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Water torture: Unravelling the psychological distress of irrigators in Australia

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ABSTRACT

Water institutional and property right reform in the food bowl of Australia, the Murray–Darling Basin (MDB), has generated both benefits and costs for irrigators. Water allocation uncertainty along with the increased risk of recurring drought has been gradually placed back on irrigators to manage, and in the last decade there has been considerable reallocation of water from consumptive to environmental use in the MDB, which has caused much angst within rural communities. In the face of such change this study provides, for the first time, a large-scale profile (n = 1000) of irrigators' mental health in the MDB. Our point estimates suggest some irrigation industries in 2015-16 recorded some of the highest levels of psychological distress nationally; higher than dryland farmers or the Australian population. Financial difficulties were most associated with this distress, but it was intertwined and underpinned by the ongoing threat of water scarcity, which irrigators often incorrectly associate with the implementation of the Basin Plan. Psychological distress varied by industry and location: horticulturists reported the highest levels of distress, followed by broadacre, dairy and livestock. Future national water policy must consider the real impacts of water recovery, and recognize that so-called 'socially neutral' water recovery policies can actually cause significant community harm where they hamper farm exit and adaptation to a hotter future. We recommend that future water policy must focus on i) encouraging farmer adaptation (hence supporting water entitlement buy-back and eliminating on-farm irrigation infrastructure subsidies); and ii) removing farm exit barriers.

1. Introduction

Water reform in Australia's food bowl, the Murray–Darling Basin (MDB), has generated both benefits and costs for irrigators under institutional and property right reform. Irrigators who owned water entitlements have benefited considerably from the marketization of water (Grafton et al., 2016), with water now a very valuable commodity asset. Nevertheless, for some this has come at a high price, where water management risk has increasingly been put back on irrigators to manage and accommodate. Because of climate change and serous droughts in the MDB over the past two decades, water security has decreased significantly for irrigators. An example of how irrigators have been increasingly tasked with managing water scarcity issues is the difference between how water allocations were determined and announced in the past two decades. For example, in the MDB's largest irrigation district, the Goulburn-Murray Irrigation District in Victoria, prior to 1998 the water authority accepted the risk of variable expected inflows during the season, and incorporated them into opening allocations—the share of water irrigators would be able to access that year. After 1998, opening allocations incorporated current storage volumes and expected minimum inflows, which had the result of shifting the risk management burden onto irrigators. Irrigator uncertainty increased considerably; with opening higher reliability entitlement[1] allocation levels starting at 0% in six out of the last thirteen years. Water allocation announcements are now updated every two weeks from the start of the water season, depending upon inflows, rainfall and storage levels. The uncertainty of opening and final allocations can lead to considerable hardship for those with annual crops in deciding whether to plant a crop for the year, as well as causing stress for those with permanant crops as to whether they will have enough water to keep their crops alive, which correspondingly requires an increased need for irrigators to carefully plan their water management strategies (Wheeler et al., 2014b).

Water uncertainty linked to scarcity issues expand the traditional

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[1] High reliability entitlements provide water allocations of 100% in roughly 95 out of 100 years. Opening allocations of 0% are therefore unusual for high reliability (though not for general security entitlements), and create significant distress for irrigators.

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agricultural causes of worry for Australian irrigators. Farmers in general in Australia face open markets, declining terms of trade/commodity prices, and relatively little government support or subsidy assistance. Other issues include economies of scale pressures; aggregation of family farms; out-migration of people/services to larger regional centres; competition from mining for agricultural resources; and an ageing farm workforce (Barr, 2009; Sherval and Askew, 2012; Wheeler and Zuo, 2017). Australia is also the driest inhabited continent on earth, and experiences large climate variability. Drought is thus a recurring issue for dryland and irrigated farmers, where both suffered unprecedented water scarcity conditions in the MDB during the Millennium drought (most common timeframe of 2001/02–2009/10).

The Millennium drought represented the worst ever recorded drought since European settlement, and led to a large number of irrigators exiting farming. It also had significant impacts on tourism, recreation and the environment. The severity of the drought, and the fact that the environment suffered disproportionately, highlighted the overallocation of water resources, and motivated significant government intervention in the MDB (for a detailed history see Wheeler, 2014). This intervention included the *Water Act* (2007) which empowered a Basin-wide management plan (2012) that set sustainable diversion limits for water—namely a reduction of consumptive (irrigation) surface water diversions by 2,750GL/year, to be returned to environmental use by July 2019 (Taylor et al., 2017). Reductions to consumptive water use have been sought through two major policies: investing over AU $7billion in on-and off-farm irrigation infrastructure to achieve water 'savings'; and investing over AU$3billion into buying water entitlements[2] back from willing irrigators. Recovered water is then held and used by the Commonwealth government to achieve environmental objectives. To date, around 2,000GL/year in long-term average annual yield water entitlements have been recovered, with two-thirds of the recovery achieved through buy-back from willing irrigators, and the remainder from subsidizing irrigation infrastructure. In 2015 a 1,500GL cap on total water entitlement buy-back was established, based on perceptions that buy-back is economically more harmful to rural communities. Recovering water through irrigation infrastructure, on the other hand, is viewed as politically palatable and more socially neutral for rural communities. Despite room within the buy-back cap (and the fact that buy-back was considerably more cost-efficient with less environmental negative impacts),[3] in late 2017 there was a recommendation from the Murray-Darling Basin Authority to only recover future environmental water from on- and off-farm irrigation infrastructure to minimize harm to irrigation communities (Grafton and Wheeler, 2018).

