The Negative Externalities of Water Consumption

by Jesse Hermans

Water is a scarce, finite resource critical for life and many human activities. It is a fundamental raw input taken from the commons and combined with land, labour and capital to produce things like food and fibre. In Australia where droughts are frequent, optimal and efficient water use is critical for both the economy and environmental sustainability.

Without good public regulation, rivalrous consumption of finite water resources would quickly destroy the sustainability of both human activity and the environment. While public regulation contains this impulse, a better regulatory structure could achieve more efficient and more equitable outcomes.

The negative externalities from excess water consumption arise from water's quality of being a common resource. Before the application of property rights and licenses, water could be extracted from a system such as the Murray-Darling Basin at just its extraction cost. This does not take into account the costs of depleting the commons – both in environmental harms, and in depriving other users.

Where the private marginal cost is significantly lower than the social marginal cost, the true social and environmental cost of extracting water from the basin is disregarded – this is the definition of a negative externality.

Due to the true cost not being reflected in the production (extraction) price, an unregulated market leads to excess water consumption. Taken to the extreme, such excess consumption of a finite resource could lead to significant environmental damage as well reduce the resource quality and availability to others downstream, or worse – complete exhaustion of the resource. This problem is known as the tragedy of the commons. Total surplus, consumer surplus, producer surplus and government surplus are all at risk of being significantly reduced.

It is therefore imperative that a regulatory system is devised and used to ensure an efficient as well as equitable distribution of finite water resources. Such a system needs to also be flexible, to cope with the fluctuations in basin capacity as well as meet environmental needs. A well-designed system promotes productivity while ensuring surplus is safe guarded and even increased.

Water, being a common resource, should be thought of as part of the commonwealth – initial ownership of such a resource should belong to the public, with the state acting as a trustee. From here the decision of how to regulate water consumption must be made. Market based systems in this instance are favoured by Australian governments.

For urban water use, pricing water through publicly owned utilities is utilised as a policy – the government acting as a water producer. This ensures consumers of water (voters) are provided sustainable, reliable and sufficient access. For river systems such as the Murray-Darling Basin however, it is necessary to have more stringent requirements for consumption. Governments here have opted instead for direct regulation, creating property rights assigned to annual water stocks. This has led to the creation of an Australian water market, where water licenses are traded. These water licences consist of both temporary allocations and permanent entitlements. Through this system the problems associated with the tragedy of the commons has been avoided and efficiency greatly improved, although in recent years it has been criticised for advancing agriculture over environmental allocations.

However a much greater issue lies in the structure of this water market system – the appropriation of resource rents by private license holders. This system has allowed speculators to buy up permits in pursuit of capital gains during times of drought by enforcing water scarcity. This is both an inefficient and inequitable management of scarce resources. The value of the Australian water market was estimated at over $40bn in 2012.

For a more equitable and efficient market, the state could collect the resource rents from the licenses via annual tender or similar lease charges. This would eliminate the price of the licenses which arises from the capitalised resource rents, removing barriers to entry for more productive water users and return the resource rents to the rightful owners – the public.