

Is the Environment Getting Its Fair Share? An Analysis of the Australian Water Reform Process Using a Social Justice Framework

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Published online: 28 July 2013
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Abstract Australia is currently undergoing fundamental and far-reaching reforms in water management that have been prompted by wide-spread environmental degradation caused by past water management practices. This paper is an extract of a wider study that explores how governments incorporate social justice into water reform policies and how that effort is perceived by non-government stakeholders. Using a comprehensive Social Justice Framework, we used a mixed methods approach that combines a quantitative content analysis of key water reform documents with a qualitative semistructured interview process to identify and analyse three principles of social justice that apply to the environment as a water stakeholder: need as a distributive justice principle, representativeness and accuracy as procedural justice principles. We found that the environment is identified as a legitimate water stakeholder whose needs are meant to be assured through the water reform process. However, the environment suffers from a crisis of identity. Other water stakeholders claim to speak for the environment but say different things. Thus, due to a diversity of voices, strong government intention to satisfy environmental needs is diluted in practice. Furthermore, the prerogative to define and measure environmental needs through science, while deemed to be fair and objective, leads to unintended consequences that complicate management and disenfranchise less scientifically capable stakeholders. Overall, we believe that the

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formal recognition of the environment as a stakeholder in water reform is a significant forward step but its crisis of identity must be resolved before the environment can fully utilise its new role as a stakeholder.

Keywords Distributive justice · Procedural justice · Water reform · Environment

Water management in Australia is currently undergoing fundamental and far-reaching reforms. Distribution of water has changed from one single, clear objective—extraction for agriculture and urban water supply—to a more complex goal of ensuring sustainability and certainty for human consumption, production, the environment and the welfare of water-dependent communities. Consequently conflicts over the fairness of the water reform process and outcomes for different water stakeholders are becoming apparent, making an exploration of government's efforts to incorporate justice and fairness into its policies highly relevant. In our previous larger study a Social Justice Framework (SJF) was used to analyse distributive, procedural and interactional justice principles in Australian water reform for three different stakeholders: landholders, the environment and Aboriginal peoples. In this paper, we examine how distributive justice and procedural justice are applied to the environment as a stakeholder. Specifically, we discuss the presence, implementation and consequences of social justice principles that impact on the environment as a water stakeholder: need as a distributive justice principle, and representativeness and accuracy as procedural justice principles.

Social Justice Framework

Social justice as described by social psychologists is a type of justice that looks at the allocation of benefits, such as bargaining power, resources or fundamental rights and duties, in a society (Prilleltensky & Nelson, 1997). Water is a complicated resource for social justice research because of its dual nature as a public good and a private property right, invoking calls for both rights and responsibilities among its users and managers. It exemplifies the conflict between the rights and needs of the individual and the rights and needs of a greater collective (Clayton & Opatow, 2003; Sabbagh & Golden, 2007; Wilke, 1991); these conflicts are termed social dilemmas (De Cremer & Van Vugt, 1999).

This study applies a SJF to Australian water reform (see Lukasiewicz, Bowmer, Syme, & Davidson, 2013, for details of the development of the SJF). The SJF is a set of categories for justice principles. These three categories are distributive, procedural and interactional justice, which correspond to three distinct social justice foci (Skitka, 2009). The three components of the SJF presented here have been applied to water management issues by Syme and Nancarrow (2002) in a much less rigorous format. While our larger study examined all three components, in this paper, we omit references to interactional justice (or inclusionary justice whereby

people are seriously considered and given dignity in the decision-making process), and instead have focused on the environment as a water stakeholder.

Distributive Justice

The original focus of social justice research was on distributive justice, which is concerned with how resources are distributed in a group (Brockner & Wiesenfeld, 1996). The Framework used here applies two relevant distributive justice models to the water reform process: Deutsch's (1975) model on distributing resources in cooperative relationships, which outlines resource distribution according to the principles of need, equity and equality; and Wilke's (1991) Greed-Efficiency-Fairness (GEF) hypothesis, which defines three motivations in resource distribution: greed (the pursuit of self-interest); efficiency (desire for good management of the resource) and fairness (adherence to social norms).

Procedural Justice

Later, the focus of research shifted to procedural justice, which concentrates on how the decisions are made rather than how the resource is distributed (Wendorf, Alexander, & Firestone, 2002). While procedural justice literature lacks a comprehensive model, the principles needed to achieve procedural justice can be grouped into three headings based on Paavola's (2007) model: (a) who is allowed to participate, or whose interests are included in the decision-making process (representativeness); (b) how much power do participants have to affect the decision (level of power); and (c) what are the rules of the process that ensure fairness (process rules). Representativeness refers to Thibaut and Walker's (1975) voice hypothesis, which states that people need to be heard, even if they have little influence on the decision. The level of power is based on Arnstein's (1969) ladder of participation. The 'process rules' subcategory is based on Leventhal's (1980) six rules designed to ensure a fair process: consistency; impartiality; accuracy; correctability of errors; representativeness and ethicality.

Water Reform

Australia is often described as the driest inhabited continent on Earth experiencing the highest variability of river flows (Khan, 2008). The past several decades exposed the considerable environmental degradation that resulted from historical water management practices. After colonisation, water quickly became a productive resource, regulated by state governments to promote economic expansion development and progress (Connell, 2007; Tisdell, Ward, & Grudzinski, 2002). River health was described in purely production-related terms and managed in order to achieve stability and predictability of water flows for commercial usage (Hillman, 2006). Due to the rainfall variability, large-scale water storages were promoted to develop irrigation (Khan, 2008) and engineering works were built (such as the

Snowy Mountains scheme) that altered the natural flow of rivers and significantly decreased water flows (Kingsford, 2000).

