspectives

As noted above, we began our consideration from a shared understanding of drought as a normal part of climate and a rejection of the “hydro-illogical cycle” (Wilhite 1993) with its implied policy approach that drought only be the focus of attention by decision makers when it reaches some sort of “crisis” point. We sought to look at the role of triggers within this approach but very quickly found that the language we were employing to discuss this issue was problematic. The debate over language reflected a quite fundamental difference in our point of departure in the consideration of drought policy, which, interestingly, is more a consequence of national difference than disciplinary approach. This section seeks to set out for the reader the key point on which we differ and to set the context for the discussion which follows.

1.1 The Australian context

Australia is arguably a world leader in a risk management approach to drought. The idea that drought was a natural disaster was explicitly rejected over two decades ago when the Australian government removed drought from the events covered by the country’s natural disaster relief arrangements. This is expanded in more detail below, but the key point for the purposes of this section is that the language of “crisis” has been rejected by Australian policy makers and the policy instruments used in the National Drought Policy are about risk management across the climate cycle. There has been an element of crisis response in the exceptional circumstances provisions of the drought policy which provide additional support to agricultural producers in cases of severe drought. However, this has been in the context of an overall approach that drought is not a disaster but a risk to be managed, along with the other risks facing farm businesses, for example, exchange rate risk, interest rate risk, commodity price fluctuations and outbreaks of pests and diseases. And this latter point highlights an important second area of difference. Australian drought policy has almost exclusively focused on the impact of drought on agricultural producers. The programs available have focused on supporting the farm business by providing risk management tools to assist with managing cash flow in low-income years and providing support to change farming practices to “drought-proof” farm operations. Emergency measures for farm businesses have been presented in the context of supporting only those operators with long-term sustainable futures in agriculture. As with much policy implementation, there has been a gap between the rhetoric and the actual impact of the policy. A recent review of the policy (Productivity Commission 2008) has made a large number of recommendations aimed at reinforcing the risk management message of the National Drought Policy, and removing those elements which have slipped back into a more crisis-response form. Overall, the message in Australia is that drought is not a disaster, a crisis

response is inappropriate and, as is discussed below, policy approaches which imply that drought is an “event” to which governments “respond” are inappropriate and inconsistent with the risk management message.

It should also be noted that in Australia, drought policy, and water policy are treated separately; drought and water are handled by different government departments, with different cabinet ministers and are debated within different policy communities. This has allowed policy makers to “firewall” (Thacher and Rein 2004) drought policy as an issue debated by a relatively small and close knit group of interested parties. Water policy is subject to an intergovernmental agreement between the states and the federal government and, at the time of writing, there is a major national debate over water allocation in the Murray-Darling Basin. Drought is barely rating a mention in this context.¹

1.2 The US context

Unlike Australia, the concept that drought is a natural disaster, along with other technological, climatological, and weather disasters, remains very strong in the United States. Much of the recent effort to address drought risk management has focused on improved drought monitoring and prediction. The implementation of the weekly US Drought Monitor product [<http://droughtmonitor.unl.edu>] in 1999, and the active drought monitoring community that has developed around this effort, has helped spur tremendous progress on drought monitoring strategies during the past 10 years or so.

Movement toward a national drought policy within the United States, however, has not been able to gain similar momentum. A drought during 1995–1996 focused national attention on the drought issue and helped lead to the passage of the National Drought Policy Act by US Congress in 1998, which created the National Drought Policy Commission (NDPC). The NDPC prepared their report for the US Congress in 2000, providing recommendations for a national drought policy. Although efforts to pass a National Drought Preparedness Act following the NDPC recommendations were not successful, the US Congress passed the National Integrated Drought Information System (NIDIS) Act in 1996 to enable an interagency, multi-partner approach to drought monitoring, forecasting, and early warning. NOAA was designated as the lead agency, and the NIDIS program office was established in Boulder, Colorado.

