

# Coase Rules OK: Exploring prospects for private sector environmental protection<sup>1</sup>

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## **Abstract**

*Environmental policy in Australia, and internationally, has been characterised by taxes, subsidies, regulations and direct state provision. These Pigouvian inspired measures have paid little attention to the institutional drivers (Coasian rules) that underpin environmental issues. A re-orientation toward environmental protection initiatives driven by institutions that are endogenous to society offers the potential to lower transaction costs and release exchange efficiency improvements of the type demonstrated by Ostrom in the context of common property resources and Williamson in the case of firm organisation. Australian examples of private sector nature protection initiatives are used to demonstrate this potential.*

**Key words:** *Institutions, transaction costs, environment, open access.*

## **On markets, institutions and transaction costs**

At the beginning of any economic analysis, it's always worth reflecting on the merits of the market as a mechanism for coordinating the activities of millions of self-interested individuals in their collective interest. Of their own free will, people offer up information on their preferences to the world through this interaction with others in the process of buying and selling. This information, through price formation, signals the relative scarcity of resources and allows the reallocation of those resources through exchange to those who value them more highly.

Part of the reflection on the capacity of the decentralised market system involves contemplating the foundations on which its successful operation depends. The foundations are North's (1990) institutions. These are the 'rules of the game' by which self-interested individuals interact with each other in markets. Foremost of these institutions are those that allow for the definition, defence and exchange of property rights: the bundles of rights and responsibilities relating to the use, holding and disposal of scarce resources. With such a rights regime in place, individuals have the incentive to

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provide information regarding the relative strength of their preferences for resources to the market masses. This is the necessary ingredient for the social co-ordination of resource use through the exchange of rights in the market place.

The counter point to this situation is that in which the institutions associated with property right definition, defence and exchange are not well established. Without these institutions, the market mechanism will struggle to generate and transmit information regarding the preferences of potential suppliers and users of resources. Without that information, the conclusion drawn from most economic analyses is that reliance on the market will ensure that resources are wasted through over-exploitation or under-supply. The temptation that follows is to conclude further that some form of collective action is required to 'correct' the 'market failure' so occurring. This is the conclusion drawn by those economists following in the footsteps of Pigou (1912) who advise the establishment of taxes and subsidies as remedies. Individuals who do not bear the full costs or enjoy the full benefits of their actions because market prices are not signalling complete information are taxed and subsidised respectively to reflect the existence of such 'externalities'.

The Pigouvian focus on the failure of markets to deliver socially optimal resource use outcomes, and in particular the policy focus on 'internalising' externalities through government intervention, remains a key element of current environmental economics texts and a mainstay of many developed nations' environmental policies. The existence of externalities is seen as a prime justification for government intervention, even if tempered in some jurisdictions by a requirement to demonstrate that proposed policies will improve community well-being relative to a no-new-policy alternative.

As has been pointed out by Randall (1983) and Anderson (2004), the weakness of the Pigouvian approach is that it fails to integrate into its analysis, any recognition of the reasons why the offending externalities arise in the first instance. An alternative approach that considers the institutional roots of externalities offers the prospect of a broader base for understanding 'market failure' and gives a different perspective on the development of policy. This is the approach that is underpinned by the work of Coase (1960) who put forward transaction costs as the source of externalities. Without transaction costs, there would be no 'externality gap' between social and private benefits and costs as parties are able to negotiate exchanges across resources and achieve all of the improvements in social well-being that are available.

However, transaction costs are omnipotent and vary in their extent from context to context. The existence of transaction costs and hence externalities, does not justify intervention. Clearly it is in the interests of society to reduce transaction costs in order to enjoy the benefits of increased exchange. However, if the transaction costs are greater than the efficiency dividends available from enhanced exchange then it is not in society's interest to engage in that exchange. An understanding of the factors that influence

transaction costs is essential in this pursuit of efficiency gains. The key driver to transaction costs is the institutional structure that underpins exchange<sup>3</sup>.

