

Rent-seeking behaviour and regulatory capture in the Murray-Darling Basin, Australia

R. Quentin Grafton & John Williams

To cite this article: R. Quentin Grafton & John Williams (2020) Rent-seeking behaviour and regulatory capture in the Murray-Darling Basin, Australia, International Journal of Water Resources Development, 36:2-3, 484-504, DOI: [10.1080/07900627.2019.1674132](https://doi.org/10.1080/07900627.2019.1674132)

To link to this article: <https://doi.org/10.1080/07900627.2019.1674132>



© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 24 Oct 2019.



Submit your article to this journal [↗](#)



Article views: 2200



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 6 View citing articles [↗](#)

Rent-seeking behaviour and regulatory capture in the Murray-Darling Basin, Australia

R. Quentin Grafton and John Williams

Crawford School of Public Policy, Australian National University, Canberra

ABSTRACT

We examine water governance in the Murray-Darling Basin using the frameworks of rent-seeking and regulatory capture. These frameworks are used to evaluate two government programmes intended to ensure an environmentally sustainable level of water diversions in the basin: targeted one-on-one purchases of water entitlements from designated sellers; and subsidies for irrigation infrastructure to increase irrigation efficiency. Deficiencies in delivering the stated environmental goals of both programmes, and questions about their 'value for money', are highlighted. Specific recommendations are provided about how to mitigate both rent-seeking and regulatory capture of water reform initiatives in large river basins.

ARTICLE HISTORY

Received 18 June 2019
Accepted 25 September 2019

KEYWORDS

Australia; Murray-Darling Basin; corruption; governance; transparency; irrigation

Ministers and their senior officials share a common interest in success, which can lead to more influence for the Minister and the department, and improved prospects for its senior officers. They also share a basis for mutual antagonism towards the Minister's political opponents, whose criticisms may reflect on the department as well as the Minister. There is a natural human inclination for a subordinate to seek to give effect to the wishes of a superior, and policy can be sufficiently broad and elastic to allow public servants to exercise considerable discretion.

G. E. Fitzgerald (1989, p. 130), chair of the Commission of Inquiry into Possible Illegal Activities and Associated Police Misconduct

Introduction

A long-standing literature exists in relation to how non-state actors are able to influence, and even control, expenditures and priorities of states for their own particular benefit or interests (Buchanan & Tullock, 1962; Downs, 1957). This decision-making challenge exists not only in authoritarian states but also in well-established and high-functioning democracies.

In democracies, many political parties chose to identify with particular groups or interests (Hudson, 1995). The benefit of partisan identification by political parties is that it increases their likelihood of being elected to office through more votes, campaign funds or other assistance from their partisans. The benefit to partisan voters is that the self-identified parties that they support and influence, and that are elected into office, may

CONTACT R. Quentin Grafton  quentin.grafton@anu.edu.au

© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

provide them with favourable regulation, legislation, or pecuniary benefits through the tax and transfer system.

This political process of 'tit for tat' (Axelrod, 1980), whereby political parties reward their supporters, has a long history in democracies. Indeed, the process of 'buying' votes or securing support is most obvious in election promises or commitments (Congleton, 1989). This is because it is in the interest of political parties to 'signal', sometimes in coded language (Hindess, 2014), to their supporters the expected benefits of voting for them. One factor that prevents politics from degenerating into an orgy of self-interested, partisan policies is that electorally successful political parties typically need to win over multiple interests, as represented by the 'median voter' (Congleton & Bennett, 1995; Holcombe, 1989). Some voters, at least, also care about the national and public interest, and also good governance and competence, and this may supersede their immediate personal interests in how they vote.

A transparent comparison of the costs and benefits of public decision making, with consideration of who wins and who loses, is necessary to determine whether government decisions are in the public or national interest.¹ Indeed, a hallmark of good governance is that such evaluations are undertaken, at least for all larger programmes and projects, with clear and factual explanations as to why decisions are made, and who benefits. By contrast, a failure to provide transparent decision making creates opportunities for particular interests to influence government decision making that may benefit only a few, possibly at the expense of the many.

Here, we employ the concepts of *rent-seeking*, deliberate actions by particular interests to secure preferential treatment and/or pecuniary benefits from public decision making (Lambsdorff, 2002), and *regulatory capture*, decision making by public servants that favours particular and regulated interests (Stigler, 1971). Rent-seeking and regulatory capture are, respectively, the 'demand for' and the 'supply of' decision making intended to benefit particular interests rather than the broader, public interest.

We examine rent-seeking and regulatory capture in relation to water reform in one of the world's larger river basins by surface area and where the water policy and governance are claimed to be world leading: the Murray-Darling Basin (MDB) in Australia (Figure 1).² Recent water reform in the MDB began with the National Water Initiative, agreed to in 2004 by all state governments and the Australian government (Horne, 2017). The initiative had as a key objective to achieve sustainable water use in over-allocated or stressed water systems (Williams, 2017). In particular, the signatory governments committed 'to increase the productivity and efficiency of Australia's water use, the need to service rural and urban communities, and to ensure the health of river and groundwater systems by establishing clear pathways to return all systems to environmentally sustainable levels of extraction' (Council of Australian Governments, 2004, p. 1). Consistent with this intergovernmental agreement, the Australian government set aside A\$ 3.1 billion for water entitlement purchases and also A\$ 5.8 billion for water infrastructure investments (Grafton, 2010) intended to increase irrigation efficiency (Grafton et al., 2018; Grafton, 2019). Both programmes (purchases from willing sellers of their water entitlements and subsidies for irrigation infrastructure) were intended to ensure an environmentally sustainable level of water extractions in the MDB.

The first Australian government programme we review is the targeted one-on-one purchases from irrigators of water entitlements (long-term water rights) that occurred in

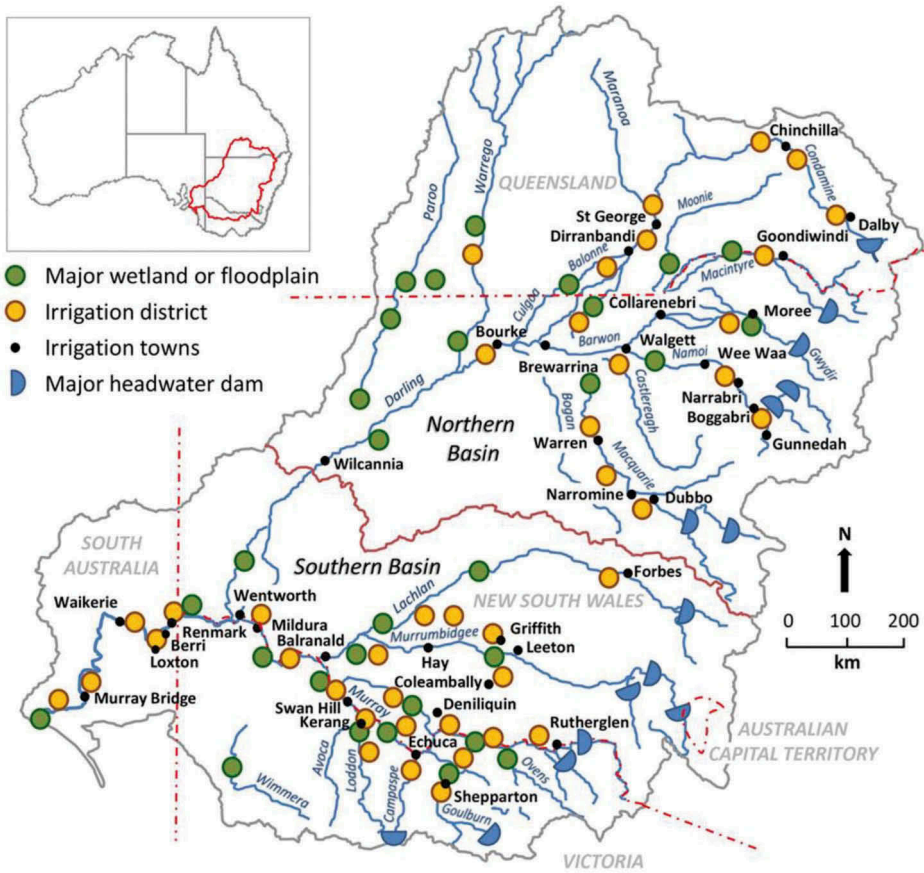


Figure 1. The Murray-Darling Basin, Australia: rivers, dams, floodplains, wetlands and irrigation districts.

