Harnessing Private Sector Conservation of Biodiversity

Commission Research Paper

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The Productivity Commission

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The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

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Foreword

This study draws together and extends previous research by the Productivity Commission on the role of the private sector in the conservation of biodiversity. Aspects of importance in enhancing the role of (private) markets include the existence of regulatory constraints, the possible use of a statutory duty of care and the thorny question of 'who pays?' for biodiversity conservation.

The public sector has long featured as a prominent provider of conservation services through the national parks and reserves system, whereas private sector activities, often on private land, have usually been less apparent. However, an efficient and effective contribution by both sectors is critical to ensuring that appropriate outcomes can be achieved and that the benefits of biodiversity can be enjoyed by future generations. Understanding how best to do that is an important challenge for governments and society at large.

The role of this study, and the earlier research which underpins it, is not to identify specific jurisdictional reforms but rather to highlight key areas for more detailed consideration. The report is part of a wider Productivity Commission research program on the role of markets and governments in achieving better environmental outcomes. A following study will look at the scope for enhancing the performance of public sector provision.

Gary Banks
Chairman

Contents

TABLES

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Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABHF	Australian Bush Heritage Fund
ACF	Australian Conservation Foundation
AUSLIG	Australian Surveying and Land Information Group
AWC	Australian Wildlife Conservancy
BA	Birds Australia
CPA	Competition Principles Agreement
CWP	Cleland Wildlife Park
DEST	Department of Environment, Sport and Territories (Commonwealth)
DNRE	Department of Natural Resources and Environment (Victoria)
ESL	Earth Sanctuaries Ltd
IC	Industry Commission
NCP	National Competition Policy
PC	Productivity Commission
SGARAs	self generating and regenerating assets

OVERVIEW

Key messages

- Conservation of biodiversity has traditionally been viewed as the responsibility of governments and the public sector. Often overlooked is the contribution to conservation that already occurs on private land jointly with other activities such as agriculture.
- In addition, a new type of private provider is emerging with biodiversity conservation as its primary or sole focus, motivated to varying degrees by philanthropy and profit.
- With more than 60 per cent of Australia's land area under private management, conservation cannot be adequately addressed without private sector participation. It is important from both an ecological and economic perspective that private sector provision of biodiversity conservation is as efficient and effective as possible.
- Governments can play an important role in facilitating more efficient and effective private provision of biodiversity conservation. Some key steps include
  - removing unnecessary legislative and regulatory constraints on private sector conservation activities;
  - clarifying rights and responsibilities for biodiversity conservation;
  - establishing appropriate cost sharing arrangements for bearing the costs of additional private sector provision where benefits are also enjoyed by the community; and
  - examining the potential for creating new markets to facilitate biodiversity conservation.
- In addition to examining ways to ensure the efficiency and effectiveness of biodiversity conservation activities by the private sector, it is also important to examine the scope for enhancing the performance of public sector provision.

Overview

This report provides an economic perspective on the role the private sector can play in conservation of biodiversity. It focuses on opportunities for governments to facilitate biodiversity conservation by enabling markets to allocate resources better. By helping to deliver desired biodiversity outcomes with fewer resources, well functioning markets can increase overall societal welfare.

'Biodiversity' relates to the variety of all life forms — the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part. Biodiversity helps safeguard ecosystem processes that support life. The general health and resilience of natural ecosystems, including their ability to assimilate wastes and withstand stresses such as drought, fire and flood, is dependent on the state of biodiversity. Healthy ecosystems are necessary for maintaining and regulating atmospheric quality, climate, fresh water, marine productivity, soil formation, cycling of nutrients and waste disposal. Biodiversity is thus important to Australia's current and future production potential. It also contributes to cultural identity and to the wellbeing of the Australian population.

Australia is one of the most biologically diverse countries in the world. However, widespread pressures such as land degradation, coastal development and habitat modification have contributed to loss of biodiversity. The 1996 *State of the Environment Report* (State of the Environment Advisory Council) found that the ongoing loss of biodiversity was perhaps the country's most serious environmental problem.

Many people think of biodiversity conservation only in terms of prominent public initiatives such as national and state parks and reserves. As a result, conservation of biodiversity is frequently perceived as a public sector responsibility. Often overlooked is the private sector conservation that occurs on private land jointly with other activities such as agriculture — for example, farmers setting aside areas of remnant vegetation from intensive agriculture and using management practices that retain native vegetation, water and soil quality. In addition, a new type of private provider is emerging with conservation as its primary or sole focus, motivated by varying degrees of philanthropy and profit.

Many ecosystems are poorly represented in (or absent from) the public reserve system and many public conservation areas are not large enough on their own to

maintain ecological processes and viable populations of flora and fauna in the long term. With more than 60 per cent of Australia's land area under private management, conservation cannot be adequately addressed without private sector participation.

Harnessing the potential of the private sector

Governments could improve biodiversity conservation and economic outcomes by removing unnecessarily restrictive regulatory constraints, clarifying rights and responsibilities for biodiversity conservation and establishing appropriate cost sharing frameworks. In addition, there may be a role for governments in creating new markets to facilitate biodiversity conservation. By harnessing the potential of markets, private sector innovativeness and energy can be engaged to deliver more effective and efficient outcomes.

Remove constraints

Institutional arrangements — particularly aspects of the frameworks for land tenure, competitive neutrality, native wildlife regulation and taxation — currently constrain otherwise desirable private conservation activities. For example, pastoral lease arrangements do not recognise conservation as a primary land use, and some provisions — including stocking rates, access and resumption provisions — may be inconsistent with some conservation activities. Governments should modify or remove those constraints that unnecessarily increase the costs and risks associated with private conservation.

Governments have collectively agreed on the principle that any competitive advantages that government businesses may have over their private counterparts simply by virtue of their government ownership should in general be removed (resulting in what is known as 'competitive neutrality') unless the costs can be shown to exceed the benefits. Despite the apparent generality of this principle, in practice it has had limited application to government conservation businesses. Only businesses listed or considered 'significant' are obliged to implement competitive neutrality measures, leading some government businesses to be exempt. Few, if any, public sanctuaries, for example, have been listed as significant. Nevertheless, there has been one successful competitive neutrality complaint by a private sanctuary in South Australia against the publicly owned Cleland Wildlife Park. The South Australian Competition Commissioner found that application of competitive neutrality principles was likely to generate net benefits to the community, primarily through cost efficiency, management performance and service quality.