In the 1980s, focus began to change from production to conservation (Godden, 2005) as community support for the environment came to the fore (McKay, 2002), prompting water managers to consider environmental and social policy objectives. The environment thus began to emerge as a water stakeholder. There was a move away from engineering works to catchment conservation and restoration (Hillman, 2006), highlighting the role of local communities as stakeholders. The focus on environmental degradation in Australia was augmented by a decade-long drought (referred to as Millennium Drought) that started in the early 1990s and only broke in early 2010 with significant flooding in the north-eastern parts of the country. This was the second most influential drought in Australia's history and was compounded by the growth in development, over-allocation of existing water resources and climate change (Kendall, 2010).

Water management has been a contentious issue from the beginning of colonial settlement, which nearly derailed Australian Federation in 1901. It remains a significant challenge for Australian governments and its management remains mired in institutional complexity. The development of water resources has allowed the Basin to become Australia's food bowl, where agriculture is the dominant economic activity (CSIRO, 2008). Irrigation in the Basin takes up only 2 % of the land but uses around 90 % of the extracted water to produce 70 % of the country's irrigated agricultural output, valued at seven billion Australian dollars (Pittock & Finlayson, 2011). Other significant water users include major cities in the region and their inhabitants: over two million people live in the Basin and a further 1.3 million directly rely on its water resources, including the entire city of Adelaide (ABS, ABARE, & BRS, 2009). All of these water users were significantly affected by the Millennium Drought, with city dwellers facing unprecedented water restrictions and some agricultural enterprises completely ceasing to function (like the rice industry in NSW) (McAlpine et al., 2009).

The current water reforms commenced in the early 1990s and advanced significantly in late 2012 when the current government approved the Murray-Darling Basin Plan, which seeks to balance water usage between human and environmental needs by returning 3,200 gigalitres of water from agriculture to the environment. The reforms changed the goal of water management from a focus on extraction to a more complex set of social, economic and environmental objectives, usually described in terms of sustainability and certainty for human uses and water-dependent ecological systems (Hamstead, Baldwin, & O'Keefe, 2008). During the Millennium Drought, water allocation became a national topic of debate and a source of frustration and anger in rural communities. The uncertainty and angst in the irrigation sector caused by continuing water reforms (Young, Shi, & McIntyre, 2006) heightens the importance of incorporating social justice into government action. The public debate became quite heated (Higgins, 2010) and focused almost solely on the existing state of the environment and how productive enterprises (especially irrigation) would be affected by any cuts to water availability (Cullen, 2012).

The reforms are of interest internationally with the hope that they will provide an effective model for water law, policy and management (Godden, 2005). How water, as an essential and productive resource, is shared between sections of the Australian society is a continuing and very relevant debate for the future prosperity of Australia as a nation. Relatively few studies (see Daigle, Loomis, & Ditton, 1996; Lauber & Knuth, 1999; Syme, Kals, Nancarrow, & Montada, 2000) have applied social justice theories and models into real-life situations. The novelty of this paper lies in the application of social justice principles, derived from an academic framework, to a real-life situation revealing how intangible, but intrinsically important concepts like *fairness* and *justice* are incorporated into government policy and programmes.

Methods

A mixed methods approach was used that combined a semi-quantitative content analysis of key water reform documents with a qualitative semi-structured interview process. Two ecologically comparable study sites were selected to focus the research and provide a background and context to the exploration of justice in government policy: the Lowbidgee Floodplain in New South Wales (NSW) and the Chowilla Floodplain in South Australia (SA) (see Fig. 1). These sites were used to explore the implementation, and impact of justice principles on real-life situations by establishing how government intentions regarding social justice are incorporated into water policies and practice at different levels of government.

Content Analysis

The use of the content analysis method to identify social justice principles rests on the assumption that the chosen key documents accurately represent government intentions regarding the water reform process. Overall, eight key documents were selected (Table 1). The COAG 1994 Agreement was the document that launched water reform, while the NWI 2004 is still acknowledged as the blueprint for Australian water reform. The National Plan for Water Security was a groundbreaking policy establishing new governance arrangements for water management between the federal and state governments which were then put into law through the national Water Act 2007 and then agreed to by state governments in the 2008 Agreement on Murray-Darling Basin Reform. The 2008 Water for the Future policy is the current government's water policy, continuing many themes of the previous policy but providing greater emphasis on the needs of the environment. The two case studies in this research are in NSW and SA so the water legislation of both these states is included.

Although different in their language, length, function and legal standing, these eight documents were chosen because each document prompted major changes in water management and the chosen documents reflect all policy formulation and implementation levels (federal, interstate and state). Also the diversity of document types provides a more complete picture of justice principles in a legal, policy and management context. Since the study was concluded in 2010, the Murray-Darling