Source: M. Colloff, personal communication, 18 June 2019.

2016 and 2017. Purchases targeted to a particular individual or entity replaced the use of open tenders in operation between 2008 and 2013. As with the previous open tender process, the stated goal of these purchases is to increase the water entitlements held by the Australian government for environmental purposes.

The second Australian government programme we examine is in relation to irrigation infrastructure subsidies. These subsidies had the same priority goal as targeted one-on-one purchases, ‘to protect, restore and provide for the ecological values and ecosystem services of the Murray-Darling Basin’ (Water Act, 2007, 3d (ii)), and were implemented by requiring recipients to provide a share (typically 50%) of the estimated ‘water savings’ to the Australian government in the form of water entitlements.

We provide evidence that rent-seeking behaviour and regulatory capture have affected public decisions with respect to both one-on-one targeted purchases of water entitlements and irrigation infrastructure subsidies in the MDB. We conclude with actions we contend would mitigate rent-seeking and regulatory capture in relation to irrigation water decision making by state actors in the MDB, and in general.

Rent-seeking behaviour and regulatory capture

The literature on rent-seeking originated with Kreuger (1974), who identified it as the actions of private individuals or entities who compete for the 'rents' or pecuniary returns that arise from quantitative restrictions imposed by government regulations, such as licences to import goods. Rent-seeking can be perfectly legal, and may even be a tax-deductible expenditure. For example, rent-seeking includes registered lobbying activities (Hogan, Murphy, & Chari, 2011). Rent-seeking may also be illegal, when public officials are bribed or coerced in some way.

Rent-seeking today is commonly understood to include a wide range of what may be called directly unproductive, profit-seeking activities (Bhagwati, 1982): actions undertaken by non-state actors to influence government decision making, including the disbursements of grants and subsidies and other budgetary assistance (Banks, 2013), for their pecuniary benefit. Rent-seeking may bring financial gain to rent-seekers and special interests (Tullock, 1989) but does not produce any goods or services. Thus, it reduces overall economic welfare. This welfare loss is exacerbated when rent-seeking results in welfare-distorting decisions by state actors (Anam, 1982) or increases inequality by reducing the progressivity of the tax and transfer system (Frijters & Foster, 2014).

In Australia, registered lobbying of the Australian government is a billion-dollar business (West, 2017) that exerts substantial influence on decision making (Wood & Griffiths, 2018). That lobbying continues, and is increasing, is evidence that rent-seeking has a positive expected return for lobbyists and those who hire them. There is also empirical evidence that lobbying and campaign contributions increase the likelihood of pecuniary benefits to individual entities or sectors. For instance, following the 2008 Global Financial Crisis, lobbying by financial institutions in the US in 2000–2007 was positively associated with higher likelihood of receiving federal bailout funds (Igan, Mishra, & Tressel, 2011). Witko (2011), again in the US, has shown that firms that contribute more money in the form of political contributions also receive more government contracts, although other factors, such as past contracting relationship and firm reputation, also increase the likelihood of receiving government contracts.

The term *regulatory capture* was used by Nobel laureate George Stigler in 1971, but it is also part of a broader literature in relation to public choice, regulation and how state actors make decisions (Clark & Lee, 2013; Gómez-Ibáñez, 2003). This literature shows that regulatory capture is more likely when the benefits of regulation are highly concentrated, because interested parties have a strong incentive to affect decision making or undertake 'entrepreneurial' politics (Wilson, 1980). As with rent-seeking, non-state actors who 'capture' politicians or public servants may not be acting illegally. Indeed, as noted by Thompson (1993, p. 369), actions whereby 'politicians take money from contributors to get elected, then do favors for them' are called 'mediated corruption'. This is a corruption of public decision making because it is mediated through the political process. Tit-for-tat actions between state and non-state actors are typically not illegal, because the gain that the politician or the political party receives in terms of votes or declared campaign funds does not represent a personal gain. Nevertheless, mediated corruption damages the democratic process because government decision making is influenced so as to direct benefits to particular interests even when this may be contrary to the broader, public interest.

One form of regulatory capture is ‘revolving doors’, whereby politicians or public servants, seeking to transition to alternative employment, provide special treatment or particular consideration to their future employer. This has been shown empirically in relation to ‘transitioning’ credit analysts at rating agencies, who have a higher likelihood of giving a more favourable rating to the firm that subsequently employs them than other firms (Cornaggia, Cornaggia, & Xia, 2016); and to examiners at the US Patent and Trademark Office, who give statistically significantly more patents to firms that subsequently employ them (Tabakovic & Wollmann, 2018). Both cases illustrate how regulatory capture can lower the quality of decision making and, if revealed, is likely to reduce trust in public institutions.

Another type of regulatory capture is when public servants are directed or ‘advised’ to make certain decisions, or to favour particular non-state actors, by their political masters and advisors. In some cases, this undue influence on public servants may come directly through non-state actors who have, or are perceived to have, the ‘ear’ of the minister or political decision makers. In other words, some non-state actors may have the ability to either advance or damage the careers of public servants. In turn, this affects how departments operate and their compliance and investigation processes. For instance, the inspector general for the Murray-Darling Basin has observed in relation to compliance with water regulations in the MDB that ‘departments don’t have the right structures in place to bring forward complaints’ (Gribbin & Jasper, 2019).

Whatever its cause, regulatory capture means that decision making is unduly influenced by particular interests, possibly at the expense of the public interest. In the context of the MDB, Horne (2014) has observed that ‘politics rather than scientific evidence is again playing a determining role’ (p. 161) and that ‘the role of politics ... can be as much about the exercising of power – of politicians, determining what best suits their interests – as weighing up economic, social and environmental considerations’ (p. 1001).

Regulatory capture can occur when science is politicized or when there are ‘industry supported scientists-cum-consultants whose credentials support their “hired gun” role in issue advocacy’ (Pielke, 2007, p. 120). The problem arises when scientists use their credibility or prestige as ‘stealth issue advocates’ rather than acting as ‘honest brokers’ (Pielke, 2007). Such advocacy has been used to ‘shut down’ rather than ‘open up’ debate on water governance in the MDB, and in particular on the 2012 Basin Plan, which was legislated in the federal parliament in November 2012 and which has as its key goal to ensure environmentally sustainable levels of water extraction.

In our view, an example of Pielke’s ‘stealth advocacy’ is a 19 July 2019 open letter, signed by 27 scientists, ostensibly in protest of an Australian Broadcasting Corporation television documentary that examined the very large public expenditures on irrigation infrastructure in the MDB. Several of the signatories of the open letter have declared interests with the Murray-Darling Basin Authority, which is responsible for implementing the 2012 Basin Plan (e.g., one is a member of its board, one is a former board member, and three are members of the authority’s Advisory Committee on Social, Economic and Environmental Sciences). Consequently, there is the appearance that some of the signatories have used their scientific credentials to advocate policy that is supportive of the MDBA and of their own roles within the MDBA. In particular, the signatories say ‘that the Basin Plan and the institutions implementing it are being unfairly maligned and that this is eroding public support for what we regard as

generally sound public policy'. They also advocate a key position of the Australian government on water reform: that any substantial change to policy implementation should await a 'scheduled review of the Basin Plan in 2026' (Vertessy et al., 2019). On 1 September 2019, it was announced by the federal water minister that the lead signatory of the open letter would lead a '\$20 million research program to increase knowledge around the Murray-Darling Basin', which would be administered by the Murray-Darling Basin Authority (Littleproud & Pasin, 2019).

Despite the statements in the open letter, there is already a large body of scientific evidence that the Basin Plan has so far failed to deliver environmental benefits at the basin scale, especially in terms of stream flows (Argent, 2017; Wentworth Group of Concerned Scientists, 2018, 2019). Low stream flows, due to excessive upstream irrigation extraction, were also identified by both the Australian Academy of Science (2019) and the New South Wales Natural Resources Commission (2019) as a key cause of the catastrophic decline in both water flows and water quality along the lower Darling River. Such declines in flow contributed to a massive fish kill along the Darling in January 2019 (Australian Academy of Science, 2019).