Although legislation has been reviewed for potentially anticompetitive effects, there appears to have been little change in areas related to conservation of biodiversity. Aspects of pastoral lease arrangements and native wildlife regulatory frameworks may be anticompetitive and overly prescriptive. For example, private sanctuaries have to obtain some licences that are not required by competing public providers and face a broad range of regulatory controls on keeping, use, trade and movement of native wildlife.

Clarify rights and responsibilities

Clear property rights are an important foundation of any incentive-based or regulatory approach to biodiversity conservation. Emergence of markets associated with conservation activities will be hampered where the rights and responsibilities for biodiversity conservation of the private sector are often unclear.

The rights and responsibilities of resource users and managers for biodiversity implied by existing property rights are often not clear. For example, property rights for native wildlife are not always explicitly, consistently or fully defined. While it is desirable for economic efficiency that rights and responsibilities be more clearly defined, this should only occur to the extent that it is feasible or cost effective to do so.

One means of clarification could be through an appropriate 'duty of care'. A legislated duty of care, in conjunction with voluntary codes of practice, can be more flexible and less prescriptive than many alternative approaches. It could complement other initiatives such as voluntary community action, education and, where appropriate, financial incentives and targeted regulation. Further research and public discussion on this issue are needed.

Property rights evolve over time in response to changing information and community preferences. These changes may occur through the common law or government legislation. However, redefinition of property rights needs to be undertaken with care and any changes to property rights can give rise to questions of compensation or assistance.

Clarifying the rights and responsibilities of the private sector is a fundamental step in determining who should bear the cost of additional conservation on private land. Establishing appropriate cost sharing frameworks can create incentives for individuals to use resources more efficiently — governments can reduce costs of beneficial private conservation activities and increase the costs to private entities which harm biodiversity. An example of a cost sharing arrangement in practice is the Coorong District Local Action Plan, which establishes a framework to share the

cost of various conservation activities such as native revegetation and wetlands and habitat conservation between landholders, the local community and the wider community.

How these rights and responsibilities are assigned is a matter for political judgement based on perceptions of equity or fairness rather than efficiency. However, once assigned, resource users and managers failing to meet the required environmental standard may be considered to generate external costs. In such circumstances, these resource users and managers should generally bear the cost of meeting the required standard. This is applying the 'impacter pays' principle and effectively amounts to enforcement of an individual's legal responsibilities. In contrast, if the community demands resource users to provide conservation beyond the level required by established property rights, those benefiting from the conservation activities (neighbouring property owners, the local or regional community or the broader community, for example) should generally be required to contribute to the cost of undertaking them — the 'beneficiary pays' principle.

In both cases, the final choice of cost sharing principle and how it is implemented would need to take into account the costs of implementation as well as equity considerations. For example, in adopting the 'impacter pays' principle there is a need to recognise that some individuals will seek to avoid paying for conservation, so implementation requires effective monitoring and enforcement. If these costs offset the positive incentive effects of adopting the 'impacter pays' principle, the 'beneficiary pays' principle may be preferred. Governments may also choose to adjust cost shares in favour of some individuals in the short term to help them adjust. Issues surrounding the social consequences of cost sharing arrangements, and the possible need for adjustment assistance, are complex and require examination on a case by case basis. This should involve consideration of the implications of any precedents that may be established.

Creating new markets

In some instances governments can create markets by defining new property rights. For example, tradeable water rights have been created and some governments (for example, Western Australia, Victoria and New South Wales) have provided or are developing statutory recognition of rights arising from the benefits of carbon sequestration. Biodiversity may not be adequately conserved because markets typically exist only for ecosystem goods derived from biodiversity (such as harvested plants and animals) – there are few markets for ecosystem services (such as flood control, nutrient cycling and waste assimilation) derived from biodiversity, hence these are largely ignored in decision making about natural resource use.

The ability to create markets offers the potential to harness market forces in improving the efficiency of resource allocation across goods and services. The success of market creation to address biodiversity depends, however, on a number of conditions being met. High uncertainty about the significance of some actions that may adversely affect biodiversity, and limited numbers of buyers and sellers, for example, are potential barriers to market formation. While the use of market based mechanisms and the creation of new markets offers potential solutions to help deliver desirable biodiversity conservation outcomes, it is unlikely to be suitable as a policy option for addressing all conservation issues. Rather, it is likely that a combination of policy instruments will be required.

Capturing synergies

Complex relationships and interlinkages exist between potential reforms in the areas discussed above. Care must be taken to ensure that legislation and the broader institutional framework support rather than contradict desired objectives. For example, even if property rights were clarified and markets for sustainable use of biodiversity were further developed, the wildlife regulatory framework would still constrain sustainable use of biodiversity. Further, even if the wildlife regulatory framework were improved, there may be competitive neutrality issues to be resolved. It is important to view potential reforms as a complementary suite that governments could use to alleviate unnecessary restrictions and realise the incentives the private sector can have to conserve biodiversity.

In addition to examining ways to ensure the efficiency and effectiveness of biodiversity conservation activities by the private sector, it is important to examine the scope for enhancing the performance of public sector provision — a matter to be addressed in a subsequent report.

1 Conservation of biodiversity

Australia is one of the twelve most biologically diverse countries in the world. However, widespread pressures such as land degradation, coastal development and habitat modification have contributed to the loss of biodiversity. The State of the Environment Advisory Council (SEAC 1996) considered that the ongoing loss of biodiversity was perhaps the nation's most serious environmental problem. The Council's State of the Environment report highlighted the growing community awareness of environmental issues and increasing recognition of the value of biodiversity (SEAC 1996).

Many people think of biodiversity conservation only in terms of prominent public initiatives such as national and state parks and reserves. This contributes to the perception that biodiversity conservation is a public sector responsibility. Often overlooked is the contribution from private sector conservation activities that occur on private land jointly with other activities such as agriculture. In addition, a new type of private provider is emerging with conservation as its primary or sole focus, motivated by varying degrees of philanthropy and profit.

This report provides an economic perspective on the role the private sector can play in conservation of biodiversity. In this chapter, section 1.1 defines biodiversity and explains why conservation is important. Section 1.2 characterises the current contributions of the public and private sectors to conservation of biodiversity. Chapter 2 critiques the common rationale for public provision of biodiversity conservation, namely the 'public good' nature of biodiversity conservation. It then explores some of the potential advantages and disadvantages of public and private sector provision, and the opportunities for greater private sector participation. Chapter 3 identifies a number of ways in which governments can reduce transaction costs, thus improving the efficient allocation of resources by markets. Concluding remarks are provided in Chapter 4.