Institutions range from internal, informal rules such as honesty and trust through to external, formal rules including the criminal code and regulatory law (Kasper 1998). In the absence of institutions, exchange is more costly. The process of knowledge formation regarding others' preferences is more time consuming and risky. With stronger rules of engagement in place, transaction costs fall and more exchange is likely with consequential improved gains in societal well-being.

When small numbers of relatively homogenous people are involved, the formation of institutions (itself a costly process) is relatively straight forward and may be achieved endogenously. The gains from potential trades are sufficiently strong to warrant the costs of forming the initial institutions that then lower the transaction costs of those potential trades. These are the societal conditions that Olson (1965) formulated as being conducive to negotiated outcomes in cases where private property rights are not well defined or defended. In such circumstance, notably where common-property goods are involved, members of groups are more likely to be able to negotiate rules that facilitate internal trades of the type that Ostrom (1990) has catalogued. Hardin's (1968) concern for common-property goods was the 'tragedy' of over-exploitation. What Ostrom found was a multitude of contexts around the globe where the 'free-riding' motivation feared by Hardin has been overcome through the operation of internal institutions.

The situation becomes more complex when the number of people involved grows and the group is more heterogeneous. While the gains from exchange are likely to be greater simply because of the increased group heterogeneity and hence increased differences in the marginal values held by individuals, the costs of reaching internal agreement regarding the rules of exchange and the on-going costs of their monitoring and enforcement will also be higher. Here the inception of external, formal institutions becomes more important. Those institutions may be formed through political collective action (such as an elected parliament) and enforced through collectively funded organisations (including courts, the police force and gaols). They may also be institutional corporate structures where transaction costs can be lowered by drawing together activities within a single firm as demonstrated by Williamson (2002).

Still the question remains regarding the contexts in which the costs of establishing external institutions and the subsequent regime of transaction costs are worth the gains to be enjoyed from exchange. Pigouvian policy initiatives focus on the potential efficiency gains but they largely ignore these costs. As Anderson (2004) points out, the adoption of a Pigouvian 'solution' implicitly involves the establishment of an institutional arrangement that specifies a vestment of rights. Furthermore, by imposing the solution,

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<sup>3</sup> Note that interventions may be supported by those in society who gain from the so-realised exchange if they are able to shift the burden of the transaction costs to others. However interventions should be judged from the perspective of the whole of society and take into account the net benefits of exchange net of transaction costs.

the improvements in resource use efficiency that can be achieved through subsequent trading of rights after an initial Coasian allocation has been made are lost.

Put simply, it may not always be desirable to establish collective institutions to allow trade to occur because of the high initial establishment costs and the on-going transaction costs. While the formation of endogenous institutions is guarded by the group's awareness of the costs they are undertaking to form their institutions relative to the expected benefits from exchange, there are no similar automatic restraints to the formation of exogenous institutions. The danger is that institutions may be imposed on society that make them worse off, especially where external institutions enable those who enjoy the benefits of exchange are able to shift the burden of paying the transaction costs to others in society.

Hence, in exploring potential policy approaches to issues traditionally branded as examples of 'market failures' in particular those involving environmental aspects, alternative underlying institutional structures warrant investigation. Anderson (2004) puts this succinctly in setting out three questions that are central to the policy development process: 'Why are the transaction costs high; can they be reduced; and what should be done if the transaction costs cannot be reduced as a result of non-exclusiveness and non-rivalry?' (p452)

In the remainder of this paper, these three questions are addressed with reference to the provision of environmental benefits that are not common property resources as defined by Ostrom but are 'open access' resources. While common property goods can involve the exclusion of users, open access goods cannot. They are not only joint (non-rival) in consumption in that one person's consumption of the good does not restrict its availability to others, but they are also non-excludable.

### **Why are transaction costs high?**

The non-rival and non-excludable characteristics make the transaction costs and institutional issues associated with open-access goods quite different from those of common property goods and call into question the relevance of Ostrom's and Williamson's conclusions. The specific characteristic of open access environmental goods that is of most interest is the inability to exclude beneficiaries. For instance, the benefit enjoyed by people who know that an endangered species or threatened ecosystem has been protected may form an exceptionally large and heterogeneous group, exclusion from which through either internal or external institutions is either at very high cost or impossible.