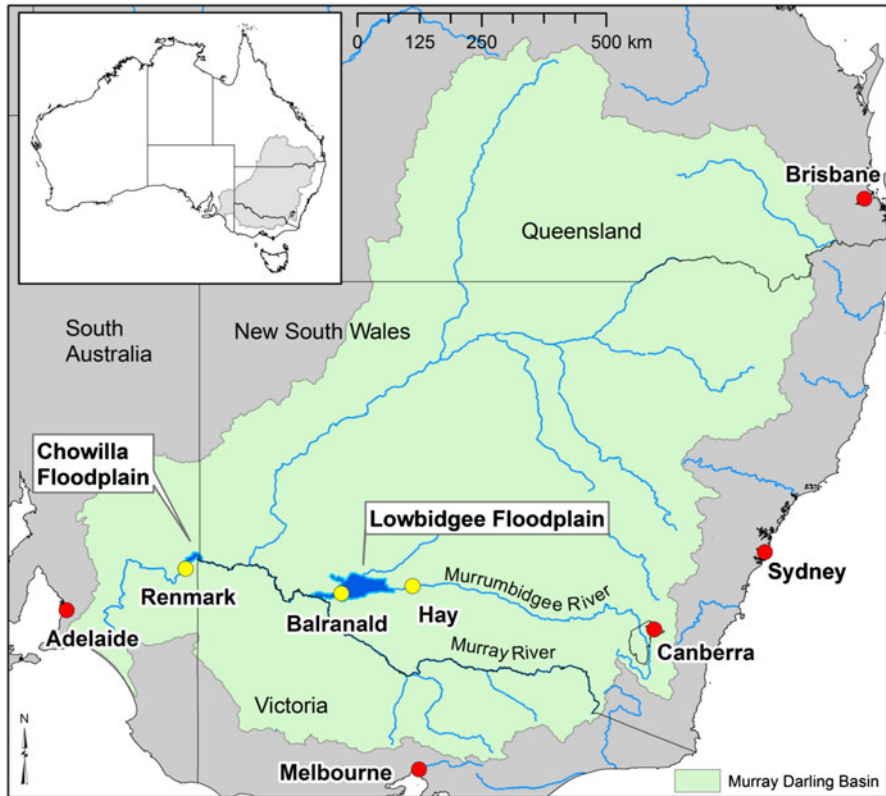


Fig. 1 Map of the two study sites within the MDB

Table 1 Key documents in Australian water reform

Full name	Acronym	Level	Years
The Council of Australian Governments' Water Reform Framework (includes federal and all state governments)	COAG	Interstate	1994
The Intergovernmental Agreement on a National Water Initiative	NWI	Interstate	2004
The Intergovernmental Agreement on Murray-Darling Basin Reform	MDBA	Interstate	2008
Water Act	WA	Federal	2007
National Plan for Water Security	NPWS	Federal	2007
Water for the Future	WtF	Federal	2008
Water Management Act	NSW WMA	State	2000
Natural Resource Management Act	SA NRM	State	2004

Basin Plan and several other important documents have been developed but are not included in this paper. The Plan is being analysed separately.

Key words for individual justice principles were selected from the SJF. More detailed key words were developed on reading the documents. For example, any words indicating the procedural justice principle of ‘participation’ were coded based on the word ‘participating’ and including ‘public involvement’, ‘engagement’ and ‘consultation’. Words not relating to justice were omitted. For example, the keyword ‘equity’ turned up references to ‘inter-generational equity’ and the need for ‘equitable’ water distribution, which were included in the content analysis, but references to ‘financial equity’ were omitted because they did not refer to equity as a principle of distribution. Often documents contained implicit references to justice principles. For example, the following reference ‘arrangements require that allocations to provide a better balance in water resource use (including appropriate allocations to the environment)’ (COAG, 2004, p. 8) does not contain the keyword ‘need’ but makes an implicit reference to need as a principle of distribution by mentioning ‘appropriate allocations to the environment’. Similarly, the following reference mentions environmental ‘outcomes’ but clearly refers to the distribution principle of ‘need’ because it talks about increasing wetland health and protecting floodplain areas: ‘The Basin Plan will, among other things, seek to improve the environmental health of all Ramsar and other key environmental sites in the Basin and secure important environmental outcomes, such as increasing environmental flows, healthier wetlands, and protection of floodplain areas and River Red Gums’ (COAG, 2008, p. 3). The coding process always considered the context. Thus key words were searched, but the context of each keyword was checked before allocating the keyword to a particular code, and so the definition of each code is very important to understand in the coding process. Then, the number of times a SJF principle appeared was coded and counted. This was an iterative process that was repeated until no new references to principles and no new key words could be found. The results were then verified by two independent coders.

References to 30 principles were found across the eight documents and frequency of occurrence was recorded. However, the frequency with which a principle appears may not be proportional to the intent of the document. Some form of ‘weighting’ needed to be established, but weighting has not been well developed in content analysis (Stemler, 2001). We assumed that principles expressed as an objective of the document have a higher weighting than principles stated in the text. The policy and legal documents we analysed state what the document is meant to achieve, why and how. The content concerning ‘what is meant to be achieved’ is the core of the document, even though its keywords may not be numerically frequent. We divided the documents into two parts: an ‘objectives’ section (the document core which includes the objectives, introduction or vision statements) and the ‘main text’ (the rest, minus references). The number of times a principle appeared as an objective of a document signified its ‘weighting’ while the number of times it appeared in the main text signified its ‘frequency’. The following simple equation was then used to determine the principle’s ‘relative importance’ (i.e. its importance relative to other principles in the document).

$$\text{Frequency} \times \text{Weighting} = \text{Relative importance (RI)}$$

The resulting number was termed the ‘relative importance score’ and used in the subsequent analysis. Multiplying the frequency by the weighting avoids possible distortion of results. If we only scored the frequency (i.e. a simple word count), we could have overestimated how important a principle is based on the relative length and nature of a document; longer documents may contain more words and, therefore, a higher frequency of justice principles while legal documents may be overly repetitive. On the other hand, focusing solely on the weighting (looking only at the justice principles in the objectives section of a document) could overestimate the importance of a principle: if a principle was mentioned as an objective (and, therefore, has a weighting score) but has little or no mention in the main text of a document it suggests that this principle is not likely to be implemented, as there is no direction or explanation for how to implement it in the text. In our content analysis, we found that a high frequency score inevitably led to a weighting score higher than zero.