The 1995–1996 drought event, and subsequent drought events affecting all regions of the United States, has highlighted that drought impacts within the country affect many sectors in addition to agriculture. For this reason, drought monitoring and response activities within the United States have developed to address agriculture and these other sectors (e.g., recreation and tourism, urban water management, energy, ecosystems, etc.), and a cross-sectoral approach is a part of the missions for both the NIDIS and the National Drought Mitigation Center (NDMC) in their drought risk management efforts.

Against this background, the next two sections set out two different ways of looking at the usefulness of triggers and declarations. These clearly reflect different disciplinary perspectives but they also highlight important national differences between a more “topdown” government focused approach and a “bottom-up” research driven perspective.

2 The issue of triggers: the US scientist’s perspective

US drought risk management focuses on the need for improved proactive strategies that can be implemented before an event occurs to reduce impacts during future droughts and increase the timeliness and effectiveness of response (Wilhite et al. 2000a). In this context, drought monitoring and early warning is one component of a drought risk management approach. Having a monitoring/early warning system in place that can detect the unique characteristics of drought will improve drought response and lead to better drought management (Wilhite et al. 2000b; Mizzell 2008; Svoboda et al. 2002). Wilhite and Buchanan-Smith (2005) describe a drought monitoring system as the “cornerstone” of effective drought management in that decision makers require this information to implement plans and policies and protect the livelihoods of citizens from the impact of drought. Wilhite (2009) also describes an important feedback loop that occurs as drought management and drought monitoring strategies evolve: better drought management drives a need for improved drought monitoring; improved drought monitoring encourages more effective drought management. One reason this feedback takes place is because both improved drought monitoring and drought management emphasize the need for information at better spatial and temporal resolutions to address decisions being made at these resolutions.

Early drought monitoring efforts tended to focus on rainfall or single indicators or indices incorporating rainfall deficiencies (Heim 2002). A drought indicator is a variable to monitor drought conditions, while an index is a variable that simplifies a more complex relationship into an indicator, such as the Palmer Drought Severity Index. As the need grew to make historical comparisons (severity, duration, and spatial extent) of drought events, attempts were made to develop new indices and indicators that would capture and explain some of the complexities of each event (Steinemann et al. 2005). The development of the Palmer Drought Severity Index (PDSI, Palmer 1965) was an important event in terms of drought monitoring within the United States because of its ability to depict conditions on a national scale. The PDSI was adopted for policy by a variety of federal drought programs, beginning in 1976 (GAO 1979; Wilhite and Rosenberg 1986; Heim 2002).

As the limitations of the PDSI were recognized (Alley 1984; Heim 2002; Hayes et al. 1999), other indices were developed, like the Surface Water Supply Index (SWSI) (Shafer and Dezman 1982) and Standardized Precipitation Index (SPI)

(McKee et al. 1993). This evolution of indicators and indices has led to the understanding that no one indicator or index can represent the diversity and complexity of drought conditions across the temporal and spatial dimensions represented by the different sectors affected by drought (Hayes et al. 2005; Mizzell 2008). In most cases, it is best to use a combination of indicators when monitoring drought. This option of using multiple indicators, however, can be very confusing for the individual decision maker, who often does not know about the characteristics of each indicator (Mizzell 2008).

While a drought indicator (such as rainfall, streamflow, or the PDSI) is a variable or index used to monitor drought conditions, a drought trigger is a threshold value of an indicator (or multiple indicators) that activates levels of drought response (Steinemann 2003; Steinemann et al. 2005; Mizzell 2008). The goal of a trigger is to correspond appropriately to the drought characteristics identified by the indicator or indicators and allow decision makers operating within a crisis-response framework to act in a timely and efficient manner. Without triggers in place, such responses to drought are often delayed or do not reach the audience the response program is intended to serve. Drought triggers can be utilized by individuals, municipal water systems, state officials, or federal policy makers, depending on their drought response requirements. Triggers needed for agricultural responses are going to be different from triggers needed for hydrological or societal responses.