The common analytical response to open access resources is that with such high transaction costs in place, institutions will not form endogenously. Furthermore, property rights will be unable to deliver an efficient outcome because no profit maximising supplier will be able to charge a price for providing the resource because free-riding will

be endemic without exclusion. Even if a positive price could be charged it would be inefficient given the marginal costs of supplying an extra user are by definition zero.

The common policy response is for the state to become the monopoly supplier. Hence the widespread establishment of networks of state owned and operated national parks that provide for the protection of ecosystems and species.

So the answer to Anderson's first question in the context of open access environmental goods is that transaction costs are high because of the costs of establishing institutions (internal or external) that can provide incentives for preference information to be made available. The institutional arrangements that have emerged – involving the collection of taxes, the development of environmental policy and the implementation of that policy – are costly to operate. However as the public's demands for environmental protection benefits have increased, the community has supported government policy that involves incurring those costs. In political economy terms, it is probably more accurate to conclude that sufficient voters in sufficient marginal electorates have held environmental protection preferences that have been strong enough to swing their votes toward candidates offering to impose the costs of state environmental protection provision across the whole community.

## **Lowering transaction costs**

The next question Anderson poses is whether these transaction costs can be lowered through the introduction of different institutional structures. Of particular interest is the feasibility of institutional structures that would reduce the prominence of the state as a provider of open access environmental protection goods and services. This line of questioning follows the same logic as that employed by those seeking to understand the role of endogenous institutions in the provision of common property goods and services in that it looks for examples of contexts where state provision has been usurped or at least supplemented. For this paper, Australian examples are investigated.

### ***Terrestrial ecosystem protection***

Terrestrial ecosystem protection has long been the province of government in Australia. Extensive networks of National Parks have been set aside in all states. However over the past three decades, there has been a general slowing down in the rate at which new National Parks have been declared. The last twenty years have witnessed an expansion in the network of privately owned and operated nature reserves. The trend toward private sector 'nature conservation enterprises' was initiated by Earth Sanctuaries Pty Ltd a limited liability company and has been taken forward by Bush Heritage Australia (BHA) and Australian Wildlife Conservancy (AWC), both of which are not-for-profit organisations. Each of these organisations has operated through the receipt of private funds that they have used to buy freehold title over land. In the case of Earth Sanctuaries, monies were received from the public through the issuance of new shares in capital raisings. Both BHA and AWC seek donations from the public. Earth Sanctuaries has

faded in prominence over the past ten years after the company experienced difficulties in having its prospectus for capital raising approved by the corporate regulator (the Australian Securities and Investment Commission - ASIC). The company was de-listed in 2005. However, the land holdings of both BHA and AWC have expanded. BHA currently owns and manages 32 reserves covering over 947 000 hectares in six states (Bush Heritage Australia 2010). AWC owns 20 sanctuaries around Australia covering more than 2,775,000 hectares (Australian Wildlife Conservancy, 2010). Their purchases have sought to target the protection of particularly vulnerable species and ecosystems that are not well represented in the estate of national parks.

This evidence of growth in the private supply of environmental protection assets indicates that the institutional structures underpinning the private ownership of land are sufficient to see the emergence of an alternative to state ownership for environmental protection. The transaction costs associated with private ownership have been at a low enough level under the arrangements put in place by BHA and AWC for individuals to pay for the goods and services offered. Notably, the goods and services provided are largely non-excludable. For instance, donation to the organisations does not give exclusive visitation rights to donors. What is enjoyed by donors is the knowledge that the areas of land purchased with their donations, and their associated ecosystems and species, are protected. This is available equally to non-donors<sup>4</sup>.