The 2012 Basin Plan has found to be failing by the Murray-Darling Basin Royal Commission, established by the state of South Australia. In particular, the commission identified important deficiencies in governance, compliance and enforcement, climate change, Aboriginal engagement, water diversions by irrigators on flood plains, ground-water monitoring and extraction, and public disclosure. The commission also observed ongoing failure to respond to policy problems and to improve the implementation of water reform in the MDB: 'The recent history – perhaps better called the politics – of the Basin is acutely framed by what may be called constraints that limit or discourage what may otherwise be regarded as beneficial change or improvements' (Murray-Darling Basin Royal Commission, 2019, p. 15).

In Australia, there is also evidence that regulatory capture may be widespread, going well beyond the water sector. For example, in a survey of over 2,200 respondents by Transparency International Australia and Griffith University in May and June 2018, two-thirds of respondents who self-identified as former Australian government public servants (245 respondents) claimed to have least once 'personally witnessed or suspected a government official or politician making a decision in favour of a business or individual who gave them political donations or support'. Of these, almost half had seen such decision making at least a few times, and almost one in five had seen it 'many times' (Transparency International Australia, 2018)

Corruption in the water sector

The 2008 *Global Corruption Report* by Transparency International focussed on the water sector in 35 countries. One of the report's foci was corruption in the irrigation sector. In India, for example, in relation to irrigation infrastructure contracts,

[financial] 'leakages' were of the order of 30–45 per cent of approved amounts. Approved plans included costs that were overestimated by at least 15–25 per cent through the over-design of structures and misrepresentation of labour requirements, deceptions that then set the stage for the diversion of funds during implementation. (Lewis & Lenton, 2008, pp. 22–23)

More generally, corruption in the irrigation sector may include subsidy capture, whereby irrigators 'lobby governments to pay for projects that do not necessarily deliver net benefits to society, but that deliver a major subsidy to landowners' (Rijsberman, 2008, p. 69); corruption in the construction of irrigation infrastructure; and corruption in the maintenance and operation of irrigation structures.

Transparency International (2018) highlighted that the water sector, in general, is at high risk of corruption. This is because the capital-intensive and the public good nature of water infrastructure of the water sector, typically, means large and ongoing public expenditures. Water is governed by multiple agencies and government departments, making it difficult to identify lines of responsibility and authority and, thus, corrupt decision makers; the complex, technical nature of water projects makes it a challenge for non-specialists to identify corrupt practices; and also growing water scarcity, especially in arid and semi-arid regions, increases the payoffs from corruption for those able to increase their share of the available water. The losers of corruption in the water sector are typically the poor and marginalized, who have little or no influence or 'voice'. More generally, beyond the water sector, the general risks of corruption increase with the market power of providers of services to the public sector; the discretion of decision makers; and the lack of accountability and/or transparency in relation to decision making (Klitgaard, 1988).

While much of the corruption in the water sector occurs in low-income countries with limited public resources for audit, oversight, monitoring and compliance, it also includes high-income industrialized nations. Plummer (2008, p. 4), a respected governance and anti-corruption specialist, observed that 'in Europe, North America and Australia, corrupt practices involving or affecting water resources and services are not uncommon'. Repetto (1986) also highlights the widespread nature of rent-seeking in relation to public irrigation systems in the US. Despite the recognition of corruption in the water sector, Huppert (2013, p. 268) has observed a 'hear no evil, see no evil, speak no evil' approach to rent-seeking and regulatory capture by water professionals because 'pondering on issues of rent-seeking and corruption might impinge in unpleasant ways on the outcomes of projects and programmes they were involved in and hence on their personal ambitions and reputations'.

Plummer (2008, p. 6) identifies three forms of corruption in the water sector: petty corruption, in which a public servant extracts small bribes for particular favours; grand corruption, in which a small number of, usually senior, politicians or public servants receive payments 'under the table' for awarding contracts of large value to service providers; and state capture, in which 'decision-making process and enforcement of water policies are manipulated to favour the interests of a few influential water users or service providers at the expense of the broader public'. State capture, which is another term for regulatory capture, is most common in high-income countries, while petty and grand corruption are principally found in low- and middle-income countries.

Regulatory capture (or state capture) is difficult to identify, although there is evidence that it is common (Repetto, 1986).³ In the MDB, for instance, through an ongoing water reform process (Hart, 2016), irrigators are the principal beneficiaries of infrastructure subsidy schemes that have cost, in public expenditures, some A\$ 4 billion as of August 2019 (Australian Department of Agriculture and Water Resources, 2019a). On average, irrigators have received infrastructure subsidies worth A\$ 400,000.⁴ Such large payments, at the very least, suggest that irrigator lobbyists are able to

direct much of the government benefits of water reform to irrigators. This perspective is supported by Marshall and Alexandra (2016, p. 689) who observe: 'One can only speculate on the degree to which irrigation lobbyists and hydraulic bureaucracies influenced specific policy decisions.'

The potential for regulatory capture in the MDB is highlighted by the former chief of the Australian Federal Police, who is examining links between political donations and the purchase of water entitlements from irrigators. In his view, reported in May 2019, there are undeclared conflicts of interest in relation to decision making about water programmes in the MDB. He notes, in particular, that

if conflicts of interest aren't transparent, it could lead to corruption... Water is now the value of gold. If you have corruption in other elements of society, if you have corruption in other areas of business, why wouldn't you have it here, when water is the same price of gold? (Middleton, 2019)

Further evidence of regulatory capture in the MDB stems from a 2017 media investigation of water theft in the northern MDB. In this investigation by the Australian Broadcasting Corporation, the most senior water official in the state government of New South Wales (NSW) at the time, the deputy director general of the NSW Department of Primary Industries, was recorded as offering to share allegedly classified documents with irrigators. He was also alleged to have resisted calls from investigators in his own department for a monitoring and compliance operation, even when there was evidence of water theft (Begley, 2017). This official was subsequently forced to resign. An independent investigation later found serious deficiencies in water administration and compliance. In particular, the independent investigator observed: 'increasing pressure from certain stakeholders to "water down" key reforms, including reforms to water metering and improving transparency of information about water usage' (Matthews, 2017, p. 1).

The extent of rent-seeking and regulatory capture in the MDB cannot be determined without a judicial inquiry that has the power to compel witnesses to testify under oath and to acquire documents. In the absence of such an inquiry, it is instructive to review the number of water-related meetings between non-state actors and NSW government ministers in 2014–2018 (Figure 2). Irrigation companies and industry, combined, accounted for over half of all ministerial meetings. The NSW Irrigation Council, a lobbyist and advocacy group, had more than 25. By contrast, many of the reported non-irrigation and non-industry entities had only one ministerial meeting in this four-year period. Combined, indigenous, catchment and environmental entities accounted for only about 20% of the total number of ministerial meetings given to irrigation and industry entities (Figure 2).

Additional evidence of regulatory capture is a business case undertaken by the New South Wales Department of Primary Industries (2016). It ignored the potential environmental costs and losses of cultural value associated with a major water supply project, but it highlighted the potential benefits of reduced environmental water recovery in the Northern MDB, which would provide economic benefits to upstream irrigators. Other evidence of regulatory capture includes a June 2019 review of the Barwon-Darling Water Sharing Plan in the Northern MDB by the New South Wales Natural Resources

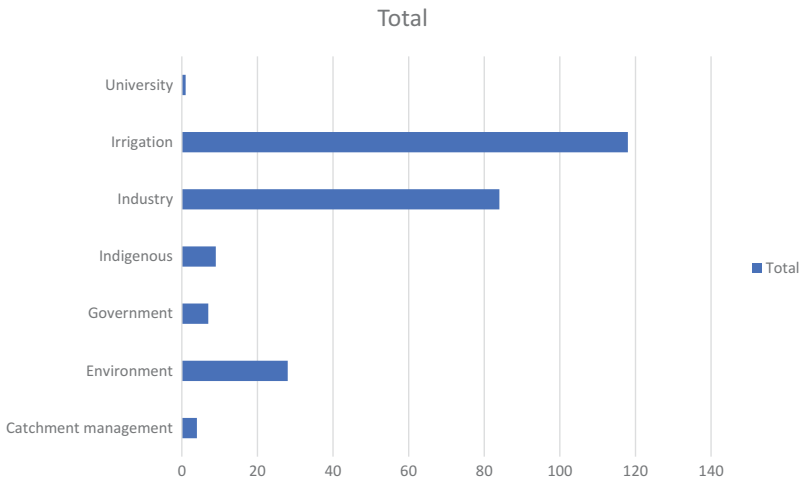


Figure 2. Number of water-related meetings with New South Wales government ministers, 2014–2018. Source: Data sourced from Guardian Australia, '2019 NSW ministerial diary scrape output', <https://docs.google.com/spreadsheets/d/1LXLwOL4CkBbNUTOG4shoKbN9mlUgFib80tMsBp8-r3k>

Commission (2019). The commission observed that for the Barwon-Darling region of northern NSW,

changes to the water sharing rules in the Plan area have resulted in an increased allowance for extractive use at lower flow classes that are critical to the environment. These provisions benefit the economic interests of a few upstream users over the ecological and social needs of the many. (p. 1)

This water sharing plan, in force since 2012, is scheduled to continue until 2022, and while 'reduced inflows due to drought, upstream extraction, and climate change are all impacting the flows in the Barwon-Darling, the Plan provisions that allow increased access to low flows have resulted in poor ecological and social outcomes' (p. 8).