1.1 Biodiversity is important

Biodiversity is broadly defined as the *variety* of the living world — the different plants, animals and microorganisms, the genes they contain and the ecosystems of

which they form a part (DEST 1996). It can be classified at three levels — genetic, species and ecosystem (SEAC 1996):

- genetic diversity occurs within and between populations of species, providing individual characteristics and influencing resilience or adaptability to change;
- species diversity refers to the number of species in an area; and
- ecosystem diversity refers to the variety of interrelated biological communities such as wetlands, rainforests and grasslands, their interactions and resultant ecological processes and ecosystem services.

Biodiversity provides many important benefits — some associated with use and others associated with its existence (box 1.1). Biodiversity helps safeguard ecosystem processes that make life possible. The general health and resilience of natural ecosystems, including their ability to assimilate wastes and withstand stresses such as drought, fire and flood, is dependent on the state of biodiversity. Healthy ecosystems are necessary for maintaining and regulating atmospheric quality, climate, fresh water, marine productivity, soil formation, cycling of nutrients and waste disposal (DEST 1996). Biodiversity is important to Australia's current and future production. It also contributes to cultural identity and to the wellbeing of the Australian population (SEAC 1996).

Biodiversity has a number of characteristics which have important implications for policy design. First, the loss of biodiversity is potentially irreversible — once a species is lost, for example, it is lost forever. Second, there is considerable scientific uncertainty: many species have yet to be discovered and information and understanding of the causes and consequences of biodiversity losses is extremely limited. Third, biodiversity exhibits threshold effects, leading to collapse when stressed beyond certain limits. Fourth, connectivity of biodiversity means that effects in one bioregion may be felt in other bioregions.

Conservation of biodiversity involves maintenance of diversity — not only of 'charismatic species' such as the koala and platypus, but also microorganisms that cannot be readily seen or appreciated, such as fungi. It does not necessarily require conserving every individual member of a species or every individual ecosystem, but rather ensuring that the *variety* of species and ecosystems is sustained. Conservation of biodiversity can include both:

- protection — non-consumptive use and preservation of particular species and/or ecosystems; and
- sustainable use — consumptive use of particular species and/or ecosystems within their capacity for renewal or regeneration.

It is likely that community demands for conserving biodiversity will grow as incomes and population levels trend upwards (Hone et al 1999). However, there are both direct costs from providing conservation, and indirect costs, for example, conserving a particular species that carries disease or destroys habitat.

Box 1.1 **Use and non-use benefits of biodiversity**

The benefits derived from the physical use of biodiversity are commonly termed *use values*. These include, for example, the benefits people derive from visiting a national park and the benefits from the use of biodiversity in production such as agriculture, forestry and fishing and from the processing of pollutants. Other benefits stem from keeping open the potential for future use of biodiversity rather than actual current use (*option values*). Other benefits may be derived from preserving biodiversity for the benefit of other people (*vicarious values*), or for future generations (*bequest values*).

Biodiversity can also provide benefits to people unrelated to its actual or potential use — commonly termed *non-use values*. *Existence values* are essentially derived from the knowledge that biodiversity exists — for example, people may value the existence of a particular species or area even if they are unlikely to ever see or make use of it.

For some people, biodiversity also has *intrinsic value* — that is a moral or philosophical value in its own right.

1.2 Public and private conservation of biodiversity

Governments, as well as the private sector (individuals, businesses and groups) have sought to conserve biodiversity. Commonwealth, State, Territory and Local Governments have directly and indirectly attempted to conserve biodiversity or influence the conservation actions of the private sector. In 1996-97, the public and private sectors together accounted for around $1.5 billion of measured direct expenditure on the protection of biodiversity and landscape, of which the State, Territory and Commonwealth governments together accounted for approximately 69 per cent ($1.2 billion) (ABS 1999). The agricultural and mining sectors are estimated to have spent approximately $173 million in 1996-97 on biodiversity and landscape protection (ABS 1999). This is likely to underestimate total expenditure on biodiversity conservation as it does not take into account voluntary or unrecorded private conservation activities.

Examples of different types of public and private activities to conserve biodiversity are identified in table 1.1. Often they extend beyond addressing biodiversity *per se* to broader objectives. As well as formal conservation structures and 'visible' conservation activity there are also informal private conservation activities.

Currently there are few mechanisms for monitoring the extent or quality of the results of conservation expenditure by either the public or private sectors.

Table 1.1 **Types of public and private sector provision of conservation**

Type of action	*Public sector*	*Private sector*
In situ conservation • Primary activity	Ownership and management of World Heritage Areas, national, state and local parks and nature reserves; management of wildlife recovery programs	Ownership and management of private reserves and sanctuaries; management of wildlife recovery programs
• Secondary activity (possibly as part of joint production eg with agriculture)	Management of native vegetation on public land eg roadsides	Voluntary conservation; covenanting of remnant vegetation; management of shelter belts and riparian areas
Ex situ conservation	Collection and preservation of specimens for public collections, zoos and gardens	Collection and preservation of specimens for private collections, zoos and gardens
Education and information	Provision of public information programs and advocacy	Provision of private information programs and advocacy
Research	Funding and undertaking public research or public funding of private research	Undertaking research or funding private or public research
Commerce	Allocation of property rights and facilitation of markets; removal of market impediments	Sustainable use; ecotourism; commercially provided conservation eg auctions for conservation
Finance	Provision of incentives and grants	Provision of grants and sponsorship
Legislation/regulation	Controlling taking and use of wildlife without approval; limiting land clearing without approval	—
Self regulation	—	Establishing codes of practice

Despite the relatively wide range of activities by both the public and private sectors, arguably the most prominent direct contribution to biodiversity conservation is the national and state park and reserve system. Around 7.9 per cent (609.2 square kms) of the Australian mainland (including Tasmania) is publicly owned protected areas (EA 2001). Of all the States and Territories, South Australia is estimated to hold the most land (over 211 000 square kms, or more than 21 per cent of the State) dedicated to protected areas (table 1.2).

Table 1.2 **Australian protected areas**[a]

(as at 2000)

	Area of protected areas (000 square kms)	*Per cent of State or Territory area*	*Per cent of total protected areas*
Commonwealth	32.8	-	5.4
Queensland	69.4	4.0	11.4
New South Wales	49.5	6.2	8.1
ACT	1.2	50.0	0.2
Victoria	33.8	14.9	5.5
Tasmania	22.0	32.4	3.6
South Australia	211.2	21.5	34.7
West Australia	159.2	6.3	26.1
Northern Territory	30.1	2.2	4.9
Total	**609.2**	**-**	**100.0**

[a] All terrestrial statutory protected areas on the Collaborative Australian Protected Areas Database 2000. Includes national parks, conservation parks, nature reserves, regional reserves and other protected areas.

