

# Drivers for Change in Water Regulatory Systems: Setting the Scene for Development Assistance

*This paper identifies drivers for change in water policy and regulation. Evidence from Australia, Southeast Asia and the Pacific is situated within an overview of broader water reform discourses with a view to better understanding the relative significance of endogenous and/or exogenous factors in setting water management directions. Drivers for water sector change including scarcity, ideology, conflict and international environmental policy are discussed and water policy reform is seen to be embedded in wider societal and governance reform processes and agendas.*

## 1. Introduction

This paper considers drivers for change in water governance with a view to informing the design of water related development assistance. Reviewing drivers for change in cases from Australia, Southeast Asia and the Pacific region, the paper suggests that overseas development assistance (ODA) programming needs to understand change in water governance as embedded in wider reform processes and be sensitive to case-specific pressures for reform.

In recent years, water management paradigms have moved away from a focus on infrastructure provision into the fields of governance and regulation (see Appendix 1 for an overview of water regulatory change). This change has followed recognition of shortcomings in the ways water and water infrastructure is used, distributed and managed in human, environmental and economic terms. In response, water sector programs increasingly aim to improve water governance by building capacity and driving regulatory change towards more integrated water resource management models. This is reflected in development assistance programs where there has been a shift from “hardware” to “software” approaches with an emphasis on capacity building.

Physical, demographic and economic pressures, infrastructure requirements, ideological influences, social changes and wider reform processes can shape water sector reform in specific ways in particular contexts. Drawing on examples from a number of case study countries and river basin contexts, this paper examines drivers for change in water regulatory systems. In doing so, the paper seeks to demonstrate the significance of endogenous dynamics for development assistance programming and to improve understanding of the ways in which development assistance in the water sector both influences and is influenced by water regulatory reform.

## 2. Drivers for Change in the Water Sector

Key drivers for change discussed in this section include scarcity, conflict, ideology and international water policy.

### *Scarcity and the Environmental Imperative for Change*

Scarcity of water is frequently advanced as the primary rationale for reform in the water sector. The words ‘scarcity’ and ‘crisis’ dominate literature on water reform (Postel 1992; Ward 1997; Falkenmark 1998; Homer-Dixon 1999; Blackmore 2000; Postel 2000; Saleth and Dinar 2000; Smith 2000; Frederiksen 2003; Wolfe and Brooks 2003; Barbier 2004; Thomas 2004). It is commonly asserted that the world is experiencing a freshwater scarcity crisis (Gleick 2000; Frederiksen 2003; Thomas 2004) resulting from a command, control and exploit approach to natural resources. The sense of crisis has grown as population growth, improved living standards, industrial development, climate variability, environmental awareness and food security goals have put increasing pressure on the hydrological cycle (Moriarty, Butterworth et al. 2004).

Scarcity is represented in the literature both as a cause of past change and innovation, and as a critical driver for future water sector reform. Developmental responses to scarcity in the past were to create or seek out new sources of water (supply-based responses) in the form of diversions, storages and other infrastructural solutions. Yet, with increasing environmental awareness scarcity is now understood more in ecosystem terms rather than as an engineering challenge, meaning there is now greater emphasis on living within a limited supply, allocation, demand management, and technological and economic measures to improve efficiency. Water sector changes inspired by this approach to scarcity include alterations in water allocation mechanisms towards more market based approaches and a mainstream recognition of the need for integrated water management according to hydrological boundaries (Jaspers 2003).

Yet scarcity does not just exist in an absolute or even a relative sense but is also constructed discursively. Various explanatory discourses of scarcity are brought to bear for particular purposes where explanations of and solutions for water shortages may be politically, rather than environmentally, motivated. In Australian cities, urban water scarcity is constructed relative to historical levels of consumption and based on broadly held expectations of maintaining green lawns, swimming pools and regular car washing. In this context, explanations for scarcity range from the effects of El Nino through to profligate consumption, to urban population growth forecasts, and to inadequate storage and infrastructure (eg *The Australian*, Editorial, 6 May 2005). In Thailand, scarcity is popularly expressed through the level of water in storage dams at the end of the wet season and their ability or otherwise to provide irrigation security to rice farmers for dry season cropping. Explanations often target ethnic minority highlanders and their supposed destruction of headwater “sponge” forests. Solutions range from resettlement or denial of citizenship rights, to asserting the need to build storage dams in place of forests as “sponged” natural storage.

#### **Text Box 1: Scarcity in Australia**

##### *Key issues*

Scarcity has been a significant driver for change in Australian water regulatory systems where scarcity caused by overdevelopment and over-extraction of water has been exacerbated, or made more pressing, by a lack of reliable rainfall to supplement dwindling water supplies. Australian water scarcity problems are both environmental and developmental in origin in that periods of drought, combined with water development and over-extraction, threaten the availability of water for agricultural irrigation, long-term secure drinking supply and environmental flows. Australian water policies have long neglected scarcity issues, and, informed by inherited water management practices from Britain (where water supplies are more abundant), water management has ignored climatic realities and instead focused on the role of water to support irrigation, provide hydroelectricity and supply urban areas with abundant, reliable drinking water. Scarcity has been “managed” by impoundment, giving Australia one of the highest per capita freshwater storage capacities in the world. In recent years however, a longer-term drought combined with increasing emphasis on sustainability has pushed scarcity to the top of the water management agenda and precipitated water regulatory reform.

The role of scarcity as a driver for water policy change in Australia is apparent in the Murray-Darling Basin. The Murray-Darling, Australia’s largest and most agriculturally productive river basin, has been the subject of transboundary water management debates since the signing of the Murray Waters Agreement in 1914. More recently in 1997, inspired by scarcity and severe environmental degradation in the Murray-Darling river system, the Council of Australian Governments (COAG) negotiated a cap on water extraction from the river system. The cap represents a key shift in Australian water management away from water resources development towards water resources allocation within fixed limits as scarcity concerns have inspired a re-definition of appropriate and sustainable water regulation. Furthermore, the potential for future water shortages has influenced legal arrangements for water allocation, with the introduction of a tradeable licensing system and priority listing for different water uses to be implemented in the event of more extreme scarcity.