Research by Steinemann (2003) and Steinemann et al. (2005) examined the process for establishing and evaluating drought triggers. The primary criteria most important to consider when selecting triggers are that they can be understood by decision makers and the public (constituents of the policy), are scientific and objective, and can be evaluated for their effectiveness in terms of relating drought severity with impacts. Trigger characteristics include the indicator value, time period, spatial scale, probabilities of occurrence, and perhaps distinguishing whether a drought is increasing or decreasing in severity (Steinemann et al. 2005). If triggers are going to be implemented in policy or management decisions, they need to be consistent from event to event and equitable in terms of the people affected (Steinemann et al. 2005).

Steinemann et al. (2005) examined state-level drought plans and feedback from water managers in the United States to determine criteria for the operational use of drought indicators and triggers in this particular sector. These criteria included suitability of indicator and trigger for the particular drought type; data availability and consistency; clarity and validity; temporally and spatially sensitive; temporally and spatially specific; drought progressing and receding; statistical consistency; links with program goals and management; explicit combination methods; and quantitative and qualitative indicators. Keyantash and Dracup (2002) identified similar criteria during an evaluation of drought indicators in their study of two climate divisions in Oregon. Mizzell's (2008) recent assessment highlights the fact that many indicators and triggers are still

being developed and used without “scientific justification”. Therefore, the need still remains within the United States for a thorough evaluation to help better determine which trigger or triggers are most relevant and responsive for various applications.

Policy makers in the United States have recognized the need for balance between risk management and drought relief programs. The NDPC Report (2000), for example, emphasized the following guiding principle for a national drought policy: “Favor preparedness over insurance, insurance over relief, and incentives over regulation”. Even so, a variety of relief programs remain embedded within US agricultural policy, and many of these programs, as well as insurance programs rely on some type of trigger for implementation. Several of these programs, for example, rely on the US Drought Monitor product as their trigger. As a result, the focus on improved drought monitoring and early warning strategies, as described above, has provided a scientific foundation for these programs.

3 Triggers as a problem for policy: the experience of Australia

Australia is the driest inhabited continent with one of the most variable climates on the planet due to not only annual variability in rainfall found in many places in the world but also multi-annual variability arising from the ENSO system and inter-decadal variability originating in the oceans (Hennessy et al. 2008, 3; Lindesay 2003; Stafford Smith 2003, 10–11). Drought has been an ongoing problem since the arrival of European settlers in the late eighteenth century and the introduction of agricultural practices that had evolved in a more benign and reliable climate. Stafford Smith (2003, 11) sums up this challenge of the Australian landscape as follows:

Plants living in the US (or Mediterranean) environments can be reasonably confident that they will receive another rainfall of a given size with a consistent return time, usually less than a year. By comparison, the Australian plant (speaking teleologically!) has no idea when its next drink is going to fall.

This statement is significant in the agricultural context as the crops cultivated by Australian agricultural producers originated in Europe and European settlers brought with them a conception of climate that regarded droughts, and indeed floods, as a deviation from a more reliable norm, not as a characteristic of the climate to which they would need to adapt. Over the past 200 years, Australia’s farmers have been highly innovative and are today among the most productive in the world, adapting to the often harsh climate and challenging conditions of farming an ancient landscape.

Until 1989, drought was considered a natural disaster and the federal and state governments responded within the framework of the natural disaster relief arrangements (NDRA), an agreement which still sets out the respective responsibilities of the two levels of government in the event of disasters such as cyclones, earthquakes, bushfires, and floods. In 1989, the federal government announced that drought was no longer to be covered by the NDRA. There were several reasons for this decision, one of which was the increasing understanding of the impact of the El Niño-Southern Oscillation phenomenon on Australian rainfall, particularly in the eastern states. Policy makers were of the view that improved scientific understanding of Australia's climate patterns meant that it was no longer tenable to base policy on a position that drought was entirely unpredictable and surprising to the same degree as other events covered by NDRA. Drought of some severity will occur in Australia; the challenge is that its timing is unknown. This suggests that the best approach is to provide farmers, again reflecting the Australian drought policy emphasis on agriculture, with the tools to manage their businesses to cope with the downturn in production and income that accompanies a prolonged dry spell. These tools can be in the form of skills training, financial management instruments, or climate information to help in business planning.