Sources: AUSLIG (2001); EA (2001).

Many public national parks and reserves were established on 'residual' marginal land that was not suitable for agriculture with more productive land being used for commercial purposes (Curran 2000; SEAC 1996). Often the selection of areas for public national parks and reserves, for example, alpine and coastal areas, was based largely on the perceived natural beauty of their landscapes and their associated recreational and tourism values:

> Ecology was only a minor consideration; indeed, up until the Second World War grazing, hunting and timber cutting were relatively common in national parks and reserves. (Hall & McArthur 1996, p. 128)

Many ecosystems are poorly represented in (or absent from) the public reserve system (Young et al 1996). Moreover, many public conservation areas are not large enough on their own to maintain viable populations and the ecological processes necessary to sustain natural communities in the long term (Bennett 1995a). Further, as noted in the National Strategy for the Conservation of Australia's Biological Diversity, the expansion of the protected area system in an attempt to increase its representativeness 'has not, however, been accompanied by a concomitant increase in the number of resources needed for orderly planning and management.' (DEST 1996, p. 10). Hence conservation on private lands is an essential component of achieving national biodiversity objectives (DEST 1996).

Around 500 million hectares (63 per cent) of freehold and leasehold land in Australia is under the control of private land managers. The private sector can directly address important off-reserve biodiversity goals through either integrating conservation with production (including sustainable use) or providing dedicated

conservation initiatives on private land. The private sector can also support existing conservation areas with sympathetic land uses on adjacent land.

Although widespread, private conservation of biodiversity is less prominent than public sector provision. Often private sector provision is informal, voluntary and undertaken through joint production with other activities, particularly agriculture (box 1.2). It is characterised by relatively smaller scale philanthropic and commercial activities.

Conservation of biodiversity on farms can take many forms — for example, the setting aside of remnant vegetation from intensive agriculture, fencing and revegetating sensitive areas such as water courses, whole farm planning consistent with the natural landscape and using management practices that retain soil and water quality.

Commercial benefits from conservation may include the commercial value in hay, seed and honey production of planting perennial plant species, and benefits such as shelter belts, prevention of erosion, provision of drought feeding opportunities and aesthetic benefits from native vegetation (Coorong and Districts Local Action Plan Steering Committee 2000; Crosthwaite 1998; IC 1998). ABARE (2000) estimated that over 37 per cent of Australian farmers are members of a Landcare group, and that between 1996-97 and 1998-99 around 17 per cent of farmers who changed management practices did so to prevent or halt land degradation.

Box 1.2 **Indigenous Protected Areas Program**

In September 2001 a desert wetland system in the Kimberley covering 434 600 hectares of national and international significance was conserved with the declaration of Western Australia's first Indigenous Protected Area. The area includes 38 700 hectares of lakes and waterholes that support at least 73 species of waterbird and 175 species of aquatic invertebrates.

The Traditional Owners of Paruku (Lake Gregory), the Tjurabalan native title holders, will manage their lands for the conservation of natural and cultural values. Most of the Indigenous Protected Area will be managed to maintain biodiversity while enabling the sustainable grazing of cattle and other enterprises to meet community needs. Critical habitats for breeding waterbirds comprise about one-eighth of the Indigenous Protected Area and this area will be managed primarily for cultural heritage, ecosystem protection and recreation — similar to a national park.

The Indigenous Protected Area Program, supported by the Commonwealth Government's Natural Heritage Trust, is part of the National Reserve System Program which aims to establish a network of protected areas incorporating a representative sample of all types of ecosystems across the country. Paruku is the 15th Indigenous Protected Area declared and takes the total amount of land under this category of protection to 3.6 million hectares.

Source: Hill (2001).

Altruistic conservation by charitable or volunteer-based organisations has also supported the provision of conservation in Australia (box 1.3). As well as directly conducting conservation, many philanthropic and community groups are involved in monitoring activities, providing information and educating the wider public and influencing the development of conservation policy. Resource users and managers are volunteering to set aside land purely for conservation purposes. The ABS (2001) estimates that around 0.1 per cent of the Australian land area is formally covered by agreements (such as covenants) on private land to conserve biodiversity.

Box 1.3 **Private conservation initiatives: some examples**

The Australian Bush Heritage Fund (ABHF) is a private non-profit conservation organisation protecting Australia's bush. It currently owns 13 reserves nationally, representing landholdings of over 60 000 hectares. Through bequests and direct purchases ABHF acquires and protects areas of habitat that are likely to be developed. It is funded through donations of money or land from the public. It also draws on volunteers, such as botanical experts, to assist in its work. In cases where land bequeathed to the fund does not meet the conservation criteria of the Fund, part or all of the land may be sold and the proceeds used to conserve land with higher conservation values (ABHF 2001).

Australian Wildlife Conservancy (AWC) (formerly Fund for Wild Australia) is a Perth based private non-profit conservation group that is seeking to enhance and protect biodiversity through the purchase and management of properties of high conservation value. AWC is funded mainly through public donations. AWC has two properties open to the public near Perth — Karakamia Sanctuary, a 250 hectare freehold property, and Paruna Sanctuary, a 2000 hectare freehold property. In total, AWC has seven properties covering about 450 000 hectares, which it intends to manage as wildlife sanctuaries (Fund For Wild Australia 2001).

Birds Australia (BA) is a private non-profit conservation organisation. It has been operating since 1901 when its predecessor, the Royal Australasian Ornithologists Union, was founded. The aim of BA is to contribute to the conservation, study and enjoyment of Australia's native birds and their habitats. BA holds the lessee rights to two pastoral properties in South Australia and the Northern Territory covering over 310 000 hectares in total. BA is funded through public donations but has also received some funding through the Commonwealth Government's Natural Heritage Trust (BA 2000; BA 2001a; BA 2001b).

Conservation Volunteers Australia is a non-profit, voluntary organisation aimed at involving the community in conservation to improve the environment and increase environmental awareness across Australia. Activities undertaken by volunteers cover tree planting, seed collection, endangered species protection, weed control, flora and fauna surveys, walking trail construction, fencing and environmental monitoring (Conservation Volunteers Australia 2001).