Scarcity has also driven change in New South Wales water management with threats to Sydney’s drinking water supply constituting a powerful imperative for reform. A lack of sustained rainfall, combined with urban expansion and increased demand for potable water, has put pressure on existing water storage mechanisms and inspired widespread debate on the need for more secure supplies in the event of more extended periods of drought. Policy responses have included the placing of restrictions on domestic and industrial water use (for example a prohibition on watering gardens on particular days of the week) and discussion of alternative water supply options. While demand-side management has featured to a certain extent in these debates, the focus has been on technical solutions to the supply problem in the form of expanded storage facilities, water diversions or desalination.

Pricing mechanisms are increasingly seen as an essential component of demand management, based in part on the success of water usage charges in reducing household water consumption since they were introduced in Sydney in the early 1990s. Water usage remains a relatively small part of household expenses, but there are social and political barriers to steeper charges, including equity concerns. Sydney Water is currently examining options of a tiered pricing structure, which is already in place in other States.

*Implications for Development Assistance*

- There is a need to look at water availability over a longer term period and to understand natural scarcity as subject to long term cycles and short term fluctuations.
- There are natural cycles that have determined periods of abundance and scarcity in Australia, yet British water management principles based on abundance have largely driven Australian water management. The transfer of water management systems is problematic. ODA needs to be cautious of transferring Australian management principles (based on English models) to other countries.
- The cyclical nature of water is a characteristic of many parts of the world. ODA should take account of the variable nature of water scarcity and build awareness of how this drives change.
- Political will for reform in Australia has been predicated on a perceived scarcity problem. This can inform ODA in that instances of actual or potential scarcity are likely to correlate with political will for regulatory reform. In other words, if problem is defined domestically there will be more will to effect change.

Although physical scarcity constitutes a significant imperative for reform, the ways in which scarcity is interpreted at the policy level often overlooks the ways in which scarcity is caused and manifested. Although there is a great deal of material describing the scarcity crisis and asserting its growing urgency, there is a lack of investigation into underlying assumptions behind claims of a crisis and the more complex ways in which scarcity can be experienced and addressed. Literature has tended to focus on the physical nature of water scarcity (quantity issues) at the expense of the complex links between physical scarcity, social adaptation and economic management (Dinesh Kumar and Singh 2001; Nicholson 2001; Bjornlund 2003; Barbier 2004). Taking a broader view of scarcity, requires a shift away from a focus on the physical properties of natural resources themselves to people, behaviour and institutions (Wolfe and Brooks 2003). These issues can be understood with reference to the scarcity matrix developed by (Molle and Mollinga 2003) (Table 1). The conceptualisation of scarcity offered by Molle and Mollinga (2003: 532) is useful in engaging with issues of context in designing appropriate water development assistance programs as it emphasises the complex links between people, environment and economic power:

Water scarcity has to do with how societies spread over space, how their activities modify the environment and how this, in turn, impacts on them, and with how different segments of these societies are able (or unable) to mobilize financial resources and power in order to shape the patterns of access to water within society.

**Table 1: Varieties of Water Scarcity** (adapted from Molle and Mollinga 2003)

Scarcity type	Characteristics
Physical	An absolute scarcity, where water sources available are limited by nature. This type of scarcity is common in arid or desert areas. Often there are seasonal variations in the severity of scarcity.
Economic	The incapacity to commit human resources (such as labour and time needed to procure water) and financial resources (such as payment for water) to access water.
Managerial	Scarcity caused by improper maintenance or management of water facilities. This kind of scarcity can be induced locally or externally (for example impacts from upstream water developments on water quantity and/or quality, decline in operational efficiency of irrigation systems).
Institutional	A society's failure to deal with rising supply/demand imbalances and to preserve the environment. Shortages can in part be ascribed to failure to anticipate imbalances and to supply adequate technological and institutional innovations. This kind of scarcity can be induced locally or externally.
Political	Occurs when people are barred from accessing an available water source due to political subordination or discrimination.

Although this analysis broadens traditional understandings of scarcity to include the social and political factors relevant to water shortages, the matrix overlooks the fact that water is defined as “scarce” relative to very different needs or expectations. Millions in developing countries live on less than half of the WHO minimum standard of 25 litres per person per day, yet scarcity is also considered

a problem in wealthier countries where per capita consumption is in excess of 100 litres per person per day. Rather than de-legitimising ideas of scarcity in wealthier countries, however, scarcity needs to be understood in relation to competing water uses between agricultural, industrial and domestic users, and objectives, including ecological sustainability and equity.

### **Text Box 2: Scarcity in Thailand**

#### *Key issues*

In Thailand, the seasonal nature of the rainfall regime has always imposed a degree of absolute scarcity during the dry months of November to May. Agricultural systems have adapted to this pattern. Irrigation storages and distribution systems have been designed to transcend natural availability and make scarcity an outcome of social, administrative and political decisions.