Targeted one-on-one purchases of water entitlements

In 2007, in the worst year of a decade-long drought that affected much of South-Eastern Australia, the Australian prime minister announced a A\$ 10 billion funding package over 10 years to ensure the future of water security. This National Plan for Water Security, later called Water for the Future, had as a key objective 'putting the MDB back on a sustainable track, significantly improving the health of the rivers and wetlands of the Basin, and bringing substantial benefits to irrigators and the community alike' (Howard, 2019, p. 3).

Much of the allocated funds have notionally been spent on 'environmental water recovery' to increase stream and river flows in the MDB. Most of the funding for water recovery, or some A\$ 4 billion (Australian Department of Agriculture and Water Resources, 2019a), has been directed to subsidies for water infrastructure, whereby the subsidy recipients provide to the Australian government water entitlements equal to about half of the estimated 'water savings'. To date, the Australian government claims it has acquired

some 700 billion litres of water entitlements for the environment through water infrastructure subsidies, as measured by their long-term average yield.

Some A\$ 2.5 billion has been spent on acquiring water entitlements from willing sellers (Grafton & Wheeler, 2018). As of 31 March 2019, the volume of water entitlements acquired by purchases from willing sellers was 1224 billion litres of surface water, as measured by the long-term average annual yield (Australian Department of Agriculture, 2019a). These water entitlements were purchased from willing sellers by the Australian government between 2008 and 2013 through a series of publicly announced open tenders. Irrigators who so wished had the opportunity to provide a closed bid for the volume and price of water entitlements they were prepared to sell to the government. Based on 'value for money', in relation to the reliability or the annual yield of the water entitlements to the price paid, and also to environmental needs in relation to how the purchased water entitlements were expected to be used, a purchase contract was offered to successful tenderers. In addition to comparing the value of money across competing bids in a tender, a well-developed market for water entitlements exists in the MDB (Grafton, Horne, & Wheeler, 2016) that gave the Australian government a benchmark in relation to value for money.

Following a federal election in August 2013, and a change in the Australian government, the open tendering for water entitlements was terminated in 2014. In 2015, the government imposed a legislative cap of 1500 billion litres on the volume of water entitlements that can be legally acquired by the government. Both actions were in response to concerns by some irrigators, and especially irrigation advocates and lobbyists (National Irrigators' Council, 2019), that the purchase of water entitlements for environmental purposes was undermining the socio-economic viability of irrigation communities.

In September 2015, the governing coalition replaced the prime minister and also combined the portfolios of agriculture and water into one department. The minister for the new Department of Agriculture and Water Resources was also the deputy prime minister. Shortly thereafter, the department initiated a series of one-on-one targeted purchases of water entitlements from particular sellers. By contrast to open tenders, these targeted one-on-one purchases of water entitlements had the support of the National Irrigators' Council (2019).

The ability of the government to discern value for money in targeted purchases of water entitlements is extremely limited, because there are no other offers for sale. Many of the details of these targeted purchases are deemed 'commercial in confidence' and thus not accessible to public scrutiny. What public details are available include the month of purchase, the total cost and location of the water entitlements, and the name of the seller (Australian Department of Agriculture, 2019b). The stated justification for adopting targeted purchases of water entitlements, rather than open tenders, is that they 'provide significant benefit, while minimising negative social and economic impacts' (Australian Department of Agriculture, 2019b).

In 2016–17 approximately A\$ 150 million was spent by the Australian government on 10 separate targeted purchases of water entitlements. The one on which there is the most information relates to water entitlements sold at two properties (Kia Ora and Clyde) along the Condamine-Balonne catchment in southern Queensland, near the NSW border. These properties are owned by Eastern Australian Agriculture (EAA) which in turn has its holding company listed as Eastern Australia Irrigation (EAI). EAI has its registered head office in the

tax haven of the Cayman Islands and was co-founded by the current federal minister for energy and emissions reduction.

In relation to the EAA purchase, the Australian Department of Agriculture spent A\$ 78.9 million to acquire 28.7 billion litres of low-security water entitlements in the form of 'overland flow' – water that becomes accessible only when there is a flood that goes over the banks of the rivers and brings water onto the properties where the water entitlements are held. According to the department, the price paid of A\$ 2745 per million litres represented 'a fair market value', and it 'undertook due diligence activities in investigating the proposal, including checking the validity of the licences on offer; and obtaining commercial water valuation advice, independent advice on the possible socio-economic impacts, and advice from the state government, the Murray-Darling Basin Authority and the CEWH'. The department also observed that, as a result of the targeted purchase of water entitlements from EAA, 'a large portion of the remaining [environmental] water recovery [under the 2012 Basin Plan] required for the Condamine-Balonne has been achieved with minimal impacts on employment and production' (Australian Department of Agriculture, 2019b).

Given the lack of details about the transaction, an order to produce documents was served on the Department of Agriculture by the Australian Senate. The relevant documents were made publicly available on 25 October 2018, although they were heavily redacted in relation to the price of comparable water entitlements (Parliament of Australia, 2018).

Important questions remain,⁵ but the following facts are known.

- There is evidence that the initial communication to purchase water entitlements from EAA was initiated by the Department of Agriculture, although this is denied by the department (Slattery & Campbell, 2019a).
- EAA offered to sell some of its water entitlements to the Department of Agriculture prior to 2015, but these offers were declined.
- The average price paid for water entitlements in the MDB, and with higher long-term average yield, through the previous open tender process was A\$ 2,000 per million litres (Grafton & Wheeler, 2018), 27% less than was paid to EAA.
- The settlement price of A\$ 2745 per million litres paid to EAA was 25% more than the original sale price offered by EAA prior to the negotiations in 2017 with the Department of Agriculture (Slattery & Campbell, 2019a).
- The volumes of water attached to the overland flow water entitlements sold by EAA to the Department of Agriculture were, in part, determined by a business associate who has also acted as a consultant for EAA (Slattery & Campbell, 2019a).
- The profit from this transaction – the difference between the proceeds received by EAA and the value of the water entitlements that it sold – was A\$ 52 million. By comparison, EAA's revenues from its farm operations in the financial years ending 30 June 2017 and 30 June 2018 were A\$ 23.8 million and A\$ 3.7 million, respectively (Australian Securities and Investments Commission, 2018). EAA also had negative assets (prior to the sale) of A\$ 28.6 million, as of June 2017 (Chenoweth, 2019). The cumulative interest paid by EAA to EAI by 2018 was tens of millions, which suggests that EAA is 'unlikely to have paid cash tax' on the sale of its water entitlements, because the amount received would have been paid to EAI to cover its promissory and convertible notes to EAA (Chenoweth, 2019).

- A valuation of A\$ 16 million for water storage on EAA properties was built into the purchase price paid by the government, but there is no agreement to store overland flows on the properties, nor has this storage yet been used by the government (Slattery & Campbell, 2019b).
- As of May 2019, most of the levees on the properties that are used to trap water during floods remain in place (The Project, 2019), though their removal was agreed as part of the purchase.
- The water entitlements acquired by this purchase are overland flows and thus are not secured from downstream users. Thus, downstream irrigators with their own water entitlements are able to divert the water recovered 'for the environment' by the government.