Both AWC and BHA have lowered the transaction costs for individual donors by providing a vehicle for them to pay for an expansion in the supply of protected areas. The organisations have established mechanisms that the general public trust to deliver outcomes and through targeted advertising campaigns have made that avenue well known amongst those with strong nature protection preferences. Established donors are approached regarding campaigns to raise funds for the purchase of specific areas and are then kept well informed regarding the progress toward the goal. Success is widely reported in the media. Bequests are particularly welcomed with the costs of making the necessary arrangements being accommodated by the recipient organisation.

These private organisations have sought to meet a community demand for environmental protection that governments had not met. They have been able to mobilise funds that traditionally would have been thought trapped by free-riding. However, their approaches to lowering the effective costs of private supply have not been without government assistance. Most importantly, tax deductibility status has ensured that the individual's cost of a donation made is lowered by their marginal tax rate. Furthermore, some of the AWC portfolio has been secured with dollar-for-dollar matching grants from the federal government. By providing assistance in this way, governments have been able to assist in satisfying the demands of those with stronger environmental preferences than the median voter at lower costs to their other spending targets than would arise from state ownership and management.

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<sup>4</sup> While the benefits arising from making a donation are non-excludable, the enjoyment from the act of giving is the donor's alone.

The operations of BHA and AWC have involved the generation of endogenous institutions to lower the transaction costs of people interested in terrestrial environmental protection. They have both worked within established external institutions (notably property rights to land) but have also sought, through the political process, access to taxpayer funds to increase the value generated for donors' money.

### ***Riparian ecosystem protection***

A similar modus operandi to that employed by BHA and AWC is now developing amongst organisations seeking to supply environmental protection benefits in riparian ecosystems through the purchase of water entitlements in river systems that have been modified by irrigation.

The environmental condition of rivers in the Murray Darling Basin deteriorated over the last century as progressively more water was withdrawn from the system for irrigated agriculture. State allocations of licences to extract water for irrigation was driven by the political strength of irrigators to the point where in the state of NSW there were licences for more water extractions than there was water available even in the wettest years. A combined recognition that the allocation of irrigation water entitlements was flawed and that some riparian ecosystems were on the point of collapse stimulated a policy response that involved the setting of a cap on future extractions, the development of property rights to water that were separate from land title so as to facilitate the emergence of a water market and, more recently, to a programme of government funded 'buy-backs' of entitlements from irrigators. In this way, the state has instituted a set of external institutions in an attempt to provide for the more efficient use of the water resource. Trade in water entitlements has ensured that water for irrigation has moved to higher valued uses. Trade also allowed better adaptation to periods of drought. The establishment of title over water has also permitted government to enter the newly established water markets to buy entitlements to be managed by the 'Commonwealth Environmental Water Holder' specifically to achieve environmental goals such as improving the condition of flood dependent ecosystems along the rivers of the Basin (for example, wetlands and River Red Gum forests). Entitlements to 737,796.5 megalitres were being held by the CEWH as of 30 June 2010 and to that date, 179,000 megalitres had been applied to secure environmental improvement to rivers, wetland and floodplains (Australian Government 2010).

The establishment of tradeable water title has also provided an institutional base for the emergence of private sector entities whose goal is to provide environmental improvements in water dependent ecosystems along the rivers. For example, Healthy Rivers Australia (HRA) has established a 'water bank' that holds water either donated by entitlement holders or purchased using funds from donations and sponsorships. This water is made available, on application, to individuals or organisations that propose to use it for riparian ecosystem improvements. For example HRA has supplied 30 megalitres of water to support the reintroduction of the Southern Purple Spotted Gudgeon, an endangered fish species, into the Paiwalla Wetland in South Australia. This followed a successful captive breeding programme undertaken by HRA in conjunction

with another private not-for-profit, Native Fish Australia (Healthy Rivers Australia 2010).

Again, it is important to note that the establishment of HRA has been stimulated by the formation of water markets that in turn were made possible by the external institutions associated with water entitlements. Furthermore, grants from government have been important sources of finance for HRA and tax deductibility of water donations has been granted. In June 2010, the Australian Valuation Office determined that the donation to HRA of a temporary entitlement to 48.4 megalitres would generate a tax concession of \$16,900.