Following the removal of drought from NDRA, a Drought Policy Review Task Force (DPRTF) was set up in 1990 to:

1. identify policy options which encourage primary producers and other segments of rural Australia to adopt self-reliant approaches to the management of drought;
2. consider the integration of drought policy with other relevant policy issues; and
3. advise on priorities for Commonwealth Government action in minimizing the effects of drought in the rural sector. (DPRTF 1990, 2)

The Task Force report argued that "Managing for drought is about managing for the risks involved in carrying out an agricultural business, given the variability of climate. Drought represents the continuing risk that seasonal conditions will not be adequate to sustain agricultural activity" (DPRTF 1990, 3). Following receipt of the Task Force recommendations, the federal and state governments agreed to a National Drought Policy based on "principles of sustainable development, risk management, productivity growth, and structural adjustment in the farm sector". Its objectives were to:

- encourage primary producers and other sections of rural Australia to adopt self-reliant approaches to managing for climate variability;
- facilitate the maintenance and protection of Australia's agricultural and environmental resource base during periods of climate stress; and
- facilitate the early recovery of agricultural and rural industries, consistent with long-term sustainable levels. (ACANZ 1992, 13).

The 1992 National Drought Policy made a distinction between “normal” and “severe” drought, with the latter being droughts for which even the best farm manager could not be expected to prepare. Such events were known as “exceptional circumstances” (EC). The policy came into effect on January 1, 1993, and the EC provisions were triggered almost immediately and came quickly to dominate the implementation of the drought policy. The timing of the introduction of the new risk management approach was unfortunate for policy makers as it coincided with what was at the time considered to be the worst drought of the twentieth century. It was also a problem for policy makers that exceptional circumstances had not been defined adequately in the relevant legislation, so almost immediately there was debate around how such events would be identified. As the declaration of EC triggered government relief in the form of enhanced subsidies on interest payable on commercial loans and, later, increasingly generous welfare payments, the criteria used for the declarations were highly contested. This debate over the triggers shifted attention away from managing the risk of drought to managing the parameters of the policy and shifted the energies of farmers from adapting to climate variability to making the case that they satisfied the requirements for assistance. The first attempt to develop an objective, scientifically based system for declaring EC drought was the result of a Workshop in 1994. This was endorsed by the Ministers in the form of six core criteria, which would be taken into account in considering exceptional circumstances declarations. These criteria were as follows:

1. meteorological conditions;
2. agronomic and stock conditions;
3. water supplies;
4. environmental impacts;
5. farm income levels; and
6. scale of the event. (ARMCANZ 1994, 3)

The framework specified that a rare and severe drought was a “once-in-a-generation” circumstance (ARMCANZ 1994, 8), taken to mean a one in twenty to twenty-five year occurrence (O’Meagher et al. 2000, 121), with the meteorological situation as the threshold event. This did not end debate over drought policy or its implementation. Although the underlying principle of risk management remained, the criteria for EC declarations, and even which should be the threshold criterion continued to be the subject of debate over the ensuing decade (for more detail on the various reviews and debates around declaration criteria see Botterill 2003b).

Apart from generating debate about the appropriate criteria for triggering an EC declaration, the scheme was plagued from the outset by what became known as the “lines on maps problem”. The areas subject to EC declarations were geographically defined, usually on the basis of existing administrative boundaries.

This meant that not only did the boundaries rarely, if ever, align with meaningful biophysical regions, but they also raised inequities with those experiencing similar conditions on the “wrong side” of the lines. Attempts were made to address this through the introduction of buffer zones in 2001 but as has been noted elsewhere this “simply blurred the lines rather than addressing the inequity” (Botterill 2003a, 55).