Thailand's rapid rural/agricultural development since the 1960s and urban/industrial development since the 1980s has created scarcity relative to development-induced demand and needs. This development-induced scarcity takes a number of forms and has a number of governance implications:

- Dry season cropping: since the 1960s, the area of dry season cropping in the Central Plains has increased in line with the storage available at the Bhumiphol and Sirikit Dams. More recently, northern Thai farmers have greatly increased the area planted to dry season cash crops such as onions and garlic. Dry season cropping creates scarcity in a number of ways. It reduces the amount of water that flows downstream, from northern Thai valleys into the Chaophraya system, and from the Chaophraya Delta out through Bangkok. It increases the exposure of farmers to annual water shortages during dry cycles, as storages are increasingly stressed, and it also creates scarcity in relation to expectations and needs for dry-season incomes.
- Energy: the development of hydropower in several of Thailand's major river basins has created competition between sectors. While several of the dams are in principle multipurpose schemes, their operational requirements involve tradeoffs and hence choices over allocation of water as a scarce resource.
- Blaming the hill-tribes: rapid development in Thailand has been synchronous with deforestation. There is a widespread belief and discourse at both senior government level and at village level that water shortages are due to forest destruction by upland ethnic minority shifting cultivators. Development that links physical systems through river basin interconnectivity and dependence on a common but increasingly scarce resource contributes to conflicts and a politics of blame that has implicated marginal groups.
- Legitimising infrastructure: discourses of scarcity are bound up in the politics now required to legitimate large scale infrastructure in a country where dams and diversions have attracted widespread popular opposition. In drought years, including 2005, the Kaeng Sua Ten Dam has been brought back onto the public agenda by the Royal Irrigation Department and others with interests in building a dam on the last of the major Chaophraya tributaries (Yom River) without a major impoundment. Similarly, the 200 billion baht mega-project known as the Water Grid (its official Thai name translates as Sustainably Holistic Water Management Project) has been pushed through on the basis that water shortage in some basins legitimises transfers from others. This project involves thirteen major diversions, including several that require water to be brought (through bilateral agreements) from Laos, Cambodia and Burma.

#### *Implications for Development Assistance*

- Care needs to be taken in supporting sectoral agencies that may contribute to water management problems. It is better to identify inclusive multi-stakeholder mechanisms or platforms for support.
- ODA should recognise the role of civil society where it has a role.
- ODA should support science/policy/community dialogues given that there is a lot of bad science or partial science justifying particular avenues for reform.
- The Thai experience can inform development directions in neighbouring countries. Thailand is the most developed nation within the Mekong regions and is no longer a bilateral partner for AusAID but part the wider regional grouping. Thai experiences can provide lessons on development or overdevelopment to inform ODA for less-developed regional nations.

In accordance with the view that changes in governance structures will achieve more sustainable water futures, there has been a shift in some contexts away from supply-based approaches towards demand driven water management to reduce current water use rates. For example, non-governmental organisations such as the World Conservation Union (IUCN) have promoted demand management as a means to conserve water (in terms of both quantity and quality) through the implementation of technical, economic or legislative mechanisms to control water use (IUCN 2005). Such options are often supported by local level actors where scarcity is directly experienced and is premised on both technical and economic innovations.

Broad implementation of demand management strategies at the policy level is by no means universal, however, and the potential for large-scale hardware projects to address water shortages continues to be

advanced by some water sector actors. In many parts of the world (for example Thailand and Australia) there is political support for ‘demand-responsive’ water management with recommendations that alternative water supplies such as diversions from water-rich areas and/or desalination be investigated. Demand responsive management can be understood as a return to command and control resource management strategies and does not represent a broad shift towards greater water conservation. Yet the emerging popularity of water trading schemes in certain contexts can be seen as a form of demand management in that trading schemes ‘cap’ current water use rates and create economic incentives for reductions in water use.

***Text Box 3: Crisis as a Trigger for Action in Australia***

*Key issues*

In Australia key environmental events have been the trigger for action, acting as a catalyst for community mobilisation and government response. The blue-green algal bloom along a 1000 km stretch of the Darling-Barwon River in 1991-1992, as a result of inappropriate agricultural practices, over-allocation of water and agricultural run-off, contributed to a sense of crisis over the state of inland rivers in NSW. A rise in environmental awareness of the seriousness of land degradation and water issues amongst the general public, and the initiation of various government and community programs to reduce water pollution, were prompted by this dramatic event. The ‘Sydney Water Crisis’ of 1998 is another example of how a critical environmental event contributed to pressure for the state government to take radical action, in this case institutional restructuring and legislative changes, to improve catchment management.

Crises present opportunities for change and result in different responses being advocated by groups within society. Whilst drought is more a semi-permanent feature of some parts of Australia than a discrete environmental event, it has at times been interpreted as a crisis. A sense of crisis for rural communities and economies deepened in the early years of the 21st Century generating widespread media and political attention. In response to concerns over a populist agenda to deal with the drought by reviving “turn the rivers inland” proposals, the Wentworth Group of concerned scientists was established at the Wentworth Pub in October 2002. The group, led by Professor Peter Cullen, has subsequently been quite influential in setting the direction of water reforms at Federal and State levels. Two key prescriptions promoted by the Group include: Blueprint for a Living Continent (2002) and Blueprint for a National Water Plan (2003). The prescriptions involve measures for improving river health, establishing nationally consistent water entitlements and trading systems, and means for community engagement and establishment of environmental water trusts. While there is general agreement on many of the broad analyses and proposed measures, there is also considerable debate over some of the implications (for example full commodification of water through separation of water and land titling) and aspects of the delivery mechanisms. In particular, the “decentralised regionalism” implied by the Group’s recommendations (Lane et al 2004) has been critiqued as glossing over requirements to work simultaneously with governance at a number of levels, of the complexity of “community” involved in community involvement, of upward and downward accountability, and of the matching of community-based and scientific knowledge (“democracy and technocracy”). These concerns match a more fundamental analysis of the contingency involved in decentralisation of natural resource management (Ribot 2004). The opportunity presented by the crisis to consider a wider range of interlinked issues associated with water futures has, however, been strengthened by the injection of ideas from the Wentworth Group into the drought debate.

*Implications for Development Assistance*

- The role of think tank or civil society groups (Wentworth Group) illustrates that there are people outside normal structures who can trigger water regulatory change. An important lesson from the Australian experience is that these groups were able to use the perceived crisis as a window of opportunity to influence water policy.
- ODA should allow a facility for ‘crisis’ response. There is a need to respond quickly when the moment is right. This response should not be limited to disaster relief but should also engage with political opportunities to respond with governance-related ODA.