A further initiative in this regard is the formation of the Nature Conservation Water Trust by the NSW Nature Conservation Council (NCC), the umbrella organisation for environmental non-government organisations in the state of NSW. Originally formed to accept donations relating to a campaign to buy water entitlements that were scheduled to be auctioned for irrigation development on the Warrego River in the north west of the state, the Trust's remit was broadened when politically lobbying proved effective in preventing the auction from going ahead. The transaction costs associated with securing political favour were clearly lower for the NCC than those associated with establishing and managing the Trust as well as the subsequent costs of managing the water entitlements to be procured. Again, the NCC has secured tax deductible status for donations to the Trust (Nature Conservation Council 2010).

These examples of terrestrial and riparian environmental protection demonstrate the evolution of different endogenous institutional settings in the context of open access environmental goods and services. The benefits anticipated by donors to the organisations described do not involve direct use of the assets protected. They are therefore fundamentally different from the land-based common property resources detailed by Ostrom and the fishing benefits provided (exclusively) to those supporting water trusts in the western USA (Scarborough 2007). They are specifically in the category defined by Anderson's third question: those goods with the characteristics of non-exclusiveness and non-rivalry. So while the cases documented above demonstrate the reality of endogenous institutions developing to lower transaction costs, it is also appropriate to ask what more can be done given their special characteristics.

### **Transaction costs under non-rivalry and non-excludability**

The nature reserves that have been established by BHA and AWC provide non-excludable, non-rival goods in the form of 'non-use' values such as the knowledge that species and ecosystems continue to exist for this and future generations. However, they also provide potential use values associated with visitation. Even though many of the reserves in these organisations' portfolios are remote and vast, there are prospects for visitor access and exclusion of those who are not donors (either previous to the visit or at the time of the visit through a pseudo entrance fee). Such visits would be non-rivalrous (up to a congestion threshold) but potentially excludable. This raises the prospect of the joint production of non-use and use values from environmental protection (Demsetz



1970) whereby exchanges are made in conventional markets for the use values that provide for the supply of the joint non-use goods<sup>5</sup>.

There would appear to be no externally imposed barriers to prevent a visitation market emerging. Innovative ways of excluding users who do not pay are already in place in some government operated national parks. For instance, visitors may be required to pre-purchase entry passes that must be displayed when in the park and are subject to (low cost) random checks with heavy penalties for non-compliance. The reluctance of AWC and BHA to embark on this type of venture is thus a sign that the transaction and operational costs are higher than the expected returns. The Earth Sanctuaries experience is salient. Their goal was to engage in ‘ecotourism’ to fund reserve acquisition however apart from one reserve that was located adjacent to the city of Adelaide in South Australia, visitation demand was insufficient to generate sufficient revenue to fund the enterprise.

Proximity to major population centres – and the associated low travel costs of visitation – is therefore an important factor in generating sufficient use value revenues to allow successful joint production of non-use benefits. The irony of this is that heavy visitation may not be conducive to species and ecosystem protection and many of the endangered ecosystems and species are in the more remote areas where development has not yet led to their demise. Hence, for the joint production model to be successful, the jointness has to extend across a portfolio of assets and involve cross-subsidisation within the venture. Without reserves adjacent to the cities, this is not feasible and the establishment of private reserves in these locations may be challenging given that land prices near cities are unlikely to be attractive and because of the competition well-established state owned and operated National Parks would provide.

It is useful to note that the existing portfolio of National Parks that are city-proximate assets do charge entry fees and exclusion is enforced. However, the revenues raised by these ‘city parks’ is not directly used to cross-subsidise remote parks. Rather park revenue is paid into the state’s consolidated revenue. Hence individual park managers have no incentive to encourage use so as to generate revenue flows for use in managing the asset under their control. Management funds are fixed as amounts allocated from the overall parks service budget. The prospect of cross subsidisation across the portfolio of different assets is even more unlikely.