Limitations

The RI is the simplest way of showing the proportionality between different principles but there are several limitations to this method. The process of coding texts is ultimately subjective and difficult as many principles are hidden and implicit and must be inferred from the text, rather than being explicitly stated (see examples above). The timing of the analysis also affected the results. The eight chosen documents covered the period of water reform from 1994 until 2009, so most were written during the Millennium Drought. Water reform is a continuously changing political process so subsequent documents may emphasise different principles. The content analysis presented here should not be considered as an ultimate assessment of water justice intentions, but a snapshot in time.

Semi-Structured Interviews

The content analysis of government documents was supplemented with semi-structured interviews with key stakeholders. Overall, 61 semi-structured interviews were conducted between December 2008 and May 2011.

The breakdown of respondents is shown in Table 2. Government respondents at the federal and state level were chosen based on their roles as water managers; at the federal level, public servants from the National Water Commission (NWC), the former Murray-Darling Basin Commission and the current Murray-Darling Basin Authority (the three Basin-wide independent bodies charged with various aspects of water management) (see Connell & Grafton 2008 for an explanation of these organisations). These respondents were all long-term public servants who were either currently engaged in formulating or implementing water policies or had been engaged in it at key stages of the water reform process. The regional level in Table 2 refers to catchment management organisations which constitute the regional-level natural resource management (NRM) structures. Long-term public servants in water

Table 2 Interview respondent categories and numbers

Government bodies	No. of respondents	Non-government stakeholders	No. of respondents
Federal	11	Scientists	4
State	12	Landholders/locals	15
Regional	2	Citizen groups	2
Local	4	Aboriginal elders	11

management departments were also targeted at the state level in the NSW and SA state governments.

Key non-government stakeholders targeted in the study included landholders (primarily croppers and graziers), locals and Aboriginal people. The citizen group category refers to an urban-based group concerned about the environmental health of the Basin river system. In Chowilla, non-government stakeholders were identified from a state government community committee while in Lowbidgee, respondents were sought from local organisations recognised as standing for the Lowbidgee floodplain. Aboriginal respondents in both the case studies were approached through an intermediary, an Aboriginal liaison officer working for a government agency who had a good working relationship with a tribal group whose traditional lands spanned both Lowbidgee and Chowilla floodplains. The four scientists were chosen based on their long-term research of the two floodplains.

Often respondents suggested other potential interviewees, so many of the 61 interviews resulted from the snowballing method (described in deMarrais, 2004). Government respondents were predominantly middle-aged men, although there were more female respondents at state government, than the federal level. All government respondents were interviewed in their offices. Interviews with non-government stakeholders were conducted in their homes. All the interviewed landholders were male, while the Aboriginal respondents were a mix of male and female interviewees. While most interviews with Aboriginal elders also took place in their homes, a number insisted that the interview should take place ‘on country’, i.e. on the banks of the River Murray.

Questions for the federal government respondents focused on water reform policies and national programmes while questions for state and local government respondents were related to the study sites. General questions aimed at government respondents included: ‘What are the greatest justice issues in water management today?’ and ‘What are the essential criteria for a fair process?’ These were followed by more specific exploration of the policy and legislative documents.

The scientists, regional respondents and Aboriginal elders have long associations with the two floodplains. The landholders and irrigators are people who live on the floodplains while local people are those who live near the floodplains and regularly enjoy them (hunters and fishermen). Questions at this level were more personal, such as ‘What kinds of values does the river (floodplain) have for you?’ Respondents were also encouraged to discuss issues currently affecting the two

floodplains, such as the development of a water management plan in the Lowbidgee and the building of a regulator on Chowilla Creek. These questions elicited the respondents' experiences and understanding of the impacts of the water reform process in their area and their beliefs and perceptions about its effectiveness. None of the respondents were from conservation or environmental organisations because these do not exist for the two study sites and national environmental and conservation organisations do not work on the floodplains and had no specific knowledge of them. However, all government and non-government respondents were questioned about the environment and who its representative is.

The interviews were analysed through a process of iterative coding and thematic development using Excel tables and NVivo software (version 8) to store and sort data. The major activity of data analysis involved categorising data based on themes and topics. Interview data were initially coded thematically to match coding from the content analysis. Then new codes were created to capture themes raised in interviews that did not appear in the content analysis, mainly explanations around how social justice principles were implemented, perceptions of these and explanations of what went right and what did not. The process followed analytic induction (explanation building) which is a form of pattern building that compares findings against an initial proposition and revises it as more findings emerge and offer alternative explanations (Gibbs, 2002).