In sum, short of a judicial inquiry with witnesses testifying under oath, it is not possible to come to a definitive conclusion in terms of rent-seeking and regulatory capture regarding the targeted purchases of water entitlements from EAA. Nevertheless, the facts are: the purchase was an extraordinarily good deal for EAA in terms of the price paid per litre and also in comparison to the revenues from its farming operations; there has been little public transparency on this transaction, even after an order to produce documents from the Australian Senate; there is, at the very least, a perceived conflict of interest in relation to at least one person who undertook due diligence for or provided information used by the Australian government in relation to this purchase; and there is much uncertainty as to what increases in stream flows will be delivered to the designated downstream environmental sites as a result of the purchase of EAA's overland water flow entitlements.

Subsidies for irrigation efficiency

The redirection of water recovery from the direct purchase of water entitlements to irrigation infrastructure began in earnest in 2013 after the Liberal–National coalition government took office at the federal level. This change in how water recovery was implemented was supported by irrigator peak bodies which had previously questioned the need for water recovery for the environment (Horne, 2017, pp. 1010–1011), and which had expressed a strong preference for water infrastructure subsidies over the direct purchase of water entitlements from willing sellers through open tenders. The reprioritization from open tenders to irrigation infrastructure subsidies has been represented as a willingness by the Australian government 'to generate wealth transfers', noting that 'water users are highly likely to react to these signals and adopt new technology; but only after holding out for a subsidy' (Adamson & Loch, 2018, p. 99).

The almost exclusive focus on irrigation infrastructure for environmental water recovery after 2013 occurred even though 'irrigator preference for infrastructure expenditure over market-based expenditure (56% versus 44%, respectively) is less than what current budget allocations or stakeholder views recognize, suggesting the presence of rent-seeking in current arguments made by irrigation groups' (Loch et al., 2014, p. 403); and open tenders to acquire water entitlements for environmental water recovery are 'very positively regarded by those selling water into the market' (Horne, 2014, p. 157); and many irrigators identify themselves as willing to sell a portion of their water entitlements (Wheeler, Zuo, Bjornlund, & Lane-Miller, 2012); and there is publicly

available evidence that water recovered for the environment through water infrastructure subsidies is neither cost-effective, nor a good value for the money (Horne, 2014, p. 159), but more than twice as expensive per litre than the direct purchase of water entitlements through open tenders (Crase and O'Keefe 2009; Grafton, 2010). Importantly, the implementation of irrigation infrastructure subsidies by the Australian government ignored the explicit recommendation of one of its own agencies, the Productivity Commission (2010, p. 142): that irrigation infrastructure projects 'should only be approved where: (1) properly conducted cost-benefit analysis shows there to be net benefits (2) government contributions are commensurate with public benefits (excluding private benefits to irrigators)'.

Despite robust evidence that water infrastructure subsidies are likely to reduce return flows to groundwater and streams and rivers in the MDB (ACIL Tasman, 2003; CSIRO, 2005; Crase & O'Keefe, 2009; Productivity Commission, 2010; Young, Young, Hamilton, & Bright, 2002), also supported by international evidence (Batchelor et al., 2014; Food and Agriculture Organization of the United Nations, 2017; Grafton et al., 2018; Jensen, 2007; Perry, 2007; Qureshi, Grafton, Kirby, & Hanjra, 2011; Ward & Pulido-Velazquez, 2008), no systematic measurements at a project level were made of the effects on return flows of irrigation infrastructure subsidies. Further, 'no comprehensive benefit-cost analysis has been undertaken to confirm that the public benefits of these measures have exceeded the costs to taxpayers' (Productivity Commission, 2018, p. 97). Thus, despite the expenditure of A\$ 4 billion on water infrastructure subsidies to date, there are no adequate or comprehensive irrigator-scale measurements of the net impact on stream flows (before and after the irrigation infrastructure upgrades) or the net public benefits.

In response to the uncertainty about the net effect on stream flows of water infrastructure subsidies, Williams and Grafton (2019) used the best available field water balance data to estimate the reduction in return flows of water to the environment as a result of irrigation infrastructure subsidies. They calculated that, in the MDB, the net change in stream and river flows is between a decrease of 140 billion litres and an increase of 280 billion litres. By comparison, a review commissioned by the MDBA found a reduction of 121 billion litres per year (Wang, Walker, & Horne, 2018). Using their own midpoint estimate, Williams and Grafton (2019) calculated that the net impact of the water infrastructure subsidies in the MDB is to increase stream flows by only 70 billion litres. The Australian government claims an impact of 700 billion litres (Grafton & Wheeler, 2018).

Notwithstanding the peer-reviewed evidence that irrigation infrastructure subsidies have contributed little towards an environmentally sustainable level of extraction in the MDB, and at great cost, additional water infrastructure subsidies were recommitted in April 2019 in the form of a National Water Grid (McCormack, 2019). In relation to existing and planned water infrastructure subsidies, the Australian deputy prime minister stated in May 2019: 'At the end of my political career, I want to be able to point to new dams, bigger weirs, more pipelines, they make so much difference at the local level' (quoted by Foley, 2019). This message of 'irrigators first' is echoed by the Australian minister of the environment, who stated in June 2019, in relation to the 2019 drought in the MDB, that 'sometimes the environment doesn't need all its water but farmers desperately do need water', and that in some cases 'there's water in the dams [holding environmental water] and there are crops that are dying and farmers with drought-affected stock that need hay' (quoted by Hasham, 2019).

In sum, the delivery of billions of dollars of irrigation infrastructure subsidies in the MDB appears to be a case of rent-seeking and regulatory capture, whereby taxpayer dollars are directed to the irrigation sector in the name of water reform. This is being done even though there exists a much more cost-effective and transparent method (direct purchase of water entitlements via open tenders) to deliver the same outcome; and though water infrastructure subsidies may have reduced rather than increased overall stream flows; and though some of the subsidies have involved the construction of private water storages and the automation of weirs and water metering that neither provide any 'water savings' nor increase irrigation efficiency (Australian Department of the Environment, 2014, Annexure A).

Conclusions

A large literature exists on the causes of corruption and ways to mitigate it. The water sector, especially the irrigation sector, is particularly prone to both rent-seeking and regulatory capture. Not all of these activities are illegal, and in democracies they occur through the political process, whereby political parties and their leaders can legally provide pecuniary benefits to their supporters via the tax and transfer system.

Using the water reforms in the Murray-Darling Basin, Australia, and in particular the billions of dollars allocated for water recovery for the environment, we examined the evidence for rent-seeking and regulatory capture. We find empirical evidence of both activities in this basin. We label this 'mediated corruption', because we do not suggest, nor do we imply, that there has been bribery or petty or grand corruption, such that decision makers have received direct personal, pecuniary benefits from their decisions. Instead, the government of the day has legally undertaken expenditures to benefit particular interests, *mediated* through the political process, even though this appears to be contrary to the stated goals of water reform, as per the Water Act 2007, and also best practice regulations agreed to by all Australian governments (Council of Australian Governments, 2007).

Transparency International (2008) provides four recommendations, including strengthening regulatory oversight of water management and much greater transparency in decision making, to mitigate corruption in its various forms in the water sector. In relation to the Murray-Darling Basin, and also in general, we highlight seven governance actions that we contend would reduce rent-seeking and regulatory capture in the irrigation water sector.

- Ensure timely, accessible and independently audited water accounts that include hydrological measurements and estimates of water consumption and return flows (Grafton & Williams, 2019).
- Establish an Integrity Commission (Brown et al., 2018) with judicial powers to compel witnesses to give testimony under oath and to acquire relevant documents on public expenditures.
- Require and make accessible transparent *before-and-after measurements* of the effects of water infrastructure subsidies on estimated and actual water savings (House of Representatives Standing Committee on Agriculture and Water Resources, 2017).

- Mandate that irrigators who divert water to irrigation provide a publicly available, annual water monitoring plan that outlines where the water is sourced from, and for what, when and how the diverted water is used, including water storages.
- Create a publicly accessible electronic register of recipients of individual infrastructure subsidies and government grants.
- Adopt easily accessible and searchable electronic registers, available in real time, of all meetings by ministers and their political advisors and senior public servants with non-governmental individuals and entities, as well as financial contributions to political parties.
- Prohibit third parties or contractors with any perceived or real conflicts of interest from performing 'due diligence' in relation to the spending of public funds; ideally, this should be done by public servants (Independent Commission against Corruption, 2018).