Sources: ABHF (2001); Fund for Wild Australia (2001); BA (2000, 2001a, 2001b); Conservation Volunteers Australia (2001).

The next chapter demonstrates how market incentives and mechanisms can lead to further opportunities for private sector provision of conservation of biodiversity. It considers some of the traditional rationales for public sector provision and highlights some of their limitations.

2 Public and private provision in perspective

The 'public good' characteristics of biodiversity conservation have often been used as the rationale for direct government provision of conservation. Section 2.1 scrutinises some of the arguments used to justify public provision of conservation and demonstrates that they can be weak. It also recognises some of the limitations of public provision. Section 2.2 considers how market incentives and mechanisms can play a role in facilitating private conservation of biodiversity. Some of the ways private conservation can complement and supplement public sector provision are also considered.

2.1 Public sector conservation

Bennett (1995b) observes that that much of the economic analysis of 'nature protection' has employed, either implicitly or explicitly, an assumption that 'nature protection is the province of the government'. The same observation can be made of much of the economic analysis of biodiversity conservation. A key rationale behind this assumption lies in the belief that the benefits provided by conservation of biodiversity are 'public goods'. For example, Figgis has observed that:

> Historically in Australia the role of protecting nature via reserves has been seen as the role of government. The non quantifiable 'public good' characteristics of protected areas have been seen as best protected in public ownership. (Figgis 1999, p. 62)

The public good rationale

A public good has two key characteristics. The first is that once it is provided to one individual, it is provided to all — it is not possible to exclude people from consumption (ie it is 'nonexcludable'). The second is that consumption of the good by one individual does not reduce the benefits available to others (ie it is 'nonrival' in consumption). There is little incentive for an individual or firm to pay for consumption of a public good since it is possible to 'free ride' on its provision to others. Consequently, there is little incentive for a free market to provide public goods even if their provision would enhance overall social wellbeing. In contrast, a private good is both excludable and rival in its consumption.

Some of the benefits of biodiversity conservation are purely public. Existence benefits (see chapter 1), for example, of species or ecosystems, are both nonexcludable and nonrival. However, as highlighted in table 1.1, many different activities contribute to biodiversity conservation, and these may simultaneously supply a mix of both public and private good benefits — so called mixed goods (box 2.1). Protected areas, for example, which provide existence benefits, may also provide private benefits through guided tours — enjoyment of these tours may be excludable (by requiring reservation of a place on the tour) and rival (if the number of people is limited to avoid congestion).

Conservation activities can be categorised according to the degree of excludability and rivalry in consumption and include local public goods, open access resources, common property resources and club goods (box 2.2). As Winter notes:

> Even with a scenic landscape (the classic example of a nonrival/nonexcludable good) there may be excludable and rival components reflected in property prices and tourist accommodation prices in scenic areas. And while a biodiverse-rich landscape may be 'consumed' in a nonexcludable manner from the highway, a specific plant or animal variety may be remote from view and therefore, potentially, available as an excludable good. Much will depend on the nature of private property and the specific manifestation of access to the countryside within a particular locale. (Winter 2001)

The Senate Environment, Communications, Information Technology and the Arts Committee Inquiry into Access to Heritage also observed that:

> Many submissions [to the Inquiry] described museums, galleries and national parks as 'public goods' - either to argue for free entry, or to argue that user charges should not aim for full cost recovery. On the face of it they are *not* pure public goods as just described: nonpayers *can* be excluded (certainly in museums and galleries; often in national parks). (Senate Environment, Communications, Information Technology and the Arts Committee 1998)

Excludability and conservation provision

The existence of conservation activities with both public and private good characteristics suggests that there can be a role for the private sector where sufficient private benefits can be obtained. Formation of clubs or societies are one way the private sector can take advantage of joint provision of private and public goods. Birds Australia, for example, is a private not-for-profit organisation that owns and manages a number of conservation reserves that are in effect club goods. Birds Australia is dedicated to the conservation, study and enjoyment of Australia's native birds and their habitats (box 1.3). A membership fee provides members with unlimited access rights to the reserves and the opportunity to experience a range of

conservation values. Excludability from benefits derived through visitation is achieved through requiring membership.

Box 2.1 **Mixed goods in the provision of conservation**

Local public goods provide benefits that are nonexcludable in a defined area or region (but are not available outside the region) and are nonrival in consumption. For example, the benefits from backburning and firebreaks in national parks (reduced risk of bushfires) may be restricted to nearby properties with limited spillover effects in other regions. In this case it may be difficult to exclude anyone 'close' to the firebreaks from the benefits and the enjoyment of the benefits does not reduce the benefits available to others.

Open access resources are not owned by anyone and provide benefits that are nonexcludable and feature congestion (and, at times, rivalry) in consumption. For example, conservation activities can provide benefits in terms of the aesthetic value from observing a significant landscape from public roads and viewing points (Meister 2001; OECD 2001). Goods with open access and congestion (or rivalry) share the problem of the 'tragedy of the commons' — the resource may be overexploited as individuals maximise their own welfare without taking into account the congestion costs imposed on others.

Common property resources provide benefits to members of a community (that are not available outside the community) and feature congestion (and, at times rivalry) in consumption. For example, management of native flora provide financial benefits to licence holders (who may take/sell flora) and not the community more broadly. Another example is community irrigation. Common property resources can be managed efficiently by a community if it can establish effective rules to govern the behaviour of community members and the use of the resource (OECD 2001).

Club goods provide benefits that are excludable where only club members can receive the benefits and may sometimes feature congestion in consumption.