Results and Discussion

The Environment as a Stakeholder

The Murray-Darling Basin is a vast geographical region that covers one-seventh of the Australian continent and incorporates multiple bioregions, Australia's three longest rivers—the Murray River, the Darling River and the Murrumbidgee River—and contains over 30,000 wetlands, 16 of which are listed on the Ramsar Convention (Commonwealth of Australia, 2011a). The efforts to regulate rivers for the purposes of navigation and irrigation that started soon after colonial settlement have exacted a heavy toll on the natural environment, especially in the lower reaches of the MDB. The water reform process was spurred by the visible and ongoing environmental degradation due to the past water management practices. These signs of degradation include: increased soil and groundwater salinity, decreased surface water quality, algal blooms, coastal area degradation (Kingsford, 2000), broad-scale death of floodplain forest trees, and the conversion of freshwater wetlands into acidified and salinised water bodies (Pittock, Finlayson, Gardner, & McKay, 2010). The degradation is most severe in the lower third reach of the iconic Murray River (Scanlon, 2006). There are also estimates that half of the Australian birdlife has disappeared due to river regulation (Kingsford & Thomas, 2004). The ecological state of the MDB was assessed in 2008 through the Sustainable River Audit which found thirteen out of twenty-three valleys in the Basin to be in 'very poor' health, while a further seven were in 'poor' health (MDBC, 2008). Due to the recognition of its poor health, the environment officially became a stakeholder in

water management with rights to water access. However, how can a river (and its associated ecosystem) assert its ‘right’ to water? The identity of the environment, in this case represented by floodplains of the Murray-Darling Basin, as a water stakeholder needs to be explored.

Interviews revealed a diversity of views on what the environment is. Generally, government respondents tended to identify the environment as a somewhat anthropomorphised stakeholder. The following quote is typical of how these respondents spoke of the environment: ‘The environment always has to justify every single drop of water it uses... “how are you going to use it, what are the objectives?”... whereas the same hurdles aren’t placed on the irrigators’ (federal government respondent). Other respondents (mostly landholders and irrigators) highlighted the complexity of defining what the environment is (and, therefore, how much water it needs). One local government respondent asked outright ‘Is that [the environment] every piece of backwater along the stretch of the river, or is it only selected ones?’ Others acknowledged outright that the environment is what we make it ‘So, of course we’re maintaining the environment for the environment’s sake, but we’re doing it for our own benefit’ (scientist). Such social constructions of the environment are further explored in [Lukasiewicz, Davidson, Syme and Bowmer \(2013\)](#) which shows that government managers and scientists understand the environment as a scientific reality of interconnecting ecosystems, fragile habitats and degraded landscapes which need to be protected from further human encroachment and damage; while landholders understand the environment as their surroundings and resources to be lived in, used and enjoyed.

Since interview respondents had varied impressions of the environment as a stakeholder, how do policy and legislative documents define the environment as a stakeholder in water reform? Many references echo the idea of the environment as an anthropomorphised entity. For example, the National Water Initiative includes references to actions such as: ‘(iv) recognise and protect the needs of the environment’ (COAG, 2004, p. 11) and the COAG Agreement specifies that States and Territories should meet environmental water needs while recognising existing rights of prior users (COAG, 1994, p. 2). In the analysed documents, the environment is referred to in terms of ecosystem services and functions. For example, the Federal Water Act does not provide a definition of ‘environment’, but does define environmental assets (as water-dependent ecosystems, ecosystem services and sites with ecological significance) and environmental outcomes (ecosystem function, biodiversity, water quality and water resource health) (Commonwealth of Australia, 2007, pp. 7–8). One of the key aims of the National Water Initiative has been the setting of Sustainable Diversion Limits (only recently achieved with the passage of the Basin Plan). These diversions are defined as: ‘the level of water extraction from a particular system which, if exceeded would compromise key environmental assets, or ecosystem functions and the productive base of the resource’ (COAG, 2004, p. 29). This definition highlights that the core definition of what constitutes the environment in legal and policy terms: environmental assets, ecosystem functions and resource productivity. These core points highlight the anthropocentric definition of the environment.

Distributive Justice

The content analysis of key water reform documents revealed that the distributive justice principle of ‘need’ (based on Deutsch, 1975) dominates the reform process. Figure 2 shows the Relative Importance Scores for identified distributive justice principles across the eight key documents. It indicates that water is intended to be distributed primarily on ‘need’.

Distribution of water according to need has the highest RI score of all the social justice principles. But if need is the most important distributive justice principle, whose needs are recognised and catered for? Analysing the need principle further revealed that documents usually specified a stakeholder or interest when the need principle was mentioned.

Table 3 shows the breakdown of different types of needs identified across the eight key water documents as a percentage of the Relative Importance Score. These needs are as they appear in the various documents (so some documents specify community needs while others talk about social needs without either ever being defined). However, they have been broadly grouped into the triple bottom line dimensions (environmental, social and economic).

This breakdown clearly shows two overall types of needs: environmental and human-related. According to the content analysis, the needs of the environment are clearly more important than all the human-related needs put together. Most of the documents have been written during the Millennium Drought, which some argue has been unprecedented. The focus on need can thus be attributed to a climate of water scarcity. The content analysis and interviews revealed three key issues about ‘need’ as a distributive justice principle for the environment: (1) that definitions of

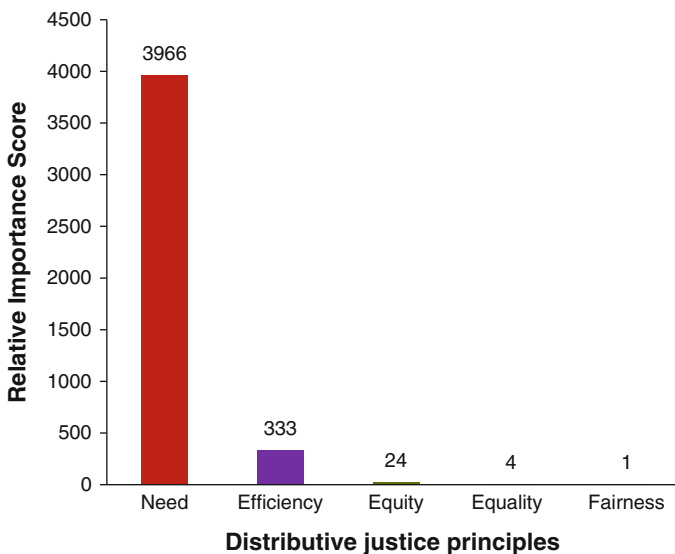


Fig. 2 Relative importance scores for distributive justice principles

Table 3 Types of needs identified in water reform documents

Type of need identified in documents	% of RI score
Environmental	
Total	74
Economic	
Economic—general	8
Irrigation	5
Industry	>1
Total	13
Social	
Human	1
Social	3
Public outcomes	5
Community	3
Indigenous	>1
Cultural	>1
Recreational	>1
Total	13