These seven actions will mitigate but not prevent either rent-seeking behaviour or regulatory capture. Other considerations also matter. For example, common law systems where legal decision making is based on 'common law' and precedents appear to provide a better check and balance on the executive and legislative parts of government than civil law systems (Gómez-Ibáñez, 2003). Freedom and democracy also matter, as does a free press.

Other factors may work in the opposite direction, to increase rent-seeking and regulatory capture. For instance, greater inequality of income and wealth may increase regulatory capture because it concentrates power in a smaller number of non-state actors. The longevity of the regulatory agencies and the term of appointment of the heads of such agencies, and who gets to make the appointments to these positions, also affect the vulnerability of agencies to regulatory capture.

In sum, rent-seeking and regulatory capture are influenced by multiple sectoral and also economy-wide social, cultural, economic and institutional factors. Understanding how to respond to these factors in different institutional settings is a critical first step in mitigating both rent-seeking and regulatory capture.

Notes

1. The Council of Australian Governments (2007, Appendix C) states: 'Decisions about the overall effectiveness of regulatory action should not be made on the basis only of its effect on particular groups in society. Public policy makers are expected to make judgments based on what is best for the community as a whole.'
2. The Australian Department of Agriculture (2019c) claims that 'Australia is at the leading edge in its approach to water resource management'. This view is shared by politicians inside and outside of government – for example, 'Australia is recognised as a world leader in water management' (Australian Securities and Investments Commission, 2018, p. 141) – and also by the CEO of the Murray-Darling Basin Authority: 'The Basin Plan is an achievement Australia should be proud of. Other countries look to our nation as having some of the best and most successful water management policies in the world' (Glyde, 2017).
3. Rijsberman (2008, p. 70) observes, in relation to the irrigation sector: 'Policy capture is difficult to prove, but the existence of powerful, politically well-connected large-scale farmers who manage to secure the bulk of irrigation subsidies in many countries makes policy capture a plausible premise.'

4. This is calculated by dividing the total Australian government subsidies for irrigation infrastructure to date, A\$ 4 billion (Australian Department of Agriculture and Water Resources, 2019a), by the approximate number of irrigators in the MDB, 10,000 (Australian Bureau of Statistics, 2019), noting that not all irrigators have received such subsidies.
5. A summary of the connections across the various parties to the EAA sale of water entitlements is provided by West (2019), with further details given by Tee and Salt (2019). The federal minister for energy and emissions reduction has publicly stated that he ended all association with these companies before he entered parliament in 2013. He has also stated that neither he nor his family have received any benefits from the 2017 sale of water entitlements by EAA. The minister for water who approved the purchase of water entitlements from EAA in 2017 has also stated that he had no contact with any ministers in relation to this purchase.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- ACIL Tasman. (2003). *Scope for water use efficiency savings as a source of water to meet increased environmental flows - Independent review. A report to the Murray Darling Basin Commission*, March 2003. Canberra, ACT: Author. Retrieved from https://www.mdba.gov.au/sites/default/files/archived/mdbc-tlm-reports/2080_Eflows_Scope_for_water_use_efficiency_savings_2003.pdf.
- Adamson, D., & Loch, A. (2018). Achieving environmental flows where buyback is constrained. *Australian Journal of Agricultural and Resource Economics*, 62, 83–102.
- Anam, M. (1982). Distortion-triggered lobbying and welfare: A contribution to the theory of directly-unproductive profit-seeking activities. *Journal of International Economics*, 13, 15–32.
- Argent, R. M. (2017). *Australia: State of the environment 2016*. Inland water. Retrieved from <https://soe.environment.gov.au/theme/inland-water>
- Australian Academy of Science. (2019). *Investigation of the causes of the mass fish kills in the Menindee region of NSW over the summer 2018–19*. Retrieved from <https://www.science.org.au/files/userfiles/support/reports-and-plans/2019/academy-science-report-mass-fish-kills-digital.pdf>
- Australian Bureau of Statistics. (2019). *4618.0 - Water use on Australian farms, 2017–18*. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/lookup/4618.0Media%20Release12017-18>
- Australian Department of Agriculture. (2019a). *Surface water recovery under the Basin plan as at 31 March 2019*. Retrieved from <http://www.agriculture.gov.au/SiteCollectionDocuments/water/progress-recovery/surface-water-recovery.pdf>
- Australian Department of Agriculture. (2019b). *Background information on significant commonwealth strategic water purchases in 2017*. Retrieved from <http://www.agriculture.gov.au/about/media-centre/on-the-record/background-significant-commonwealth-strategic-water-purchases-2017>
- Australian Department of Agriculture. (2019c). *Water management policy and legislation*. Retrieved from <http://www.agriculture.gov.au/water/policy>
- Australian Department of Agriculture and Water Resources. (2019a). *Commonwealth water recovery (as at 30 November 2018) and expenditure in the Murray-Darling Basin (as at 30 November 2018)*. Personal communications, 11 January 2019.
- Australian Department of the Environment. (2014). *Water recovery strategy for the Murray-Darling Basin*. Canberra, Australia. Retrieved from <https://www.circleofblue.org/wp-content/uploads/2015/06/water-recovery-strategy-mdb2.pdf>
- Australian Securities and Investments Commission. (2018). *Copy of financial statements and reports of Eastern Australia Agriculture Pty Ltd.*
- Axelrod, R. (1980). Effective choice in the prisoner's dilemma. *Journal of Conflict Resolution*, 24(1), 3–25.

- Banks, G. (2013). *Return of the rent-seeking society? Stan Kelly Lecture*. Economic Society of Australia. Retrieved from https://esavic.org.au/385/images/2013_GaryBanks.pdf
- Batchelor, C., Reddy, V. R., Linstead, C., Dhar, M., Roy, S., & May, R. (2014). Do water-saving technologies improve environmental flows? *Journal of Hydrology*, 518, 140–149.
- Begley, P. (2017, September 16). Top water bureaucrat Gavin Hanlon resigns after corruption allegations. *Sydney Morning Herald*. Retrieved from <https://www.smh.com.au/national/nsw/top-water-bureaucrat-gavin-hanlon-resigns-after-corruption-allegations-20170916-gyiq7h.html>
- Bhagwati, J. N. (1982). Directly unproductive, profit-seeking (DUP) activities. *Journal of Political Economy*, 90, 988–1002.
- Brown, A. J., Graycar, A., Kelly, K., Coghill, K., Prenzler, T., & Ransley, J. (2018). *A national integrity commission: Options for Australia*. Transparency International Australia. Retrieved from <http://transparency.org.au/nic-options-for-australia/>
- Buchanan, J. M., & Tullock, G. (1962). The calculus of consent: The logical foundations of constitutional democracy. *Online Library of Liberty*. Retrieved from http://files.libertyfund.org/files/1063/Buchanan_0102-03_EBk_v6.0.pdf
- Chenoweth, N. (2019, April 30). Eastern Australia agriculture's \$80 million accounting triumph. *Australian Financial Review*. Retrieved from <https://www.afr.com/rear-window/eastern-australia-agriculture-s-80-million-accounting-triumph-20190429-p51ics>
- Clark, J. R., & Lee, D. R. (2013). The impact of the calculus of consent. In D. R. Lee (Ed.), *Public choice, past and present: The legacy of James M. Buchanan and Gordon Tullock* (pp. 1–15). New York: Springer Science.
- Congleton, R. D. (1989). Campaign finances and political platforms: The economics of political controversy. *Public Choice*, 62, 101–118.
- Congleton, R. D., & Bennett, R. W. (1995). On the political economy of state highway expenditures: Some evidence of the relative performance of alternative public choice models. *Public Choice*, 84, 1–24.
- Cornaggia, J., Cornaggia, K. J., & Xia, H. (2016). Revolving doors on Wall Street. *Journal of Financial Economics*, 120(2), 400–419.
- Council of Australian Governments. (2004). *Intergovernmental agreement on a national water initiative*. Retrieved from <https://www.pc.gov.au/inquiries/completed/water-reform/national-water-initiative-agreement-2004.pdf>
- Council of Australian Governments. (2007). *Best practice regulation: A guide for ministerial councils and national standard setting bodies*. Retrieved from <https://www.pmc.gov.au/resource-centre/regulation/best-practice-regulation-guide-ministerial-councils-and-national-standard-setting-bodies#Appendix%20C>
- Crase, L., & O'Keefe, S. (2009). The paradox of national water savings: A critique of 'water for the future'. *Agenda*, 16(1), 45–60.
- CSIRO. (2005). *Whole-of-catchment water and salt balance: Identifying potential water saving and management options in the Murrumbidgee catchment*. Canberra, Australia: Author. Retrieved from <http://www.clw.csiro.au/publications/waterforahealthycountry/2005/WaterSaltBalance.pdf>
- Downs, A. (1957). An economic theory of political action in a democracy. *Journal of Political Economy*, 65(2), 135–150.
- Fitzgerald, G. E. (1989). *Commission of inquiry into possible illegal activities and associated police misconduct*. Prepared for Queensland Minister for Police and Minister for Emergency Services and Administrative Services. Retrieved from <https://www.ccc.qld.gov.au/publications/fitzgerald-inquiry-report>
- Foley, M. (2019, May 20). McCormack hails Nats 'new model' for stunning election win. *Mandura Mail*. Retrieved from <https://www.mandurahmail.com.au/story/6133792/mccormack-hails-nats-new-model-for-stunning-election-win/?cs=9397>
- Food and Agriculture Organization of the United Nations. (2017). Does improved irrigation technology save water? A review of the evidence: Discussion paper on irrigation and sustainable water resources management in the Near East and North Africa, by C. J. Perry, P. Steduto, and F. Karajeh. Retrieved from <http://www.fao.org/3/I7090EN/i7090en.pdf>
- Frijters, P., & Foster, G. (2014). Rising inequality: A benign outgrowth of markets or a symptom of cancerous political favours? *Australian Economic Review*, 48(1), 67–75.

