

# Public good conservation and the impact of environmental measures imposed on landholders

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*Public good conservation is an increasingly important economic issue. This article examines the importance of public good conservation, how environmental benefits can be delivered at least cost, and how costs can be distributed in an equitable manner. The article follows an appearance by recently retired Secretary to the Treasury, Ted Evans AC, before the House of Representatives Standing Committee on Environment and Heritage, inquiring into public good conservation.*

## Introduction

Natural resource degradation is a serious economic issue. While many of the costs associated with unsustainable land use are currently hidden, the costs are real and will have to be borne in some form by producers, consumers or taxpayers.

A particular natural resource policy challenge is public good conservation, which refers to conservation activities undertaken on private land, which may benefit local communities or society in general. Deciding who should pay for conservation measures (or alternatively who should pay for the costs of degradation) requires consideration of a number of issues, including the fact that individuals who face the legal responsibility for conservation may not bear the economic costs of its provision.

This article aims to provide a framework to address the following questions:

- Why is public good conservation important?
- How can environmental benefits be delivered at least cost?
- And how can costs be distributed in an equitable manner?

It should be noted at the outset that economic analysis can not provide definitive answers to all these questions, since many of them have a basis in value judgements that are best resolved through the political process. However, the application of economic principles can highlight the choices and

trade-offs involved, thereby making transparent the value judgements that need to be made.

## A policy framework for public good conservation

Australia's natural resources are among its greatest assets. They can enhance national welfare in many ways, from uses such as agriculture and mining, to the appreciation of native fauna and flora.

In choosing between these possibilities, it is helpful to consider the costs and benefits of alternative uses for land. In virtually every use, there are likely to be some costs as well as benefits.

The aim of public policy in this area should be to strike a balance for all Australians, between stewardship of natural resources, and the generation of national income. This would still result in human induced changes to the natural environment, since avoiding this would only be possible at the cost of foregoing production almost entirely.

In principle, a decision to undertake conservation should be relatively straightforward. It should occur when the marginal benefits of conservation outweigh the marginal costs.

What makes striking this balance so difficult in practice is that valuing the costs and benefits of alternative land uses and environmental assets is often very complex. Further, the costs and benefits are often viewed very differently from private and public perspectives.

## The importance of public good conservation

In the past, and consistent with society's views at that time, governments (both State and Commonwealth) placed little emphasis on the environmental costs of agricultural and resource production. In many cases governments encouraged or even required landholders to clear their land. For example, as recently as the early 1980s, the Commonwealth provided concessionary tax treatment for the destruction and removal of native vegetation.

While many of today's environmental problems are inherited from what we now know to be unsuitable management regimes, undesirable practices still occur.

Also, it is increasingly clear that the community is demanding higher standards of environmental conservation and protection than in the past. This can be explained by several factors:

- Increasingly, we are improving our understanding of environmental processes. This has improved our knowledge of the long-term costs of environmental degradation.
- In addition, as incomes have been rising, conservation is becoming both more affordable and more desirable.
- And finally, 'untouched' land becomes more valuable the less there is.

All these factors have resulted in increasing pressure being placed on governments and landholders to preserve natural tracts of land, reverse the effects of past practices and to stop further degradation occurring.

Changes to past land management practices have been necessary to ensure production occurs in ways consistent with society's demand for conservation. However, further behavioural change may still be required in order to meet acceptable environmental outcomes.

## Environmental degradation and market and institutional failure

Private landholders are unlikely to produce socially optimal environmental outcomes when they do not face the *full* benefits and costs of their actions. Under these circumstances, individuals are likely to place greater weight on the costs and benefits *they* bear themselves, than the costs and benefits their actions impose on others.

In saying this, it should be recognised that the costs and benefits that individuals impose on the wider community may be very diffuse and difficult to identify. This does not mean, however, that these costs are not real.

The failure of individuals to adequately take social costs and benefits into account implies that their behaviour, while sensible from their own point of view, will not be optimal from a social point of view.

For example, fertilizer used to increase agricultural production can run-off into streams causing algal blooms and affect the health of relatively distant ecosystems such as the Great Barrier Reef.

In this case the immediate benefits of fertilizer use would be apparent to the landholder, but the downstream effects would not, due to spatial and temporal separation and the very diffuse nature of the effects.

Inappropriate behaviour can also arise where government policies fail to provide appropriate incentives. For example, pricing water below the full cost (ie, including the environmental cost) will lead to overuse, with a resultant increase in salinity and decline in river quality.

Thus the case for intervention to induce conservation can be cast in terms of addressing cases where private costs diverge from social costs. This leads us to the question of how costs and benefits should be measured.

As noted above, in determining when natural environments should be allowed to be modified, a guiding principle is that the marginal benefits should outweigh the marginal costs of degradation. For if the benefits are less than the costs, society will be worse off.

Some costs of environmental degradation, such as lost production and loss of environmental services, can be quantified. However, there are also unquantifiable costs associated with modifying natural landscapes, such as loss of aesthetic value, biodiversity and climate change. While markets may not value these accurately, society as a whole does value them, which means the costs are real.