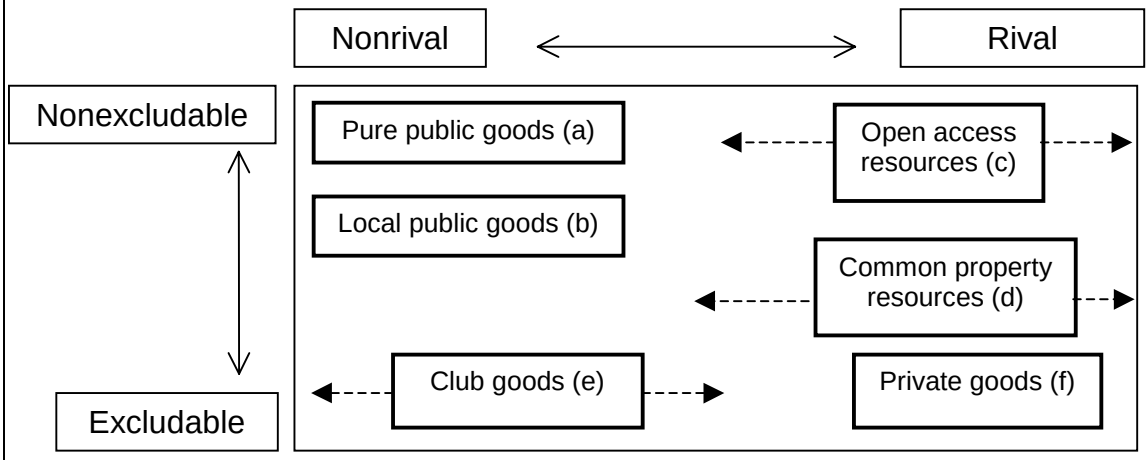
> A club is a voluntary group of individuals that derives mutual benefits from sharing one or more of the following: production costs, the members' characteristics, or a good characterised by excludable benefits. (Cornes and Sandler 1996, p. 347)

Typical examples of club goods are environmental trusts and organisations where some of the benefits from conservation activities accrue only to the 'club' members. For example, 'club' members can receive preferential access to conservation properties, unique kinds of consumer products and/or education and information services. Congestion may not occur in many clubs, except where members feel adversely affected by an increase in membership size. As the degree of congestion increases club goods may be provided as private goods, although if the supply of goods shows decreasing average costs, collective consumption through a club can still occur (OECD 2001).

Sources: Cornes and Sandler (1996); Meister (2001); OECD (2001); Winter (2001).

Box 2.2 **An economic classification of conservation activities**

Conservation activities may generate a range of benefits. While the non-use values of conservation activities are often provided as public goods, in many cases the use values from conservation can be provided in an excludable way and may be rival in consumption. Congestion, where an increase in the use of a good or service results in a cost (not necessarily monetary) on the existing users, may arise in some cases, resulting in goods which may have been nonrival becoming rival in consumption.



Examples of different conservation goods:

Pure public goods

(a) Existence values of biodiversity; and global ecosystem stability and resilience.

Mixed goods

(b) Local public goods: local parks; and firebreaks and backburning in national parks and other protected areas.

(c) Open access resources: the use value of landscape by visitors.

(d) Common property resources: use values of natural habitat and species.

(e) Club goods: access to conservation areas owned and managed by a club; and advocacy by a conservation organisation.

Private goods

(f) Private sanctuaries, guided bushwalking; private huts/lodges; and sustainable use of biodiversity.

Sources: Adapted from Biller (2000); Cornes and Sandler (1996); OECD (2001).

Whether or not excludability is feasible depends on the costs of measures required to enforce exclusion such as fencing, monitoring, collection of fees and penalties (Bennett 1995b). Entrepreneurial creativity, new technologies and institutional change (such as defining new property rights) may reduce these costs, thus changing the characteristics of benefits over time. For example, the development of

feral proof fenced conservation areas means that a private sanctuary provider can charge an access fee to these areas. DNA testing of native birds means that captive-bred birds may be able to be individually owned and traded (PC 2001).

There still are many cases where excludability is not presently feasible. Nevertheless, Bennett (1995b) observes that there may be opportunities for the private sector even where nonexcludable benefits predominate, suggesting that altruism and peer pressure sometimes work to counter freerider behaviour.

The mere existence of public benefits from a conservation activity is a necessary but not sufficient condition for that activity being undertaken by the public sector. As long as the private sector can obtain sufficient returns on any private benefits jointly supplied with the public benefits, there may be no need for government intervention. Bennett illustrates this point as follows:

> … there are no regulations to force privately owned department stores to supply special displays of lights at Christmas time. Such are the private benefits that the displays provide — primarily in the form of increased business through the crowds so attracted — that private provision is voluntary, with the public good benefits being incidental to the decision but being provided all the same. (Bennett 1995b, p. 428)

The key criteria for intervention by governments should be whether or not an improvement in social wellbeing results from that intervention. Any assessment should consider the problems that might arise from government actions as well as potential benefits. A number of examples of government failure to achieve its conservation objectives efficiently can be cited, including:

- the threat to many national parks and reserves by feral animals and weeds, and increasing difficulties in managing these areas. The Queensland Parks and Wildlife Service, for example, has reported that the area of the parks system in Queensland has increased from just over two million hectares in 1979 to over seven million hectares in 2000 and 'managing the Parks system has become increasingly challenging, complicated and expensive' (Queensland Parks and Wildlife Service 2000). The impending extinction of the northern hairy-nosed wombat, found only in a Queensland National Park, is an example of the difficult task faced by the Parks and Wildlife Service; and
- ad hoc and uncoordinated regulatory frameworks that can unnecessarily impede the provision of conservation by both the public and private sectors — for example, aspects of the regulatory frameworks to conserve native wildlife (PC 2001).

There may be many reasons for these difficulties, including:

- potential conflicts of interest as a result of a public sector conservation agency having joint regulatory/policy and management/service provision functions

(IC 1998). For example, while Victoria has recently split regulatory/policy and parks management functions to improve decision-making processes, transparency, accountability and conservation outcomes, New South Wales and Queensland have public sector conservation agencies with joint regulatory/policy and management responsibilities;

- a lack of capacity that may prevent public conservation agencies from maintaining the conservation values of public conservation areas; and
- public sector managers may also face unclear or limited incentives to minimise costs or produce the socially desirable mix of conservation (Hartley 1997). This may adversely affect the development and implementation of policies to improve conservation outcomes as well as reducing the effectiveness of direct public provision (for example, the ownership and management of national parks).

Further analysis is needed to determine whether or not current government activity is 'crowding out' private sector activity which may be able to achieve the same objectives more efficiently. For example, Bennett observes:

> One of the primary driving forces in the privatisation debate is the failure of government enterprises to provide goods and services efficiently. Inflated cost regimes, poor quality of product and service and an inflexibility in rapidly changing economic and social circumstance on the part of the public sector operations are important factors in the push towards more private sector involvement. … Whilst in the late 80s and 90s other areas of the public sector have been subjected to increasing pressure to privatise, the nature conservation bureaucracy appears to have been particularly well isolated from this trend. (Bennett 1995b, p. 426)

2.2 Private sector conservation

Whether the result of altruism, market incentives, or both, the private sector can complement existing public conservation initiatives. For example, the Australian Wildlife Conservancy (see box 1.3) has established a private sanctuary, Paruna, that connects two Western Australian national parks. Paruna Sanctuary acts as an ecological corridor and allows the movement of wildlife between the parks.