One possibility for institutional reform that this observation points to is the prospect for national park assets to continue to be owned by the state but to be operated by private sector interests. Such a strategy would avoid the political back-lash that could be expected from the privatisation of the national parks estate. However it would inject some competitive pressure to lower costs and provide improved customer service as well as introduce the prospect of joint production of excludable use benefits and non-excludable non-use benefits. The long history of public-private-partnerships (PPP) in the supply and

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<sup>5</sup> Note also that private suppliers of open-access goods and services often combine the act of donating with the provision of private goods such as t-shirts that allow donors to signal their status which may in turn be of social value.

management of infrastructure and the private management of utilities gives some pointers as to how reform in the nature protection sector may proceed. For instance, the right to operate a protected area may be offered for auction by the state at pre-defined intervals through time. Bids received may be positive and negative depending on expectations of income flows. Revenue raised by the state from the auctions may be used to fund payments made to negative bidders who require payment to manage remote, little used but biodiversity rich areas. Alternatively, bids may be received for parcels that encompass high and low use areas.

In the context of riparian ecosystem protection, water entitlements held by the state for environmental purposes could be treated similarly. Organisations gaining access to entitlements would be motivated to achieve environmental improvements at least cost through timely action, unimpeded by bureaucratic approval processes. They would also have access to water trading as a source of income. Because environmental demands for water are countercyclical to irrigation demands, the prospect is for environmentally motivate entitlement holders to sell when irrigation demand is strong and buy when it is weak. Profits so generated could be used to cover the operating costs of the organisation and potentially an expansion of their entitlement holding.

An important aspect of these possible reforms is that they require the state to step back from its past prominence as owner and manager of environmental assets. In order to test the viability of private sector initiatives, the ‘crowding out effect’ of government action must be removed. As Schlager and Ostrom (1993) report, the introduction of external institutions into contexts where internal institutions had ensured the sound management of a common property resource can be destructive. Similarly, the removal of external institutions may be necessary to see the emergence of internal institutions. The on-going success of BHA, AWC and HRA will be in part determined by the actions of the state as a competitor supplier of nature protection services. A policy of expansion of the state’s holdings of national parks for instance would be likely to reduce the willingness of the general public to donate to BHA and AWC. The continuation of the government’s water buy-back policy will make HRA’s task of raising funds more difficult: media coverage of riparian ecosystems recovering due to the actions of government would make the public less likely to be concerned that government action is not enough.

## **Conclusions**

The award of the Nobel Prize in Economics for 2010 to Elinor Ostrom and Oliver Williamson signals the significance of institutions and transaction costs to the discipline and acts to reinforce the impact of Ronald Coase’s analysis that goes back to 1960 and was recognised through the award of the 1991 Nobel Prize in Economics.

Despite this recognition, environmental policy in Australia and internationally continues to be more influenced by Pigouvian thinking. A re-orientation of policy to recognise the potential offered by endogenous institutional arrangements to lower the transaction costs associated with the provision of environmental protection goods and services requires exploration. Australian examples demonstrate that existing external institutional settings associated with land and water property rights have been sufficient to see the

development of further internal institutions that have underpinned the success of a number of private sector nature protection initiatives.

Further development of such initiatives is possible but these are likely to depend on the state relinquishing some of its current roles. This would reduce the “crowding-out” effect of government provision and would also reduce some “barriers to entry” (Demsetz 1982) that currently act to restrain private sector action.

The evolution of internal institutions may not be speedy. People in Australia have long experience, and hence expectation, of government ownership and management of protected natural areas. A shift toward private sector involvement and the associated internal institutions may take time. However, transitional strategies such as public-private partnerships offer a way forward. Already private concessionaires are active in many national parks offering services ranging from kiosks to guided tours. Aboriginal custodians of national park lands have also taken on active management roles, particularly in Northern Australia. Changing the way these interactions between the state and the private sector are managed so that they provide competitive incentives for the joint production of use benefits along with ecosystem protection benefits offers a first step.

Nor should it be expected that the transition will achieve a ‘Nirvana’ of Pareto efficient resource allocation. What can be expected is an improvement in the well-being of society that acknowledges the costs associated with the processes that generate the resource use outcomes.

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