- Glyde, P. (2017). The basin plan is working, but a century of damage cannot be repaired overnight. *Murray-Darling Basin Authority*. Retrieved from <https://www.mdba.gov.au/media/mr/basin-plan-working-century-damage-cannot-be-repaired-overnight>
- Gómez-Ibáñez, J. A. (2003). *Regulating infrastructure monopoly, contracts, and discretion*. Boston, MA: Harvard University Press.
- Grafton, R. Q. (2010). How to increase the cost-effectiveness of water reform and environmental flows in the Murray-Darling Basin. *Agenda*, 17(2), 17–40.
- Grafton, R. Q. (2019). Policy review of water reform in the Murray-Darling Basin, Australia: The do's and do nots. *Australian Journal of Agricultural and Resource Economics*, 63(1), 116–141.
- Grafton, R. Q., Horne, J., & Wheeler, S. (2016). On the marketisation of water: Evidence from the Murray-Darling Basin, Australia. *Water Resources Management*, 30(3), 913–926.
- Grafton, R. Q., & Wheeler, S. (2018). Economics of water recovery in the Murray-Darling Basin. *Annual Review of Resource Economics*, 10, 487–510.
- Grafton, R. Q., & Williams, J. (2019). Thirst for certainty: The urgent need for a water audit of the Murray-Darling Basin. *Farm Policy Journal* 16(2), 14–22.
- Grafton, R. Q., Williams, J., Perry, C. J., Molle, F., Ringler, C., Steduto, P., ... Allen, R. (2018). The paradox of irrigation efficiency. *Science*, 361(6404), 748–750.
- Gribbin, C., & Jasper, C. (2019, September 3). Murray-Darling Basin corruption undermining faith in \$13b plan. *ABC Rural News*. Retrieved from <https://www.abc.net.au/news/rural/2019-09-03/mick-keelty-southern-basin-tour/11470352>
- Guardian Australia. 2019. *NSW ministerial diary scrape output*. Retrieved from <https://docs.google.com/spreadsheets/d/1LXLwOL4CkBbNUTOG4shoKbN9mUgFlb80tMsBp8-r3k>
- Hart, B. T. (2016). The Australian Murray-Darling Basin plan: Challenges in its implementation (part 1). *International Journal of Water Resources Development*, 32(6), 819–834.
- Hasham, N. (2019, June 15). Environment minister floats 'lending' Murray Darling environmental water to farmers. *Sydney Morning Herald and The Age*. Retrieved from <https://www.smh.com.au/politics/federal/environment-minister-floats-lending-murray-darling-environmental-water-to-farmers-20190614-p51xsf.html>
- Hindess, B. (2014). Whistling the dog. In J. Uhr & R. Walter (Eds.), *Studies in Australian political rhetoric* (pp. 143–153). Canberra: ANU Press.
- Hogan, J., Murphy, G., & Chari, R. (2011). Regulating the influence game in Australia. *Australian Journal of Politics and History*, 57(1), 102–113.
- Holcombe, R. G. (1989). The median voter model in public choice theory. *Public Choice*, 61, 115–125.
- Horne, J. (2014). Policy brief: The 2012 Murray-Darling Basin plan – Issues to watch. *International Journal of Water Resources Development*, 33(1), 152–163.
- Horne, J. (2017). The politics of water reform and environmental sustainability in the Murray-Darling Basin. *Water International*, 42(8), 1000–1021.
- House of Representatives Standing Committee on Agriculture and Water Resources. (2017). *Making every drop count: Inquiry into water use efficiency programs in agriculture*. Retrieved from https://parlinfo.aph.gov.au/parlInfo/download/committees/reportrep/024116/toc_pdf/Makingeverydropcount.pdf
- Howard, J. (2019, January 25). *A national plan for water security*. Retrieved from <http://www.crsci.com.au/assets/Resources/f21ceb9e-2258-4f40-9e11-50fa80ee940e.pdf>
- Hudson, J. (1995). Preferences, loyalty and party choice. *Public Choice*, 82, 325–340.
- Huppert, W. (2013). Rent-seeking in agricultural water management: An intentionally neglected core dimension? *Water Alternatives*, 6, 265–275.
- Igan, D., Mishra, P., & Tressel, T. (2011). *A fistful of dollars: Lobbying and the financial crisis* (Working Paper 17076) Cambridge, MA: National Bureau of Economic Research.
- Independent Commission against Corruption. (2018). *Corruption and integrity in the NSW public sector: An assessment of current trends and events*. Retrieved from file:///E:/Users/Quentin%20Grafton/Downloads/Corruption-and-integrity-in-the-nsw-public-sector-an-assessment-of-current-trends-and-events_7Dec18.pdf
- Jensen, M. E. (2007). Beyond irrigation efficiency. *Irrigation Science*, 25(3), 233–245.
- Klitgaard, R. (1988). *Controlling corruption*. Berkeley: University of California Press.