*Conflict as a Driver*

In addition to the environmental imperative of scarcity and the link between scarcity and market management of water resources, the water crisis is commonly constructed with reference to actual or potential conflict. This is seen in analyses dealing with political or institutional scarcity (Molle and Molinga 2003) and with transboundary freshwater systems (Wolf 1997; Wolf 1998; Homer-Dixon 1999; Yoffe and Wolf 1999; Nicholson 2001; Alam 2002; Tapela 2002; Al-Weshah 2003; Shira, Wolf et al. 2003; Wallace, Acreman et al. 2003; Wolf, Yoffe et al. 2003; Kalpakian 2004; McCarthy and Prudham 2004). Water related conflict in transboundary river contexts, while historically contained, has the capacity to become a more pressing issue in the future if environmentally or developmentally induced scarcity worsens. For this reason, the scarcity/conflict dynamic constitutes a common justification for institutional water reform, and for the development of clearly defined regulatory and allocation mechanisms. This was expressed famously by World Bank Vice President Ismail Serageldin

who famously predicted in 1995 that, “if the wars of this century were fought over oil, the wars of the next century will be fought over water”.

The ‘water wars’ view is highly contested, however, and a number of water researchers maintain that water crisis claims are exaggerated and melodramatic. Many assert the capacity of water to encourage negotiation and inspire transboundary cooperation (Biswas 1995; Hamner and Wolf 1998; Alam 2002; Uitto and Duda 2002; Uitto and Wolf 2002). From this perspective, although scarcity can inspire competition, the essential nature of water is more likely to encourage states to agree on co-management than to resort to violent conflict.

**Text Box 4: Cases of Water Conflict as an Agent of Change**

*Key issues*

Many recent changes in the governance of water and of river basins have occurred as an outcome of conflict. In Australia, longstanding conflicts between environmentalists and farmers in the Murray-Darling provide the historical backdrop to the Landcare movement and to multi-stakeholder fora for managing water in its basin context. Over an even longer period, competing demands of States have served as the basis for institutional development of the Murray-Darling Basin water management framework. Conflicting visions of catchment management (for example more and less participatory models) have shaped institutional approaches in NSW.

Conflict avoidance can itself be a driver for innovation in the area of water governance. In Southeast Asia, the spectre of resource based conflict between the countries sharing the Mekong River has been a strong driver for cooperation through the Mekong River Commission, and an important justification for official assistance to the commission. This shared interest in avoiding conflict needs to be understood against the back-drop of the relatively recent presence of ideologically driven conflict in the region.

An important test case in conflict as a catalyst for innovative governance can be found in the Sesan case (Hirsch and Wyatt 2004). The impacts of the Yali Falls Dam in Vietnam on downstream riparian communities in north eastern Cambodia left indigenous minorities from a less powerful country having to deal with life and livelihood impacts of water resource development by the government of a neighbouring more powerful country. In principle, the Mekong River Commission should have been an avenue through which to seek redress. In fact the MRC facilitated the establishment of a government to government joint working group. However, this working group was unable to serve as a channel through which the affected communities or the civil society actors with whom they established a support network a voice in proceedings (Hirsch and Wyatt 2004).

In Thailand, the open nature of civil society has led to conflict over the drafting of a national water law. In one interpretation, it could be said that this has been a brake on reform, compared with the cases of Laos and Vietnam, whose water laws passed their respective national assemblies in 1997 and 1998, since there was little or no room for public discussion. Another interpretation, however, suggests that conflict has in fact brought discussion of water legislation and hence governance issues – such as water pricing options – into a much more robust public discussion in Thailand and hence is effective in bringing issues onto an inclusive national policy agenda. It should be noted, however, that whilst there was limited public debate over the draft water law in Vietnam it went through more than 20 revisions and was extensively debated in the national assembly before eventually being passed.

*Implications for Development Assistance*

- ODA should accept non-violent conflict as a natural part of the negotiation that characterises democratic determinations of river basin management and of wider water policy directions.
- Transboundary river basin governance tends to take on conflict at a government to government level and deals poorly with local or internal dimensions of conflict. ODA can support the poor becoming empowered to have their voice heard but often NGOs are better placed to achieve this than government to government assistance in situations of conflict, particularly where conflict has an intergovernmental dimension.
- ODA should aim to support different processes of law making and law reform. There is no one size fits all approach and development assistance programs need to identify different opportunities. Support for law reform that has not gone through deliberative processes should be approached with caution. Different opportunities for fostering inclusion and deliberation in different contexts should be identified and recognised.

What the ‘water wars’ debate does not capture is the less dramatic, everyday forms of conflict that occur at a livelihood level. As Miller (2003) argues in the context of the Mekong Basin, the kinds of conflict which tend to (eventually) register with water management authorities are the more overt forms, involving death, violence, social dislocation and destruction of resources and assets. Yet such forms of conflict are rare, with more subtle forms of conflict between neighbours, communities and countries much more apparent. Loss of livelihood due to environmental degradation, and rising costs of water access and use may contribute to landlessness, debt or out-migration. Some households and communities are more vulnerable to such changes than others, with local institutions for cooperation

and decision making on water and natural resources management determining to a great extent how resilient people are to changes in the timing, availability and quality of water (Miller 2003). As such, whilst water related conflict can be a catalyst for innovative institutional changes at various scales, the absence of overt conflict as a measure of the success of such changes may obscure the more subtle forms conflict may take.

### *Ideological Drivers*

The influence of ideology on water reform constitutes a significant driver for change in water regulatory regimes. Reflecting the influence of ideological drivers for change, international financial and technological organisations often promote particular reform agendas in accordance with broad economic philosophies. This is particularly the case in developing nations where governments may be more dependent on international development assistance contingent upon particular ‘structural adjustments’ (Saleth and Dinar 2000).