The Basin Plan, and the water recovery program in particular, have therefore become a national priority with expected community sustainability benefits. However, future drought uncertainty, increased water risk-adoption by irrigators, and the Basin Plan have raised questions, rightly or wrongly, about the consequences for rural communities given their poorer health status (AIHW, 2016), and potential difficulties in accessing support services. One of the most common concerns raised is that farmers have higher suicide rates than the general population; up to two times higher, though rates vary regionally (Fraser et al., 2005; Judd et al., 2006a, 2006b; Arnautovska et al., 2014).

Conversely, of the few studies into farmer mental health that have been conducted, many find no significant differences in mental health between farmers and metropolitan and other rural residents (Stain et al., 2008; Fragar et al., 2010; Brew et al., 2016). Some reasons include the male dominance of farming (the concept of rural farming masculinity), that females tend to self-report higher mental stress, and less unemployment in farming (a key driver of worsening mental health) (Stain et al., 2008; Brew et al., 2016). As Brew et al. (2016) outlined, there is a paucity of analysis in Australia examining farmers' mental health as compared to their rural counterparts, and a need for more refined local understanding of key drivers. Similarly, Philo et al., 2003: (277–278) emphasized that there has been a tendency in the literature to study the 'urban/rural' divide in mental health issues, which can ignore the fact that rural places are "cross-cut by complex axes of social difference, just as are urban places, and that some residents will be rendered poorer, dispossessed and excluded in various ways by the uneven power relations traversing the 'communities' in question; in which case they are liable to experience greater pressures on their mental health than are many of their neighbours". This study incorporates the complex axes of social difference by seeking to investigate a specific form of stress on farming; namely irrigator mental health by industry in the MDB, as compared to farmers in general.

Farming as a vocation has always had a certain romance associated with it. Farmers have a deep attachment to their land and the lifestyle of farming. However, the fact that most farmers 'live at work' means they cannot escape their workplace easily, and in times of distress this can cause problems. They are also traditionally perceived as strong, independent characters. The concept of rural masculinity often dominates in farming, placing a premium on stoicism (hence a reluctance to share problems), and self-reliance. In addition, rural Australia is characterized by low population density; intense social interactions; geographic isolation and conservative attitudes (Pritchard et al., 2012; Kennedy et al., 2014). All these factors play a role in shaping mental health issues, and the capacity to seek help (Judd et al., 2006b).

Within farming communities there is also great diversity. Farms range from small, almost subsistence businesses to huge commercial multinational enterprizes; with a variety of operations in-between (Kennedy et al., 2014). Financial problems have been the issue most commonly found associated with farming distress (Staniford et al., 2009; Fraser et al., 2005; Judd et al., 2006b; CRMH, 2005; Edwards et al., 2015: Fennell et al., 2016). Other common stresses include: stigma and social isolation stresses (Staniford et al., 2009; Fraser et al., 2005; Judd et al., 2006b); managing intergenerational issues and succession/retirement (CRMH, 2005; Roy et al., 2013); constant need to make unilateral decisions—often difficult ones with insufficient information under long working hours (Fraser et al., 2005; Judd et al., 2006b; Kennedy et al., 2014); and external regulation requirements (Staniford et al., 2009).

Finally, farmers struggle with external uncertainties. Weather, the performance of global markets, commodity-dumping by international competitors, and the lack of input into marketing all contribute to farmer perceptions that they are at the mercy of external forces (Staniford et al., 2009; Fraser et al., 2005). In their survey of 309 South Australian mainly dryland farmers in 2008 (a year of drought), Fennell et al. (2016) found that drought (and lack of rain) was named as the most common farming stress. As already mentioned, in the MDB, water

[2] The water savings from investments in irrigation efficiency infrastructure on farms are shared 50/50 between the irrigator and the environment, with irrigators transferring a portion of their water entitlement back to the Commonwealth government in return for money to upgrade irrigation infrastructure. One consequence of this is that reflows from previously inefficient water infrastructure are lost within the system, an environmental externality not currently accounted for in water recovery. Australia's MDB has the most advanced water markets in the world, where both permanent water (water entitlements which are a permanent share of a consumptive pool of water) and temporary water (water allocations which are a seasonal allocation attached to a water entitlement and determined by the entitlement's reliability, water storage levels, rainfall and expected inflows) are commonly traded. As at 2015/16, it was estimated that around half of all irrigators in the southern MDB had conducted at least one entitlement trade, while up to 80% of irrigators had conducted at least one water allocation trade. Hence, the existence of this water market made it possible for the Commonwealth to use market-measures to buy-back water (Grafton and Wheeler, 2018).

[3] Water recovered via irrigation infrastructure cost 2.5 times more per ML than water recovered via buyback, while irrigation infrastructure upgrades also reduce water return flows (a negative environmental externality on a Basin-scale) (Grafton and Wheeler, 2018).