Private sector activity can also supplement the role of the public sector by reducing the need for public sector involvement in the provision of conservation on both public and private land. Carter (1996) has identified that:

> … the opportunity exists for the development of a more cooperative relationship ranging from a partnership approach, through to the direct involvement of the private sector in protected area management. (Carter 1996, p. 21)

Private conservation initiatives can both alleviate some of the cost burden on the public sector and contribute to improved conservation outcomes:

> In these times of shrinking government funding and reductions in many of the services traditionally provided by government, the development of appropriate commercial operations in protected areas, and an increased association with the private sector, may be the only realistic and economically sensible route to take, and possibly the only route that can ensure the on-going preservation and maintenance of our system of protected areas. (Morgans 1996, p. 100)

Private sector participation can bring in additional resources (including capital), additional expertise (including innovations in management) and may also be more cost-effective than public sector provision. The private sector can also display a greater willingness to take risks and it has a general ability to take decisions and hence action more quickly than the public sector (The Allen Consulting Group 2001). Competition can assist conservation by providing downward pressure on private sector costs and the prices paid by consumers — for example, through improved labour management, more disciplined use of capital and more focused conservation efforts (Bennett 2001; Hartley 1997).

Markets can play a role

Individuals may derive personal benefits from conserving biodiversity. They may value biodiversity for intangible reasons — some individuals, for example, may be motivated partly or solely by altruism or philanthropy. Alternatively, they may value biodiversity for financial reasons — a private conservation initiative may have a strong financial incentive to maintain or enhance vegetation that provides habitat and food for native wildlife to support an ecotourism venture.

Well-functioning markets can mobilise and direct scarce environmental resources to those uses, and among those users, that value them most highly. They can enable the benefits from biodiversity to be 'captured' by private entities and thereby create positive incentives to manage biodiversity in an economically efficient manner. Where conserving biodiversity is important and consistent with a resource owner's self-interest, strong incentives can exist for the owner to use resources to greatest benefit, or transfer them to someone else who can make better use of them — as to do otherwise would result in a personal loss.

Clear and effective property rights are a foundation of well functioning markets. If markets for conservation do not function well, then there can be a role for governments to establish well-defined and enforceable property rights and thereby facilitate the emergence and operation of efficient markets (box 2.3).

Poorly defined property rights can increase transaction costs and this can act as a constraint on market formation or efficient and effective operation. In the absence of well-defined property rights (and a mechanism to trade those rights), or where property rights are constrained, there may be little incentive either to conserve the resource or redirect it to its most valued use. However, while property right regimes are necessary they are not sufficient conditions for sustainable management of resources (Hanna 1996) — in other words, they may need to be supported by other measures to address conservation of biodiversity.

Box 2.3 The importance of property rights

Property rights comprise the bundle of ownership, use and entitlement rights that a user has over a particular resource, good or service and include any responsibilities that the user may have to others. Property rights may change over time with community expectations. An efficient property rights structure — the theoretical ideal — has four main characteristics:

- universality — all resources are owned and all entitlements (rights over how they can be used) are completely specified;
- exclusivity — all benefits and costs that result from owning and using the resource only accrue to the owner, either directly or indirectly by sale to others;
- transferability — all property rights are transferable from one owner to another in a voluntary exchange; and
- enforceability — property rights are secure from encroachment.

In practice, these idealised attributes are seldom met, but markets can work reasonably well despite some deficiencies. It is when one or more of these characteristics is grossly violated, that markets fail. For example, if it is not possible to exclude users who do not pay for a good or service, it is unlikely to be provided by normal market (supply and demand) processes.

Where property rights are poorly specified, potential buyers and sellers will have to incur additional costs to clarify and specify the rights, which adds to the costs of making a transaction. If transaction costs are judged to exceed the benefits from the exchange then no market will exist. Transaction costs include the costs of:

- potential buyers identifying would be sellers and sellers identifying would be buyers;
- measurement of the quantity and quality of the good or service being transferred;
- revealing potential buyers' willingness to pay and potential sellers' willingness to accept; and
- specification of property rights and transfer of those rights. (Wills 1997)

Sources: IC (1998); PC (2001); Wills (1997).

New and emerging markets

Where property rights are sufficiently well-defined, markets may develop and provide incentives for further conservation by the private sector. As discussed in section 2.1 some conservation activities may have certain characteristics of a product or service that can be privately owned and traded in a market — for example, a conservation company could establish a private conservation reserve or sanctuary and charge an access fee (box 2.4), native flora could be privately owned and traded, and markets could be created for trading of carbon credits for areas of native vegetation that may also provide conservation outcomes.

Box 2.4 Earth Sanctuaries Ltd

Earth Sanctuaries Ltd (ESL) is a publicly listed company whose primary goal is wildlife conservation. ESL's current focus is the conservation of small native mammals that are threatened by exotic predators, such as foxes or feral cats (ESL 2000a). ESL operates by acquiring land, erecting electrified vermin-proof fencing, removing the feral animals from the site, and then regenerating native vegetation and introducing some of the species that occupied the area prior to European settlement (ESL 2000b).

Funding for ESL's conservation comes principally from the ecotourism that ESL operates from its sites. Tourists to ESL's sanctuaries pay to view native animals and plants and may also spend money at the company's souvenir shops, restaurants and cafes and accommodation. In addition, the company earns revenue providing a variety of services including consultancy and contract services (for example, the removal of feral species from private properties) and the sale of non-endangered captive animals. It has also received a number of grants and private donations. To boost funds for its work, ESL listed on the Australian Stock Exchange, generating almost A$12 million.

As part of its operations, ESL has been involved in the research and breeding of a number of native species including quolls, numbats, bilbies, woylies, long nose potoroos and southern brown bandicoots. It has also had success with platypus which are difficult to sustain in captivity. ESL has been one of only two institutions in Australia to have bred platypus in captivity (Senate Rural and Regional Affairs and Transport References Committee 1998).

Sources: ESL (2000a, 2000b); Senate Rural and Regional Affairs and Transport References Committee (1998).

Where markets are slow to emerge, they can add to risk and investment uncertainty for some private sector conservation initiatives — in the short to medium term these risks may result in relatively low investment in the sector. Financial and investment characteristics of conservation activities which may affect private sector provision of conservation include: low rates of return, high risk (with greater uncertainty), long payback periods, few existing financial institutions with a focus on conservation and limited information about investment opportunities (for example,

see The Allen Consulting Group 2001). New accounting frameworks for establishing the value of self-generating and regenerating assets (SGARA), such as native wildlife, may also have limited application (Aretino et al 2001a).