In particular, neoliberal theory has dominated recent discourses and informed management structures. Neoliberal regimes have been justified within the water sector by a belief that economically efficient water management systems are most appropriate where water resource supply is limited when compared to demand. Water reform is now commonly discussed in terms of “added value”, “cost recovery” and appropriate “water pricing” where cost recovery is presented as essential for economic sustainability (Jaspers 2003). In neoliberal water policy, the government role is limited with advocates asserting that government allocation of water resources is marked by inefficiency when compared with the management potential of market forces (ibid). The dominance of neoliberal ideology in the water sector is reflected in the discourses of financial institutions such as the Asian Development Bank (ADB) where much emphasis is given to ‘private sector participation’, ‘cost recovery’ and ‘water as a socially vital economic good’ appear in policy documents and guide loan regimes (Asian Development Bank 2003).

The influence of neoliberalism on water policy is reflected in international water management agreements such as the 1992 Dublin Principles. Significantly, the fourth Dublin principle explicitly states that water has an economic value and should be treated as an economic good. This principle has been widely drawn upon as an endorsement for the incorporation of market mechanisms into water resource management strategies and has become an accepted principle of international water law. Furthermore, while the Dublin principles position water as an economic good, they also acknowledge that water is a finite and limited resource. This premises and justifies market management mechanisms with claims of scarcity and legitimates a reduction in the role of states as natural resource managers as they are seen to be inefficient operators compared with market forces. However, the shift to private sector management of resources has so far been tempered by government unwillingness to relinquish control over essential resources. In Australia, for example, although neoliberal philosophies have permeated natural resource policies, much public infrastructure remains in corporatised state ownership (for example Sydney Water Corporation).

### **Text Box 5: Ideology and Sydney Water Corporation**

#### *Key issues*

‘Sydney Water Corporation’ was established in 1995 with the corporatisation of Sydney’s previous water utility the Sydney Water Board. Corporatisation was justified by the need to make the Water Board more customer-oriented, accountable and efficient in operation. It was seen as a move to deregulate the urban water sector and a first step in the transition to privatisation of water supply.

However, in 1998 Sydney Water Corporation was confronted with a crisis when *Giardia lamblia* cysts and *Cryptosporidium parvum* oocysts were found in Sydney’s drinking water supply. The ‘crypto crisis’ resulted in an effective re-regulation of the water sector, postponement of the privatisation debate and the establishment of the Sydney Catchment Authority (SCA). SCA is responsible for managing Sydney’s bulk water supply area with a view to ensuring high water quality. They are licensed by the Department of Infrastructure, Planning and Natural Resources to harvest water and sell it to Sydney Water Corporation who in turn sell it to urban consumers.

In addition to its relationship with SCA, Sydney Water Corporation works closely with three regulators: NSW Health, the Environment Protection Authority (EPA) and the Independent Pricing and Regulatory Tribunal (IPART). This triple regulatory framework is designed to ensure an equitable and safe supply of drinking water within a profit-motivated corporate

framework. However, there are obvious conflicts between agendas of the different regulators and the continued profitability of Sydney Water Corporation does not accord well with its public service mandate to provide safe and accessible water while protecting the environment. Particularly during times of scarcity, Sydney Water Corporation is faced with the mutually antagonistic objectives to encourage water conservation on the one hand and sell enough water to be a successful business (for the state treasury) on the other.

#### *Implications for Development Assistance*

- Independent regulation is an outcome of public recognition of a problem and recognition that the problem is in part a product of poor governance. Understanding fostered through capacity building etc can take the same dynamic of diagnosing problems in terms of governance deficiencies as well as in terms of the more immediate problem at hand
- There is scope within the bilateral facility in AusAID for specific assistance in the area of independent regulation. Thailand and Indonesia may be particularly appropriate for this kind of action (where the issue of regulation has been recognised and discussed). The need for independent regulation and its public acceptance is often recognised with reference to a specific problem.
- The quest for efficiency (corporatisation) can lead to inconsistencies in organisational objectives. Corporatisation brings necessity for simultaneous establishment of appropriate regulatory bodies. Ideology and broad government reform agendas need to be implemented on case by case basis. Paradox of economic rationalism. Package of reforms is needed not just one eg corporatisation.
- The less successful or problematic cases of Australian experience could be packaged and written up for policy makers in recipient countries. This already occurs to some extent with presentation of the Murray-Darling Basin experience and could be expanded.

Critiques of economic rationalist policies argue that the reasoning behind rationalist approaches is often not informed by historical experience or based on empirical support. As McCarthy and Prudham (2004) assert in assessing the influence of neoliberal ideology, projects that are profoundly political and ideological in nature are represented as founded on a set of objective biophysical and technocratic truisms. A further argument is that neoliberal natural resource management regimes are often lacking in practical or context-specific knowledge. As Stilwell (1993) asserts, economic rationalism has often been applied without reference to local level experience, and the theoretical advantages of economic rationalism can obscure empirical assessment of its successes and failures. Universal principles, models and institutional arrangements as promoted by key agencies active in the water sector have similarly been criticised by Molle as the institutional equivalent of monocropping (2004), undermining the resilience built into diverse systems.

Despite clear indications that economic philosophy has driven change in the water sector, with scarcity providing the impetus for introduction of more efficient economically based management, economic mechanisms have not been universally applied. Governments and public institutions have been unwilling to forfeit control over water due to its essential and unpredictable nature. Faith in the efficiency of self-regulating market management has been tempered by a recognition that intervention is often required for successful and adaptive management of a highly variable resource. For this reason, although economic mechanisms have been embraced as offering incentive based solutions to scarcity, the role of government has not been significantly scaled back and regulation continues to be central to water resources management.