- Kreuger, A. O. (1974). The political economy of the rent-seeking society. *American Economic Review*, 64(3), 291–303.
- Lambsdorff, J. G. (2002). Corruption and rent-seeking. *Public Choice*, 113, 97–125.
- Lewis, K., & Lenton, R. (2008). Water Resources Management. Chapter 2 in *Global Corruption Report 2008: Corruption in the Water Sector*. Cambridge, UK: Cambridge University Press.
- Littleproud, D., & Pasin, T. (2019, September 1). \$20m Basin research program increases security. Minister for Water Resources, Drought, Rural Finance, Natural Disaster and Emergency Management. Retrieved from <https://minister.agriculture.gov.au/littleproud/media-releases/20-million-basin-research-program-increases-security>
- Loch, A., Wheeler, S., Boxall, P., Hatton-Macdonald, D., Adamowicz, W. L., & Bjornlund, H. (2014). Irrigator preferences for water recovery budget expenditure in the Murray-Darling Basin, Australia. *Land Use Policy*, 36, 396–404.
- Marshall, G. R., & Alexandra, J. (2016). Institutional path dependence and environmental water recovery in Australia's Murray-Darling Basin. *Water Alternatives*, 9, 679–703.
- Matthews, K. (2017). *Independent investigation into NSW water management and compliance advice on implementation*. NSW Department of Industry. Retrieved from https://www.industry.nsw.gov.au/__data/assets/pdf_file/0019/131905/Matthews-final-report-NSW-water-management-and-compliance.pdf
- McCormack, M. (2019). *New Era: Liberal & nationals to deliver national water grid*. Nationals for Regional Australia. Retrieved from <https://www.michaelmccormack.com.au/media-releases/2019/4/30/new-era-liberal-amp-nationals-to-deliver-national-water-grid>
- Middleton, K. (27 April 2019), Keely warns river 'ripe for corruption'. *Saturday Paper*. Retrieved from <https://www.thesaturdaypaper.com.au/news/politics/2019/04/27/keely-warns-river-ripe-corrup-tion/15562872008055>
- Murray-Darling Basin Royal Commission. (2019). *Murray-Darling Basin royal commission report*. Retrieved from <https://www.mdbrc.sa.gov.au/>
- National Irrigators' Council. (2019). *Submission 31 to senate environment and communications legislation committee Re: Inquiry into the water amendment (purchase limit repeal) bill 2019*. Retrieved from https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/WaterAmendmentBill2019/Submissions
- New South Wales Department of Primary Industries. (2016). *The final business case for the Broken Hill long-term water supply solution*. Retrieved from https://drive.google.com/drive/folders/1DvuX3-7SEIN5rTeY2_p6_hLm73KpLMj0
- New South Wales Natural Resources Commission. (2019). *Final report review of the water sharing plan for the Barwon-Darling unregulated & alluvial water sources 2012*. Retrieved from <https://www.nrc.nsw.gov.au/publications>
- Parliament of Australia. (2018). *Senate orders for production of documents—Environment—Murray-Darling Basin Plan—Water purchases—Order of 16 November 2017—Letter to the President of the senate from the minister for resources and Northern Australia (Senator Canavan), dated 25 October 2018, responding to the order, and attachments*. Retrieved from <https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22publications%2Ftabledpapers%2Ffa585f8d-6f39-43ec-9e46-bef903173df5%22>
- Perry, C. (2007). Efficient irrigation; inefficient communication; flawed recommendations. *Irrigation and Drainage*, 56, 367–378.
- Pielke, R. A., Jr. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge, UK: Cambridge University Press.
- Plummer, J. (2008) Introducing water and corruption. Chapter 1 in *Global Corruption Report 2008: Corruption in the Water Sector*. Cambridge, UK: Cambridge University Press.
- Productivity Commission. (2010). *Market mechanism for recovering water in the Murray-Darling Basin. Research report*. Canberra, Australia. Retrieved from <https://www.pc.gov.au/inquiries/completed/murray-darling-water-recovery>
- Productivity Commission. (2018, August). Murray-Darling Basin Plan: Five-year assessment. *Draft Report*. Retrieved from <https://www.pc.gov.au/inquiries/current/basin-plan/draft>

- The Project. (2019). *The Sunday Project 5 May 2019 (25 minutes to 36 minutes)*. Retrieved from <https://tenplay.com.au/channel-ten/the-project/2019/5/5>
- Qureshi, M., Grafton, Q., Kirby, M., & Hanjra, M. (2011). Understanding irrigation water use efficiency at different scales for better policy reform: A case study of the Murray-Darling Basin, Australia. *Water Policy*, 13(1), 1–17.
- Repetto, R. (1986). *Skimming the water: Rent-seeking and the performance of public irrigation systems* (Research Report No. 4). Washington, DC: World Resources Institute.
- Rijsberman, F. (2008). Water for food. Chapter 4 In *Global Corruption Report 2008: Corruption in the Water Sector*. Cambridge, UK: Cambridge University Press.
- Slattery, M., & Campbell, R. (2019a). *#Watermates: The buyers and sellers of Australia's most controversial water*. Canberra: Australia Institute. Retrieved from <http://www.tai.org.au/content/water-gate-s-water-mates-buyers-and-sellers-australia-s-most-controversial-water>
- Slattery, M., & Campbell, R. (2019b). *Debugging the Watergate Complex*. Canberra: Australia Institute. Retrieved from <http://www.tai.org.au/sites/default/files/Debugging%20water%20gate%20%255bweb%255d.pdf>
- Stigler, G. J. (1971). The theory of economic regulation. *Bell Journal of Economics and Management Science*, 2, 3–21.
- Tabakovic, H., & Wollmann, T. G. (2018). *From revolving doors to regulatory capture? Evidence from patent examiners* (Working Paper 24638). Cambridge, MA: National Bureau of Economic Research.
- Tee, J., & Salt, R. (2019, June 4). *Watergate crew: The regatta of mates behind Australia's richest water deal*. Michael West. Retrieved from <https://www.michaelwest.com.au/watergate-crew-the-regatta-of-mates-behind-australias-richest-water-deal/>
- Thompson, D. F. (1993). Mediated corruption: The case of the Keating five. *American Political Science Review*, 87(2), 369–381.
- Transparency International. (2008). *Global corruption report 2008: Corruption in the water sector*. Cambridge, UK: Cambridge University Press.
- Transparency International Australia. (2018). *Rising corruption concern drives support for federal integrity body: Global corruption barometer survey results*. Retrieved from <http://transparency.org.au/tia/wp-content/uploads/2018/08/180820-Media-Release-Global-Corruption-Barometer-Griffith-University-TI-Australia.pdf>
- Tullock, G. (1989). *The economics of special privilege and rent seeking*. Dordrecht, The Netherlands: Kluwer Academic.
- Vertessy, R., Stewardson, M., Wang, Q. J., Webb, A., Western, A., Nathan, R., ... Dyer, F. (2019). *An open letter from scientists on the Murray-Darling Basin*. Ingenium. Retrieved from <https://ingenium.eng.unimelb.edu.au/2019/07/19/an-open-letter-from-scientists-on-the-murray-darling-basin/>
- Wang, Q. J., Walker, G., & Horne, A. (2018). *Potential impacts of groundwater sustainable diversion limits and irrigation efficiency projects on river flow volume under the Murray-Darling Basin plan*. Report written for the Murray-Darling Basin Authority. Retrieved from <https://www.mdba.gov.au/sites/default/files/pubs/Impacts-groundwater-andefficiency-programs-on-flows-October-2018.pdf>
- Ward, F. A., & Pulido-Velazquez, M. (2008). Water conservation in irrigation can increase water use. *Proceedings of the National Academy of Sciences*, 105(47), 18215–18220.
- Wentworth Group of Concerned Scientists. (2018, April, 19). *Murray-Darling Basin plan: Five-year assessment*. Submission to the Productivity Commission Issues Paper. Retrieved from https://www.pc.gov.au/__data/assets/pdf_file/0006/227508/sub042-basin-plan.pdf.
- Wentworth Group of Concerned Scientists. (2019). *Water Flows in the Murray-Darling Basin: Observed versus expected*. Summary Report. Retrieved from <https://wentworthgroup.org/wp-content/uploads/2019/02/MDB-flows-summary.pdf>
- West, M. (2017). *Corporate lobbying a billion-dollar business*. Michael West. Retrieved from <https://www.michaelwest.com.au/corporate-lobbying-a-billion-dollar-business/>
- West, M. (2019, April 21). *Barnaby Joyce, Angus Taylor, Australia and the Caribbean*. Michael West. Retrieved from <https://www.michaelwest.com.au/barnaby-joyce-angus-taylor-australia-and-the-caribbean/>

- Wheeler, S., Zuo, A., Bjornlund, H., & Lane-Miller, C. (2012). Selling the farm silver? Understanding water sales to the Australian government. *Environmental and Resource Economics*, 52(1), 133–154.
- Williams, J. (2017). Water reform in the Murray–Darling Basin: A challenge in complexity in balancing social, economic and environmental perspectives. *Journal and Proceedings of the Royal Society of New South Wales*, 150, 68–92. Retrieved from <https://www.royalsoc.org.au/images/pdf/journal/150-1-Williams.pdf>
- Williams, J., & Grafton, R. Q. (2019). Missing in action: Possible effects of water recovery on stream and river flows in the Murray–Darling Basin, Australia. *Australasian Journal of Water Resources*. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/13241583.2019.1579965>
- Wilson, J. W. (1980). The politics of regulation. In J. Q. Wilson (Ed.), *The politics of regulation*. New York: Basic Books.
- Witko, C. (2011). Campaign contributions, access, and government contracting. *Journal of Public Administration Research*, 21, 761–778.
- Wood, D., & Griffiths, K. (2018). *Who's in the room? Access and influence in Australian politics* (Grattan Institute Report No. 2018–12). Retrieved from <https://grattan.edu.au/wp-content/uploads/2018/09/908-Who-s-in-the-room-Access-and-influence-in-Australian-politics.pdf>
- Young, M., Young, D., Hamilton, A., & Bright, M. (2002, July). *A preliminary assessment of the economic and social implications of environmental flow scenarios for the Murray River System*. Report prepared for the Murray-Darling Basin Commission. Canberra, Australia. CSIRO Land and Water and PISA Rural Solutions.