For the purposes of this discussion, the important point is that Australian governments have been committed since 1992 to basing drought policy on the principle of risk management. The rhetoric of successive ministers for agriculture, from both sides of Australian politics, has continued to reinforce the risk management message. However, the implementation of the EC provisions has to a large extent undermined that objective. Attempts to produce objective criteria for the declaration process have been unsuccessful, and the regular reconsideration of those criteria has left a clear impression that they are open for negotiation, and therefore the result of a political process rather than based on scientific evidence. The declaration process itself has provided several access points for those trying to make the case that the circumstances they are experiencing are exceptional and this has diverted the efforts of groups of farmers away from managing their farm businesses in the face of increasing dryness to lobbying to receive government support. The key components of the drought policy package, described below, hinge on the declaration that an exceptional circumstances (EC) drought exists in a defined area. A case needs to be made, first by those affected, and then by the relevant State government, that the definition of EC has been met and that support is therefore justified. This process of preparing an EC case is time-consuming and requires evidence to be collected, potentially diverting farmers’ efforts from other, risk management, activities. A recent inquiry into the EC program by the Australian government’s economic research agency, the Productivity Commission (2008, 133) summed up problems within the drought policy’s implementation as follows:

Some government programs for drought assistance have had consequences that are perverse to the objectives of the NDP [National Drought Policy] and inconsistent with the outcomes of other programs. This can limit the effectiveness of NDP and broader agricultural policies. Business assistance programs, including EC interest rate subsidies and subsidies for other business inputs, such as transport, water, or irrigation infrastructure, can support some farmers and small businesses who may not have made wise management decisions and are consequently not self-reliant during droughts. Such programs provide an incentive for some farms to structure their expenditure and debt to maximize their receipt of government subsidies for business costs.

The Commission (133) notes that

Furthermore, these programs can discourage drought preparedness actions such as early destocking or diversification of income sources and distort production decisions by leading farms to use the subsidized input in excess of what would otherwise be the case. (2008, 133)

The government programs on offer under the EC program, which are quite limited both in scope and generosity by international standards, have had mixed success in conveying the risk management message. There are three key programs that have comprised the EC response:

1. Subsidies on the interest payable on commercial loans
2. An EC welfare payment
3. Farm Management Deposits

Interest rate subsidies have been used as a policy instrument in agricultural adjustment policy in Australia for decades and have been subject to ongoing criticism. A number of government reports has recommended against them (Synapse Consulting (Aust) Pty Ltd 1992; McColl et al. 1997). They are considered inequitable and poorly targeted and run the risk of encouraging farmers to take on more debt than sound risk management would suggest is appropriate. The second component of the package, the welfare payment, has become increasingly generous over its lifetime, opening up real inequities between farmers, and between farmers and other groups in the community (Botterill 2007). Both of these programs have been triggered by the declaration of the existence of an exceptional circumstance and are subject to the lines on maps problem. This is particularly problematic for the welfare program as it means that the personal circumstances of the recipient are not the threshold eligibility criterion for income support.

The third program, the Farm Management Deposits scheme, has been the most successful in terms of the risk management paradigm. It is a tax effective income-smoothing mechanism that allows farmers to put aside money in good years to be drawn on in subsequent bad years. The Productivity Commission (2008, 159) found that this scheme provides a “relatively effective form of assistance for primary producers that potentially assists in building a self-reliant platform for drought preparedness through incentives to maintain financial reserves”. The Commission also noted that “Importantly, availability of the scheme is not dependent on drought declaration, location or farm type” (2008, 160). Not surprisingly, given these assessments, the Commission recommended that the interest rate subsidy program be abolished, the welfare program be replaced with a scheme that is not linked to a declaration process, and the Farm Management Deposit scheme be retained. The important policy point here is that

the most successful part of the National Drought Policy implementation is that which does not require declarations or triggers. It is a standing program which farmers use as an income-smoothing mechanism as part of their risk management strategy for their business. This makes it absolutely consistent with the spirit of the Australian policy approach to drought.

The Australian government has yet to respond in full to the Productivity Commission report, or the other two reports which were also part of the review process (Drought Policy Review Expert Social Panel 2008; Hennessy et al. 2008). A trial of alternative drought support measures was run in cooperation with the Western Australian government in that state for 2 years until June 2012. A report on the trial found that it had “been implemented as intended” and it “noted the strong demand for the pilot programs” (Keogh et al. 2011, 1). At the time of writing, no area of Australia is experiencing exceptional circumstances drought conditions and governments have yet to indicate the content of future drought policy.