Another ideology that has resulted in significant changes in natural resources management, including water, has been that of participation and the associated objective of more people-centred approaches. Whilst participation has long been an influential concept in a development context, and there are many participatory methods and tools employed at a project level to realise more inclusive decision making (including PRA and RRA techniques, stakeholder dialogues, focus groups, participatory mapping etc.), broader institutional changes influence both the nature of participation and its outcomes. Participation has been a strong driver for bureaucratic and organisational changes affecting water resources management, the most prominent of which is decentralisation. Whilst there are many opportunities for participation to result in greater community and stakeholder ownership for natural resources management decisions, and obvious benefits from the inclusion of diverse interests and knowledge of resource actors, there continues to be strong difficulties associated with the translation of discourse into actual institutional mechanisms for participation. The extent to which participation drives changes in water resources management is subject to constant negotiation by different resource actors.

### *International Water Policy*

An internationalisation of environmental policy has occurred in recent years with an increase in inter-governmental discussion and coordination of policy and a growing emphasis on the significance of international law for effective environmental management. Reflecting this, global water sector changes have been marked and propelled by a series of international fora for discussion of water and environmental governance. These meetings have often engaged stakeholders from a number of nations, yet generally speaking they have not been characterised by pluralistic membership due to the difficulties poorer and less powerful countries and actors face in organising themselves at the international scale. Table 2 details key events in the development of an international water policy framework.

**Table 2: International Fora and the Development of Global Water Policies**

<b>Date</b>	<b>Forum/Event</b>	<b>International Water Policy</b>
1972	UN Conference on the Human Environment	A turning point in the development of environmental policy. Recognition of the significance of appropriate environmental management for sustainable human existence. The Conference encouraged participants to consider a more integrated and holistic system of water management (Grover 1998).
1977	UN Conference on Water, Mar del Plata	The first UN conference dedicated to water issues. Assessment of water resources, use and efficiency. Recognised the human right to access water in quantities and of a quality necessary to fulfil basic needs. Led to the establishment of the UNDP-World Bank Water and Sanitation Program and the Water Supply and Sanitation Collaborative Council – two key institutions for fostering international cooperation in water policy and management (Grover 1998).
1981-90	International Drinking Water and Sanitation Decade	UN decade dedicated to mobilising international support for action in water and sanitation provision. The emphasis was on human health and engineering solutions. The decade saw a peak in international water related development assistance, primarily in the form of large infrastructure project funding.
1992	International Conference on Water and the Environment, Dublin	The Dublin Principles: <ul style="list-style-type: none"> <li>• Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.</li> <li>• Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.</li> <li>• Women play a central part in the provision, management and safeguarding of water.</li> <li>• Water has an economic value in all its competing uses and should be recognized as an economic good.</li> </ul>
1992	UN Conference on Environment and Development, Rio de Janeiro	The Rio Declaration on Environment and Development outlines principles of sustainable development. Agenda 21 refers to holistic management of freshwater within the framework of national economic and social policy. Compared with the Mar del Plata Conference, the Rio Conference does not refer to human rights but constructs water in terms of basic human needs.
1997	1 <sup>st</sup> World Water Forum, Marrakech	The Marrakech Declaration recognises the basic human need for water and sanitation, supports the preservation of ecosystems and encourages efficient use of water.
1997	UN Convention on the Non-navigational uses of International Watercourses	This Convention (not yet in force) was passed by a large majority in the General Assembly. It codifies customary law on the non-navigational uses of international watercourses. The Convention deals with cooperative management of transboundary watercourses and emphasises the principles of equitable and reasonable with specific attention to vital human needs.
2000	2 <sup>nd</sup> World Water Forum, the Hague	Acknowledgement of a world water crisis. Emphasis on integrated water resources management. Advocacy of a stakeholder approach and the need to make water management effective, efficient and equitable (for example through full-cost water pricing).

2000	UN Millennium Declaration	<p>Millennium Development Goals:</p> <ul style="list-style-type: none"> <li>To halve by 2015 the proportion of people who are unable to reach, or to afford, safe drinking water.</li> <li>To stop the unsustainable exploitation of water resources, by developing water management strategies at the regional, national and local levels, which promote both equitable access and adequate supplies.</li> </ul>
2001	International Conference on Freshwater, Bonn	<p>Recognition of the links between poverty, development and water and the importance of water for human health, livelihood, economic growth and sustainable ecosystems. Innovative approach taken to participation of diverse stakeholders' interests, including utilities, labour unions, NGOs and local government.</p> <p>Priority action areas identified as: governance; mobilising financial resources; and capacity building and sharing knowledge.</p>
2002	World Summit on Sustainable Development, Johannesburg, Rio+10	<p>Countries agreed in the Millennium Development Goals to commit themselves to halve the proportion of people who lack clean water and proper sanitation by 2015.</p> <p>The action agenda included development of affordable, and socially and culturally acceptable technologies and practices; innovative financing and partnership mechanisms; and the integration of sanitation into water resources management strategies.</p>
2002	UN Committee on Economic, Social and Cultural Rights General Comment No.15	<p>Details the human right to water including national legislative implementation and the obligations of non-state actors.</p> <p>Paragraph 2: "The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent death from dehydration, to reduce the risk of water-related diseases and to provide for consumption, cooking, personal and domestic hygiene requirements."</p>
2003	International Year of Freshwater	<p>Publication of the 2003 UN World Water Development Report assessing progress towards achieving the goal of sustainable development formulated at Rio in 1992, and the UN Millennium Development Goals relating to water. Progress was found to be generally unsatisfactory.</p>
2003	3 <sup>rd</sup> World Water Forum, Kyoto	<p>Recognition that good governance, capacity building and financing are of the utmost importance for effective water resources management.</p>

As can be seen from the above table, key changes in international water policy include: an increasing awareness of environmental problems and the consequent adoption of sustainability as a driving water management goal; the introduction of integrated water resources management as an overarching policy directive; the definition of water as an economic good; and a more recent shift to consideration of water as a human right.