Where degradation has already occurred, some of these costs could be recovered through environmental repair. However in many cases, the cost of repair would be greater than the benefits and thus would not be worthwhile. For example, it would clearly be uneconomical to repair *all* salt affected land.

Most environmental services and natural capital are not currently accounted for in measuring our national economic welfare. However projects are underway. The Australian Bureau of Statistics has devoted considerable resources to developing environmental accounting methods. The Government is also developing a set of headline indicators of ecologically sustainable development.

Although environmental benefits and costs of a public good nature are intrinsically difficult to quantify, informed judgements can be made.

## How can the conservation be delivered at least cost?

An important policy challenge is to ensure that when a socially acceptable environmental standard is defined, it is delivered at least cost to the economy. Or alternatively, how can the environmental outcome be maximised for a given cost?

### Market-based mechanisms

One means is through the use of market-based mechanisms.

Market-based mechanisms seek to influence the price signals faced by individuals, ideally to reflect the full social costs and benefits of their actions. This allows each individual to make decisions that are best suited to their own circumstances, while also taking into account the wider effects on society.

The principal advantage of market-based mechanisms is that they are non-prescriptive, giving individuals the flexibility to choose the amount and means of conservation depending on their own circumstances. Those who can conserve only at a very high cost can opt to pay instead, while those who can conserve at a relatively low cost will do so. This has the effect of inducing a least-cost path to an overall environmental outcome.

A further advantage is that market mechanisms promote a continuing incentive to find innovative ways to further reduce environmental impacts.

Market-based approaches can be divided into quantity-based measures such as trading schemes and price-based measures such as pollution taxes and repair subsidies.

Under appropriate design conditions, an emissions trading scheme and a pollution tax will be equivalent in delivering outcomes at least cost to the economy.

A *trading scheme* would involve setting a *cap* on environmental degradation. Individual permits would be sold, auctioned or administratively allocated up to the cap, and then traded in an open market.

- Undertaking environmental repair could generate extra permits.
- Groups that had a strong preference for environmental conservation could buy and retire permits, thereby raising environmental outcomes.

Such schemes do not directly fix the unit cost of conservation; this would be determined by the market through trading and indirectly through the size of the cap.

Examples of tradable permit schemes include the sulphur dioxide trading scheme in the United States and individual transferable quotas for Southern Bluefin Tuna.

A *tax scheme* would involve setting a *price* on degradation through charging for environmental damage. In a reciprocal fashion, environmentally beneficial behaviour can be subsidised.

Such a scheme would not directly fix the quantity of conservation; this would be set by a market determination of how much conservation can be purchased at a particular price.

Examples of tax measures include the Aircraft Noise Levy and the New South Wales Load Based Licensing Scheme, where pollution charges are levied on the annual amount of pollution discharged by a firm.

To maximise effectiveness, it is important that the tax or subsidy is targeted as directly as possible to the activity being influenced. This generally means that the *income* tax system will not be a preferred policy tool for achieving these ends.

Targeting particular environmental activities directly will also ensure that they are not *de facto* trade barriers, such as the broad subsidisation of agriculture practiced in the EU and Japan under the guise of natural resource management.

In using either a tax or a tradeable permit scheme, there will be some degree of behavioural change. This behavioural change is necessary in order to achieve an increased environmental standard.

However, both methods can provide revenue, either through selling permits or collecting tax, to enable governments to compensate affected parties.

Such compensation should be delivered in the form of adjustment assistance to alleviate hardship, rather than in ways which may reverse the desired behavioural changes.

Any excess revenue may even allow governments to reduce other taxes and thereby increase overall national welfare.

## Regulatory mechanisms

While market-based mechanisms are the preferred policy tool in principle, in some situations they may be difficult to implement. For example, the costs involved in setting up a trading scheme may be too high, or a verification system may not be possible.

Under these circumstances, it may be appropriate to apply more conventional regulatory mechanisms to impose the desired environmental standard directly.

Regulations are generally low cost to government because they do not require specific expenditure on programs or subsidies. However, they may impose considerable costs over and above market based measures. This is because they restrict flexibility in determining the appropriate amount and method of conservation.

Although these costs are not identified in the National Accounts, they have an impact on national income that should be considered explicitly.

That said, regulation might be an appropriate policy tool where protection of particularly sensitive natural assets is required. In this case, the costs may be justified in order to ensure an essential environmental outcome.

## How can the impost be distributed in an equitable manner?

Once the decision is made to undertake conservation, it is important to recognise that this cost will be borne somewhere in the economy. Broadly speaking costs will be borne by producers, consumers, or taxpayers.

There is no definitive answer to what constitutes a 'fair' distribution of the impost of providing public goods conservation measures. It is ultimately a value judgement that should be decided through the political process.

## 'Polluter pays' versus 'beneficiary pays'

Some principles that are commonly used to apportion costs in practice are the 'polluter pays' or the 'beneficiary pays' principles.