these needs are ambiguous and subjective; (2) that their relative prioritisation has shifted during water reform and (3) that the debate about water reform has been framed in a production versus environment duality.

Definitional Ambiguity

The types of needs shown in Table 3 have no standard, detailed and consistent definitions. For example, both the NWI and the national Water Act provide formal definitions of environmental outcomes as including ecosystem function, biodiversity, water quality and water resource health (Commonwealth of Australia, 2007, p. 8; COAG, 2004, p. 29). But such definitions are very broad, providing little guidance on how decision-makers can formulate environmental needs or decide how much water ought to be enough. So, while the documents establish need of the environment as a paramount distributive justice principle, they do not offer useful definitions of what actually constitutes this need or any guidelines on how decision-makers are to address them, a finding that is supported by the literature (Hamstead et al., 2008; NWC, 2009).

Shifting Prioritisation of Environmental Needs

In the early 1990s, when the water reform started, the needs of the environment were given the greatest emphasis because the extent of environmental degradation was beginning to be realised. However, both state and federal government respondents pointed out that as the Millennium Drought continued, town water supplies were threatened by unprecedented low dam levels and critical human needs

came to dominate management thinking. As a consequence of the worsening conditions, the national Water Act of 2007 gave priority of allocation to critical human needs. Securing the water supply for people thus replaced environmental degradation as the major public concern. As a result, in December 2008, the Water Act was amended to include ‘critical human needs’ as the top distributive priority. The progression of the drought thus dictated a change in the prioritisation of needs. There is an ongoing ambiguity in the reform process of how environmental needs are treated relative to other types of needs. At the heart of this ambiguity lies the NWI’s dual provision of ensuring environmental needs while recognising the needs of prior water users (referring mainly to irrigation). Gardner and Bowmer (2007) indicate that this ambiguity has been there from the start of the water reform and has not been resolved yet. The Water Act has been largely interpreted as putting the environment first, an interpretation fully supported by the content analysis results presented here. However, public protests following a draft Basin Plan which seemed to put the environment first have forced the current government to direct the Basin’s main water management body to optimise environmental, social and economic outcomes equally, rather than prioritise the environment (Maher & Wilson, 2010).

Production Versus Environment Framing

In the media, the water reform debate is continually framed as a production versus environment dichotomy (Clarke, 2011). This dichotomy was most recently acknowledged in the 2012 Parliamentary Inquiry into the Guide of the Draft Basin Plan; ‘water reform debate is commonly argued as a trade-off between the environment and irrigation communities’ (Commonwealth of Australia, 2011b, p. 37). Viewing water reform through the environment versus production lens separates the two into competing and non-interdependent variables. This leads to a focus on trade-offs and a failure to perceive a more integrated view of sustainability and the inter-dependence of environmental and production requirements (Commonwealth of Australia, 2011b; Ryan, Broderick, Sneddon, & Andrews, 2010). This framing also ignores the multitude of other water uses, such as amenity, tourism, domestic supply, transport, power generation, flood control and health (Howard, 2008).

Table 3 reveals a third category (social needs such as Aboriginal needs) for those needs that do not fit into environmental or economic categories. These ‘social’ needs have an RI score comparable to the economic needs. These ‘social’ needs also represent ‘composite’ needs; for example, satisfying Aboriginal or community needs necessitates the achievement of some economic and environmental needs. The erroneous simplification of a complex water reform process into the environment versus production dichotomy hides these ‘social’ types of needs where the economic and environmental not only meet but are mutually necessary. Several interview respondents, including both government officials and landholders concur that in practice priority is given to irrigation, over environmental needs because the volumes of water available to the environment are much less than for irrigation. There is also a belief among government respondents that irrigation needs are also prioritised through the planning process. A NSW state government

respondent explains how this domination occurred: ‘In terms of representation, there were more consumptive user reps essentially than environmental reps. So it was supposed to be a consensus process and generally an issue was haggled around until consensus was reached but that often meant that certainly the environment side of the equation had to move a bit further than the others, just through way of numbers’. The respondents’ perceptions are in line with suggestions (made by Hamstead et al., 2008) that there has been a clear bias to provide water supply at expense of environmental requirements.

Procedural Justice

While the content analysis emphasises the importance of distributive justice principles, the interviews with government respondents highlight procedural, rather than distributive justice. As noted by two federal government respondents, justice regarding water management is intended to be achieved by giving all stakeholders an opportunity to participate, rather than striving to provide them with a pre-determined outcome. Both federal and state government respondents recognised multiple stakeholders and diverse interests in the water management decision-making processes, and stated that promoting fair processes, rather than fair outcomes, is a more achievable way of implementing justice. A federal government respondent admits that justice and fairness cannot be guaranteed because: ‘they [managers] have to somehow translate that word [fairness] into practical outcomes, where some people will win and some people will lose and everybody who loses will believe that it’s been unfair’. If fair outcomes cannot be guaranteed then at least a fair process can be sought, and, this will heighten the possibility of fair outcomes. Such a belief is the basic tenet of procedural justice.