Key shifts in international water policies are commonly replicated at the national level and operate alongside more locally specific factors to drive water regulatory reform. However the extent to which the development of international water policy and law has driven change is varied across different case study areas. Due to the influential role of international ODA, for nations with more aid dependant economies, the adoption of global water policies can be critical to ensuring the continued support of donor nations and the international diplomatic community. For more developed nations, aligning domestic policies with international agreements and events can be significant for the maintenance of a positive diplomatic image.

A key characteristic of the international debate on water, until the recently agreed Millennium Development Goals, has been a reliance on proclamations and general statements rather than binding international agreements to meet water management objectives, and water supply and sanitation targets. Because of the binding nature of the Millennium Development Goals, on the global stage, these have been an important driver for reforms aimed at achieving the year 2000 target of halving the number of people without access to clean water and sanitation by the year 2015. While provision of physical infrastructure is seen as a fundamental for achieving these targets (Camdessus 2003),

innovative governance is also seen as a necessary condition to facilitate construction, maintenance and management of such infrastructure and to ensure that it delivers equitable benefits in the right places. Within that broad consensus however, are significant differences over appropriate governance, financing and delivery mechanisms. A particular point of contention relates to the extent of private or public-private partnership roles in infrastructure provision and ownership. Close to this question is the issue of water user fees.

In the Asia-Pacific region, the Millennium Development Goals have not played as significant a part in setting of national targets as they have in Africa, Latin America or South Asia. However, there are exceptions. In the Pacific island states, for example, the MDGs have been an important driver for development assistance programs in the water sector, particularly in the area of rural water supply.

**Text Box 6: Vanuatu and the Millennium Development Goals**

*Key issues*

In Vanuatu, only 67% of the total population has access to improved drinking water. Women in particular spend significant amounts of time collecting water of questionable quality from distant sources.

There is at best a chequered history of rural water supply provision in Vanuatu, where a typical pattern has been the construction of a system with the assistance of bilateral grant aid. After a few years of operation, lack of maintenance and the absence of financial means to repair basic components render the system inoperable.

A program has recently been established with the assistance of New Zealand bilateral aid to provide rural water supply systems hand in hand with community-based governance and financial management. The success of this approach is based on a patient, slow, and labour-intensive process of collaboration between project implementing agency and consultants. However, the impetus to achieve Millennium Development Goals in Vanuatu now means approximately a seven-fold expansion of the WSS program, and there are concerns that the governance and financial management will fall by the wayside in the process, leaving question marks over the physical, economic and social sustainability of the investments.

With limited government capacity to respond (the Department of Geology, Mines and Water Resources has only 30 staff, 20 of whom are employed in Rural Water Supply), aid programs have relied on NGOs for community level capacity building. The NGO Wan Smol Bag has been employed to raise awareness and provide training on water governance in a culturally informed and relevant manner. They also perform popular radio plays dealing with health and sanitation and issues related to management of village water supply systems. Among the issues advocated are the roles and running of water committees, problems associated with pit latrines near water sources, healthy bodies and washing and wider messages that natural resources belong to the people to pass on to their children and future generations.

NZAID is also placing considerable emphasis on the development of a strategic plan in its Dec 2004 to Dec 2006 assistance in the water sector. Achieving the Millennium Development Goals would require about 85% of villages to have access to clean water by 2015.

*Implications for Development Assistance*

- External drivers may lead to a push for construction of physical infrastructure that goes ahead of established programs for management and governance capacity building. ODA programs needs to ensure that the hardware/software input into achieving MDGs is consistent with local absorption capacity.
- Development assistance agencies should work with local government and local NGOs (the Wan Smol Bag example). Limits to the speed with which new systems can be put in place will in part be determined by the staffing and capacity of such groups to absorb higher levels of support.

International policy drivers for change tend to be most effective when preceded by carefully orchestrated preparatory meetings and participation that aim in both process and outcome to realise a high level of consensus. Yet translating international policy and law into concrete changes requires a clear articulation of targets and some mechanism by which these are binding for governments and other actors. Whilst it is too early to conclude whether the MDGs will be more successful than earlier attempts to promote increased provision of WSS, the high level of consensus, political support and binding nature of the targets bodes well for their success. In assessing the success of such drivers for change attention needs to be paid to not only the outcomes of such initiatives, in terms of dollars

dispersed and systems constructed, but also the manner by which projects are implemented as this greatly influences the durability of outcomes.

### **3. Conclusion**

This paper has reviewed several key endogenous and exogenous drivers for water sector reform, with specific reference to governance, covering the drivers of scarcity, conflict, ideology and international environmental policy. The extent to which change in the water sector has been nationally defined or externally influenced is variable, with water regulatory reform shaped according to the political, environmental, cultural and developmental context of a country. For this reason it can be difficult to determine the relative influence of different actors in the water sector, yet what is clear is that the starting point for water reforms in each case is quite different and this needs to be taken into account when designing assistance programs.

Trends in donor approaches to water are strongly mirrored in the water policies of developing nations (Seppala 2002). Development agencies can drive reform where assistance is linked with support for particular policy changes and where the injection of funds changes the institutional landscape. International policy trends can be helpful in defining water regulation nationally, however uniformity in broad policy direction does not negate the need to consider context specific factors in the design and implementation of national water sector policies and projects. This is of particular significance for development assistance programming, which can be seen as operating at the interface of domestic and international policy. As Seppala (2002) notes, it is easy to develop policy and pass legislation, but implementation of policy needs to account for context-specific informal institutions such as attitudes, organisational patterns and human behaviour.

The scale from which drivers for change in the water sector originate is also significant in determining the type and direction of change. The relevant literature tends to focus categorically either on the international or local level, neglecting interactions between these and other scales. There has been a tendency to focus on the environmental and political imperatives for reform and investigation into the relative impact of national and international water management agendas and the negotiation between these has been neglected. Whilst exogenous processes can be influential in supporting evolution towards more sustainable water resources management, as evidenced by the impact of international environmental law and treaties on national legal and policy environments, there needs to be some engagement with contextual features to ensure the appropriateness of such changes. It is important to note when considering the relevance of the Australian experience for Australia's official development assistance program that much of Australia's water reforms have been driven by endogenous factors. This needs to be taken into account in the design and implementation of projects, identifying appropriate scales of intervention to ensure endogenous factors are addressed.