The types of problems experienced in implementing the risk management approach in Australia are indicative of the essentially political nature of all policy processes. The frustrated dream of many to “take the politics out” of the process is unrealistic. All policy making involves judgement, which by its very nature is political, at least in the small “p” sense of being about balancing competing values at play in the decision-making process (Easton 1953, 129; Stewart 2009). The EC interest rate subsidy program and welfare program provide monetary incentives to farmers and their representatives to “game” the declaration process and as such, provide a disincentive to practice sound risk management. The focus then becomes the declaration process itself, not the risk management message. Programs like the Farm Management Deposits scheme, and other income-smoothing mechanisms like revenue contingent loans (Botterill and Chapman 2009), are much better risk management tools than declaration-linked programs. The lesson from nearly two decades of drought policy in Australia is that drought declarations that are tied to agricultural support programs become politicized and contested. They undermine the risk management message and may provide disincentives to good management practice.

Australia’s experience with the EC program would suggest that, from a political and policy perspective, drought declarations which trigger government support are problematic. They are hard to define, they are susceptible to lobbying, and they have the potential to undermine the risk management message of the National Drought Policy. However, it is an open question as to whether the problem is with triggers and declarations per se, or whether Australia’s unhappy experience with EC declarations has been due to the unsophisticated and fluid nature of the criteria that have been employed. It is also important to make the distinction between the triggering of government support and the use of triggers by individual managers to inform their risk management decisions.

As noted above, the implementation of Australia’s “exceptional circumstances” program preceded the development of the declaration process so, from the outset,

the question of how an exceptional circumstances area was to be identified was problematic. The process was largely “top-down” with little consultation with stakeholders about the criteria to be employed. The body tasked with recommending EC declarations visits areas which have applied for such a declaration, but there is not the level of stakeholder engagement that occurs with the US Drought Monitor and which involves stakeholders in monitoring conditions on an ongoing basis.

4 Recommendations for the development and use of triggers

There are some clear value judgements here which form the basis of our argument. First, we argue that drought policy should be based in a recognition that drought is a normal part of climate and is best addressed in a framework of mitigation and risk management. Second, we consider that a “good” trigger has stakeholder buy-in, is comprehensive, and involves a transparent process that engages a range of disciplinary expertise. On this basis, the “ideal” drought policy would incorporate detailed monitoring of drought conditions combined with ongoing government programs that support risk management. Triggers would serve the purpose of providing individual managers with timely and reliable information about drought conditions, which would inform their risk management decisions.

The present situation with respect to Australia is that its experience with unsophisticated triggers linked to financial support has resulted in a rejection of EC declarations by the Productivity Commission (2008) and more recently by politicians (PIMC 2011). At the time of writing, Australian federal and state governments were negotiating a revised National Drought Policy based on principles which explicitly reject the use of declarations. This does not necessarily mean that the identification of changing drought conditions through a system similar to the US Drought Monitor has been ruled out, but it implies that government support would be ongoing. The introduction of a Drought Monitor or similar in Australia would need to be managed carefully to ensure that it was seen as a tool for individual business managers rather than as a declaration mechanism for governments.

In the United States, in spite of very severe droughts across the southern Plains and Southeast recently, there remains little momentum for the development of a cohesive national drought policy. Recent calls for a national policy have not made headway, and an effort to create a National Drought Council as part of the 2008 US Farm Bill was not successful (Folger et al. 2010; Kimery 2012). For now, it appears that the emphasis at the federal level will remain focused on NIDIS, and the efforts NIDIS is leading in the areas of monitoring, prediction, and supporting regional drought early warning systems.

Finally, both nations will have to deal with the issues of drought triggers and policies within a context of future climate change. Because of the similarities in

their slow onset and long-lasting characteristics, risk management approaches for drought and climate change are likely to be mutually beneficial. Drought risk management strategies involving triggers and policies will naturally serve in the preparation for climate change impacts. Likewise, climate change adaptation strategies supporting sustainability and resiliency will reduce risk associated with natural disasters including droughts.

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