Water reform has greatly increased and diversified the number and type of stakeholders involved in decision-making. Figure 3 lists those stakeholders specified in the eight key water reform documents (i.e. those that must be legally included in water-related decision-making).

Representativeness

The environment as a stakeholder in the decision-making process has a RI score of two, and appears only in the objectives section of the NWI (COAG, 2004, p. 1), which says ‘decisions about water management involve balancing sets of economic, environmental and other interests’. This is interesting, given the prominence of environmental needs in distributive justice. It seems that an emphasis on a particular stakeholder’s need is not necessarily proportional to that stakeholders’ engagement in the decision-making processes. The breakdown of different interests to be included in water decision-making processes suffers from the same definitional ambiguities as the distributive justice principle of need, ‘government’, ‘public interest’ and ‘community’ stakeholders are not specifically identified, but since the government is constitutionally obligated to manage natural resources for the public good, it can be argued that the ‘government’ and ‘public interest’ stakeholders also include considerations of the environment. This lack of definition leads to a critical

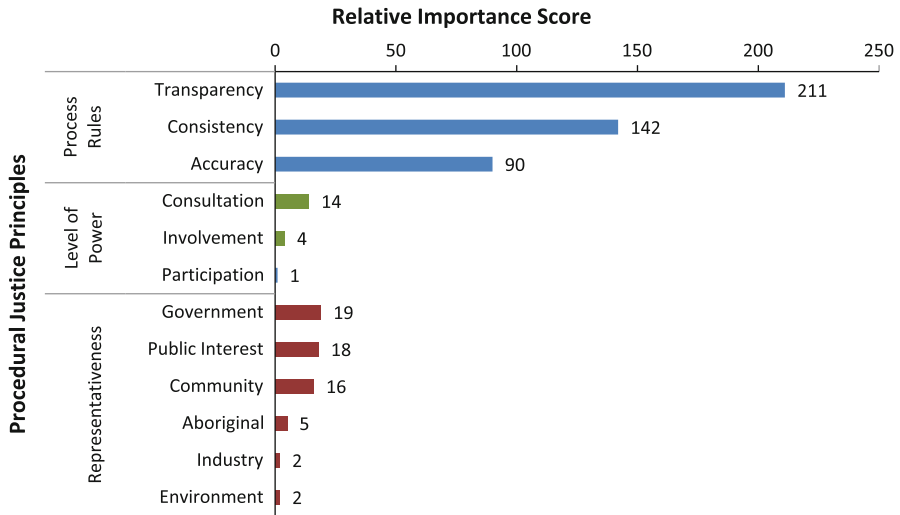


Fig. 3 The most important procedural justice principles across the eight key documents. *Transparency includes Transparency (RI: 12) and Provision of Information (RI: 199). **Consistency includes Consistency (RI: 141) and Coordination (RI: 1)

issue that arose early in the content analysis: who speaks for the environment? On this point, interview respondents differed widely. A federal government respondent was adamant that ‘the main entity that speaks for the environment is the Water Act itself’, meaning that representing the environment falls to government departments that administer the Water Act. However, both the SA NRM Act and NSW WMA also specify that environmental stakeholders are members of conservation or environmental protection groups (Government of South Australia, 2004, p. 7; NSW Government, 2000, p. 12). Other government respondents, both state and federal also cast a much wider net, noting that environmental groups, scientists, environmental water managers, the government itself and, above all, the local community speak for the environment. Another federal government respondent explains: ‘I think the most important advocates for the environment aren’t, you know, ACF [Australian Conservation Foundation] and WWF [World Wildlife Fund], and all these guys; they’re just the local community, all of them want to have good fishing holes and pleasant places to have their picnic and for the kids to swim’. By acknowledging such a wide representation of the environment, governments are making justice implementation difficult because all these environmental stakeholders have differing objectives and views on the environment.

One of the main implementation tools of the water reform is a complex national water market where licenses to extract water can be bought and sold, permanently or temporarily. Interviews with government respondents revealed that the market system is used to ensure the efficiency of water use by leaving distributive decisions to the markets instead of government administrative decisions. The environment, an acknowledged and legitimate water stakeholder, can and does participate in the water market and its main representative is the government. Federal government

respondents emphasise that the environment is an *equal* water stakeholder—just like any industry or community group. This means that the environment has to get water through the same processes, and be subject to the same constraints, as other water users. Governments (both at a federal and state level) are legally responsible for representing the environment because it provides a range of public goods. In theory, this gives governments the power to make the environment a *special*, high-priority stakeholder. However, making the environment an equal stakeholder in the market implies that the environment is not a special stakeholder and ignores the value of ecosystem services such as improved water quality and biodiversity. By treating the environment as an equal, governments are consigning its services to the market, along with the services provided by irrigators. Currently, federal and state governments have committed money to purchase water for the environment (SEWPaC, 2012). However, in the future, government commitment to financially secure water for the environment may wane, leaving the environment to compete in the market and subject to wider prioritisation of government expenditure. Some landholders in NSW concerned with the health of their floodplains fear that government commitment to the environment will only encompass those aspects of the environment that are linked to financial productivity. They acknowledge that floodplains cannot compete economically with high value water uses: ‘they’ve got this mantra: “water efficiency”, you know, water for the best use. Well the best economic use at the moment is not on floodplains, it’s not in the environment’ (NSW Landholder). Being an equal stakeholder in water reform is then a double-edged sword: it provides recognition for the environment as a stakeholder but leaves it vulnerable to changing government priorities. It also values the public good nature of the environment in the same way as the private interests of other stakeholders.