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## Annex 1: Water Regulatory Reform

### Water Sector Changes

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|---|--|
| The emergence of water allocation as a key policy issue           | <ul style="list-style-type: none"> <li>• There has been a fundamental change in the water policy framework in many countries away from water development towards water management and allocation Policies in favour internationally during the 'development era' of the 1950s to the 1970s have been superseded with strategies for allocating water and negotiating access rights This change has required a reorientation of water administration systems (Saleth and Dinar 2000) and a redrafting of water laws and policies The focus has shifted away from large-scale water projects governed by bureaucratic decision-making processes and dominated by political and engineering considerations towards more participatory decision-making with an emphasis on economic considerations and the need to achieve consensual water allocation (Saleth and Dinar 2000)</li> <li>• Despite the emergence of water allocation as a key management issue, it is important to recognise that this shift has not been universal In many river basins, particularly those in developing nations, water resources development remains a priority Large-scale infrastructure solutions to water management problems remain popular and continue to be advanced in political and economic arenas</li> </ul> |
| Decentralisation and the promotion of stakeholder participation   | <ul style="list-style-type: none"> <li>• Decentralisation has been a theme of water management in recent years with increasing emphasis on stakeholder participation in water resources decision-making In accordance with emerging beliefs in the role of government as facilitator rather than service provider, a characteristic of water sector reform is the recognition that involvement of local level stakeholders in water management decisions can enhance compliance and enforcement with water regulatory systems Increasing importance has been attached to river basin organisations (Saleth and Dinar 2000) with their capacity to both engage with stakeholders and provide coordinated policy and decision-making structures Decentralised management has not resulted in the exclusion of government from the water sector however, and local level flexibility has been paralleled by the development of regional coordination strategies (Saleth and Dinar 2000) Furthermore, although the general trend has been towards decentralisation, environmental risks have triggered a re-centralisation of water management in some case studies with government intervention seen as necessary to mitigate potential water crises</li> </ul>   |
| Integrated water resources management                             | <ul style="list-style-type: none"> <li>• Integrated water resources management emerged as a water policy principle following the Rio Earth Summit of 1992 In recognition of the need to consider the co-dependent nature of water and the surrounding ecosystem and to manage water along hydrological boundaries, integrated management has become linked to ideas of holistic water planning and the consideration of human and environmental processes as inextricably interlinked The implementation of integrated water resources management has required administrative change with water management increasingly incorporated within natural resource or environment arms of government rather than agricultural or energy sectors (Saleth and Dinar 2000)</li> </ul>   |
| The use of market mechanisms in the management of water resources | <ul style="list-style-type: none"> <li>• The favouring of market management mechanisms for water resources has been a theme of water policy worldwide since the 1980s Water was formally recognised as an economic good in the Dublin Principles of 1992 and is increasingly positioned within economic debates concerning appropriate pricing, full-cost recovery and valuation of water and ecosystem services Premised on neoliberal beliefs in the efficiency of the market, market management mechanisms are now widely accepted as a tool for the effective and efficient organisation of water allocation systems to ensure that water is directed to its highest value use Although the implementation of market mechanism in water management systems has not occurred unchecked, the development of market regulatory systems in the water sector is undoubtedly one of the key changes in the global water sector and has influenced water management at all policy and decision-making levels</li> </ul>   |

## Annex 2: Changes in Water Related Development Assistance

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### *Changes in Water Related Development Assistance*

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Hardware to software projects and a focus on governance	<ul style="list-style-type: none"> <li>• There has been a re-orientation of water related development assistance away from 'hardware' projects involving the provision of large infrastructure towards a 'software' approach engaging with issues of effective governance and institutional capacity building</li> <li>• The shift to software is reflected in a net decrease in the volume of water related development assistance since the 1980s Water Supply and Sanitation Decade (Seppala 2002)</li> <li>• In accordance with the focus on governance issues there has been blurring of the delineation between development assistance and policy intervention with an enabling policy environment seen as essential for effective aid delivery</li> <li>• Most development agencies want to influence policies and programs that will sustain longer-term progress and enable a reduction in future development assistance (Grover 1998)</li> </ul>
Multilateral development assistance	<ul style="list-style-type: none"> <li>• Diminishing development assistance resources and increasing funding requirements of water and related services encourages development assistance agencies to operate cooperatively rather than individually (Grover 1998)</li> <li>• There has been an increase in the channelling of development assistance funds through multilateral institutions In contrast to the traditional bilateral aid model, development assistance conceived and coordinated by multilateral institutions relies on cooperation between states and institutions</li> <li>• Examples of key multilateral players in water related development assistance include the Asian Development Bank, the World Bank and the Global Water Partnership</li> <li>• The growing significance of multilateral development assistance has underscored connections between water related development assistance and international trends in water sector policies</li> </ul>
Government as provider to government as facilitator	<ul style="list-style-type: none"> <li>• There has been a shift in the role of government (and consequently of government arms responsible for development assistance) away from service provision towards service facilitation</li> <li>• The change can be understood with reference to neoliberal economic philosophies</li> </ul>
Financial instruments for development assistance	<ul style="list-style-type: none"> <li>• In accordance with the mainstreaming of neoliberal ideas, financial instruments play an increasingly important role in development assistance and are often promoted by development assistance agencies</li> </ul>
Transfer of institutional models	<ul style="list-style-type: none"> <li>• The importance of an enabling institutional environment for effective development assistance has been recognised</li> <li>• Transfer of 'best practice' institutional models has been a feature of recent development assistance models with the aim of improving institutional capacity in recipient nations</li> </ul>

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