The *polluter pays principle* suggests that the people whose actions contribute to environmental degradation should pay the full costs, rather than the community as a whole. For example, if a landholder chooses to drain natural wetlands on his or her land, in order to increase the effective size of the property, he or she should have to bear the full cost of doing so. The full cost would include both the private costs and the loss that this ecosystem imposes on society.

Private land holders may object in the belief that their private property rights are being infringed through the application of this principle.

However, there are many other analogous measures that restrict private behaviour in order to protect public goods. For example, pollution controls for factories, urban planning laws, and speed limits on roads all restrict private action in order to protect public interests.

Often people are not compensated for government decisions, which affect them. For example, in the past when governments raised tariffs on certain goods, they were implicitly reducing the competitiveness of export industries. This was done without providing compensation.

Even so, governments may choose to offer compensation. Under these circumstances, compensation should only be considered where an individual's legitimate expectations have been altered and their interests have been adversely affected *after* he or she has entered into an arrangement in good faith.

The *beneficiary pays principle* suggests that where an action provides a benefit to others, those who receive the benefit should pay for the cost of providing that benefit. For example, if a landholder preserves natural wetlands for environmental purposes the cost should be shared by all who benefit.

However, there are a number of practical difficulties associated with this principle. For example: the benefits of maintaining biodiversity and ameliorating climate change benefit all Australians, and probably the whole world; however, many conservation measures, such as those designed to reduce the effects of salinity, primarily benefit particular regions or States.

Identifying the principal beneficiaries may prove to be difficult. This then raises an equity issue. Should the impost be borne by all taxpayers? If the cost is borne by taxpayers, governments will have to either raise taxes or reduce expenditure in other areas.



The adoption of the beneficiary pays principle may also encourage unwarranted claims by individuals in the hope of receiving payments.

The polluter pays and beneficiary pays principles are useful in showing that the costs of public good conservation can be imposed either on landholders or on the wider society.

While both principles are often argued to be equitable, they are essentially the flipside of each other, illustrating the essential value judgement in deciding who should pay for conservation.

Importantly both principles are largely concerned with who should be legally obliged to pay for conservation.

### Consumers or taxpayers bearing the burden?

In applying either principle, who bears the costs will depend on the ability of whoever bears the legal obligation to pass on the costs of conservation to others.

For example, the ability of farmers to pass on increased costs of production to consumers brought about by increased conservation measures will depend on the substitutability of the goods they produce. Where there are few substitutes, farmers may be able to pass on all the increased costs of production to consumers.

However, many of the goods produced by Australian farmers are sold in highly competitive world markets, with many close substitutes. In this instance the initial reduction of competitiveness for certain Australian produce could be expected to produce a downward movement in the real exchange rate. The exchange rate correction would result in increased prices faced by consumers, thus seeing them ultimately bear some of the increased production costs of the goods they consume.

Where the obligation to conserve is imposed on producers who cannot pass costs fully forward to consumers, the reduced profits may be reflected in reduced asset prices. In cases where severe hardship results, transitional adjustment assistance could be considered, resulting in the taxpayer bearing some cost.

However, a producer who purchases land after the conservation measure has been imposed should be buying fully aware of the measure and on that basis

should not be compensated – compensation would be implicit in the market price of the asset.

As the costs of conservation are essentially a cost of production, after transitional structural adjustment, the ongoing costs of meeting an environmental standard would be passed forward to consumers in the same way as any other cost of production.

### Private versus public benefits

Much of the preceding discussion has implicitly assumed conservation provided broad public good benefits. However, many conservation measures produce largely private benefits. For example, measures aimed at preventing declining fertility or soil structure, and expenditure on conserving or conveying water are likely to provide largely private benefits. That is, the benefits are captured by the individual landholders.

Where landholders undertake conservation activities that primarily benefit themselves, there is little justification for compensation from the wider community.

In deciding the case for whether public funds should be expended for conservation, the burden of proof should be to show that the benefits are primarily public in nature, rather than private, or spread across readily identifiable groups.

## Conclusion

Degradation of natural resources is a serious problem that affects, to varying degrees, the wellbeing of all Australians. There is growing pressure on governments and landholders to conserve Australia's natural resource base. While resource users do not face the full costs of their actions, the problem will continue.

In recent years governments have made considerable progress in correcting institutional and market failures. However, further progress in these areas is required. Natural resource management is a long-term problem that is not amenable to quick fixes.

Market based mechanisms have advantages over regulation in that they are non-prescriptive. As such, they have the potential to deliver the environmental outcomes society demands at least cost. The use of market based approaches does not mean that landholders need to be disadvantaged.

The costs of environmental conservation will be borne in some form by producers, consumers or taxpayers. While the latter two groups are much the same, there are likely to be important operational efficiencies in passing costs to consumers through markets, compared with passing them to taxpayers through the Budget.

The choice of who bears the legal imposition of conservation is ultimately one for governments. However, there may be practical constraints that make some options unworkable. In the longer run, the costs of conservation should be borne by consumers, in the same way as any other cost of production.

And finally, the choice of who pays does not have to affect the *amount* of conservation, nor that it be delivered at *least cost*.