Even if the government maintains its commitment to the environment, the question remains, which aspects of the environment will be catered for? The public good nature of natural resources such as water means that it not easily incorporated into economic equations (Garrick, Siebentritt, Aylward, Bauer, & Purkey, 2009; Keohane & Olmstead, 2007; Stenekes, Russell, Claire, & Mooney, 2008). Water reform has promoted market approaches that emphasise the private good nature of water while also fostering community cooperation that recognises water as a public good (Baldwin, 2008). This inherent ambiguity of goals is a source of continued underlying tension in the reform process. The environment’s water requirements are theoretically prioritised for water distribution but not in practice. Also, the environment is not an entity that can speak for itself. It is most often represented not only by the government (due to its provision of public goods) but also all facets of the community are at times considered legitimate environmental spokespersons. The environment thus faces a constant crisis of identity with different spokespersons identifying different environmental needs. Setting the environment up as a stakeholder equal to others removes its arguably special attribute of being a public good and consigns it to continued government commitment in exchange for recognition. Whether water trade is in the best interest of the environment remains to be seen, since, with the end of the drought and continued pressure from irrigation communities, government commitment to the environment may wane.

Accuracy as a Process Rule

Leventhal's (1980) accuracy process rule, or using informed opinion to make decisions, is expressed in the documents through an emphasis on using science in the decision-making process. It is the third most important process rule overall, with an RI score of 90. Both federal and state government respondents attached great importance to science, viewing it as objective and unbiased and, therefore, a fair basis on which to make decisions, especially when faced with conflicting or contradicting viewpoints from a wide range of different stakeholders. Accuracy, through scientifically informed decision-making is also an important way of testing whether environmental needs have been satisfied. Since policy and legislative documents identify the environment largely in terms of environmental services and ecosystems, it makes sense for its needs to be defined in those terms. However, tying the definition and measurement of environmental needs to scientific accuracy places greater constraints on environmental managers who have to justify 'every single drop' (according to a federal government respondent), while productive enterprises are not held to the same standards (because their water management is tied to the market). In terms of implementing this principle, interviews revealed that scientific input may be ignored or lacking during decision-making, causing further delays and conflicts. Both issues have been identified in the Lowbidgee study site in regards to the preparation of the local water management plan. Landholders also question the value of scientific input (on which government decision-making is largely based) and put more faith in local, rather than scientific knowledge (Lukasiewicz, Bowmer, Davidson, & Syme, 2012). For example, some landholders from both study sites questioned government capability in addressing environmental needs because federal and state government officials rely on catchment- and river-scale scientific input and lack local knowledge about the rivers. Since most environmental conflicts depend on the interpretation of scientific and technical data, stakeholders who lack scientific and technical knowledge are naturally disadvantaged during participation (Eckersley, 2003; Opatow & Weiss, 2000) and the different levels of knowledge also have a great influence on the perceptions of procedural and distributive justice (Clayton & Opatow, 2003). There is also a significant degree of uncertainty associated with water resource decisions and decision-makers tend to wish to reduce that uncertainty by relying on science for the *right* or *definitive* answer to problems of environmental needs. Irrigators tend to have a different and a more holistic view of dealing with this issue as they use their own models of decision-making which include weather and price fluctuations as well as the nature of their particular farm. In their view, uncertainty is an integral part of water management that has to be managed on an ongoing basis, and, therefore, landholders do not expect that an answer from a purely scientific perspective will be sufficient.

In terms of procedural justice, implementation of the accuracy process rule reveals that government respondents view it as improving fairness in addressing environmental needs by increasing objectivity. But it can lead to greater hurdles being placed on achieving environmental objectives (as opposed to economic ones); especially when necessary scientific data are missing or incomplete and it can unintentionally disenfranchise stakeholders with limited scientific capacity.

Reliance on the accuracy process rule also conflicts with the more holistic definitions of the environment held by landholders.

Conclusion

The analysis of the distributive justice principle of need and the procedural justice principle of representativeness highlighted the ambiguity of existing social justice principles in Australian water reform. This ambiguity is rooted in the nature of the environment as a stakeholder; it faces a constant crisis of identity with different spokespersons identifying different environmental needs. Whether the needs of the environment or production are to be prioritised is unclear from the water reform documents and actual events. The framing of the water reform debate into environment versus production is also creating antagonism between the two ‘sides’. In implementing the principle of representativeness, the government respondents are also concerned about addressing local interests while keeping in mind the broader public interest. All of this points to the need for debate about where the long-term priorities for water distribution lie. The procedural justice principle of accuracy is also important for defining and measuring actual environmental needs because, in the face of conflicting voices, it is seen by the government as fostering objective (and therefore fair) decision-making.

Thus, while Australian water reform has taken the step of acknowledging the environment as a legitimate stakeholder, this progressive step is constrained by the nature of what the environment is. Legally seen as a system of ecological assets, its management is tied to scientific knowledge. However, water managers tended to anthropomorphise it into an entity, hiding the different meanings and values ascribed to it by different sections of the community.

This paper applied existing social justice theories to a real-life situation of water reform, thus addressing research gaps identified by social psychology researchers. The SJF used here could be applied to evaluate (or even help formulate) reform processes in other areas of government responsibility. The formulation of Relative Importance Score to demonstrate the relationships between different principles is also a novel method that may prove useful in policy analysis of social justice.

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