However, these factors do not necessarily prohibit private sector provision and funding of conservation. The Allen Consulting Group (2001) suggest that:

- low rates of return have limited but not prevented private sector investment in other activities that seek to advance community or public interests, for example, health and education;
- a commercial rate of return is not always the pre-dominant factor in investment decisions. There is a growing pool of investors that actively seek socially and environmentally responsible investment; and
- the financial sector has a proven ability to adopt innovative approaches to new markets and investment opportunities.

The not-for-profit private conservation sector may have limited access to capital and funds for the purchase and ongoing management of conservation areas. Organisations such as Birds Australia, Bush Heritage Fund and Australian Wildlife Conservancy rely on charitable donations and/or corporate sponsorship to undertake their conservation activities. The philanthropic conservation sector makes an important and growing contribution to conservation in Australia but it is not strong compared to some countries like the USA where there is a vibrant non-government conservation sector (The Ian Potter Foundation 1999). It will be difficult for the Australian not-for-profit sector to emerge to undertake conservation without further increases in philanthropic support.

The emerging nature of some private conservation initiatives is not always an indication of any lack of willingness of the private sector to participate — rather it could also reflect a variety of other factors that may inhibit private sector investment and conservation activity. For example, inappropriate regulatory constraints such as controls on ownership and management of native wildlife, and tax arrangements and leasehold land provisions may constrain private conservation activities (see section 3.1).

Markets and sustainable use

Conservation activities are already occurring through joint production with other activities such as agriculture (section 1.2). Markets for biodiversity conservation may provide an incentive for further integration of conservation with other land uses — for example, trading of carbon credits for areas of native vegetation may also provide conservation outcomes. The private sector can integrate conservation

with production to achieve improved conservation and production outcomes — for example, retention of native vegetation can reduce erosion of streambanks, improve water quality and reduce dryland salinity. Native trees can be used to provide shelter belts and native vegetation can provide emergency feed for livestock.

From a conservation perspective, the advantage of markets is that they can facilitate the sustainable use of biodiversity. Sustainable use involves the use of a species and/or ecosystem within the capacity of the species, ecosystem and bioregion for renewal or regeneration. It can enable the private sector to obtain some financial returns from conserving biodiversity. There are a number of Australian industries based on ecotourism, wild harvest or farming of native wildlife (for example, sustainable use of native forests, grasslands, tree ferns, wildflowers, kangaroos, crocodiles and emus).

There are both ecological and economic advantages from undertaking sustainable use of biodiversity. Australia is, for the most part, better suited to production of indigenous species than exotic species — indigenous species have co-evolved with their habitat and are better adapted to environmental constraints and thus may represent a more benign form of land use. Sustainable use of native wildlife could replace traditional agricultural practices, partially or totally, with activities that would allow natural habitats to recover while still providing an income to landowners (Senate Rural and Regional Affairs and Transport References Committee 1998).

An issue with sustainable use of native wildlife is whether this is compatible with animal welfare and other ethical concerns. The ACF has expressed concerns that:

> Increased use of wildlife for economic gain is reducing wildlife to the status of "commodities" attributed with value by an economic system which to date has a very poor record of sustainable management of wildlife and wildlife habitat. … The ACF does not, in principle, support commercial, consumptive use of wildlife but does appreciate that aboriginal approaches to commercial use warrant case by case assessment and not outright opposition. (ACF 1996, p. 1)

The 1998 Industry Commission Inquiry into Ecologically Sustainable Land Management acknowledged the seriousness with which many who oppose commercialisation of native wildlife view this issue and stated that 'some views, like ethical views, are not amenable to compromise' (IC 1998, p. 315). However, the Commission identified that a blanket regulatory ban on the use of native wildlife in itself provided no safeguard to protect species and the real issue raised in many concerns was the effectiveness of the regulatory regime for the conservation of native wildlife.

Sustainable use may be unduly constrained by regulatory frameworks for the conservation of native wildlife. A key issue is whether captive-bred or domesticated native animal and plant species should be treated any differently from domesticated exotic species in terms of use, trade and export controls. A State or Territory permit is often required to farm or harvest native wildlife and a permit is usually required from the Commonwealth prior to the export of any native wildlife or products (PC 2001).

The appropriateness and extent of the restrictions on the international trade in native wildlife has been examined by several inquiries. For example, in 1998 the Senate Inquiry into Commercial Utilisation of Wildlife commented on the restrictions on international trade and recommended that other policy options should be examined. The Senate Inquiry was concerned that:

- in some cases, the Commonwealth Act provided stricter measures than were provided for by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- the prohibitionist approach to international trade did not work to protect native wildlife from illegal activities, although the extent to which it did not work was difficult to ascertain; and
- if exports were allowed, they should be derived only from captive-bred populations (accompanied by DNA identification) and not from 'the wild', and that each species should be considered on a case-by-case basis (Senate Rural and Regional Affairs and Transport References Committee 1998).

The Industry Commission (1998, p. 317) recommended that 'the Commonwealth, States and Territories should facilitate the commercial utilisation and exporting of live native fauna in a manner which builds public confidence that further utilisation will occur only if adequate and appropriate safeguards exist'. The Commission also recommended that Governments should agree to assess applications for the removal of controls on the export of live native fauna on a case-by-case basis. Any removal of controls should be conditional upon there being in place an appropriate code of practice or management plan, and suitable performance indicators.

Markets and private provision

The role of self-interest in providing conservation has been questioned. For example, the Australian Conservation Foundation (ACF) claim:

> The idea that "if you can own something you will be better motivated to look after it" may be logical, but in practical terms in natural resource management it has failed to work. There has been a large market for agricultural land for many years in Australia,

> and this has not prevented land degradation, salinity and biodiversity decline problems from emerging and accelerating. (ACF 1999, p. 10)

However, such natural resource management problems can be a result of poorly defined property rights (such as for native wildlife) and the difficulty of addressing non-point source environmental problems such as salinity rather than simply the failure of self-interest *per se*. Traditional regulatory solutions to these problems have not succeeded and markets for natural resources have been either non-existent or functioned poorly (IC 1998). The existence of deficiencies in private sector provision of conservation should not be interpreted as proof that the public sector would do it better.

At times, the pursuit of financial objectives and the generation of income from conservation may be to the potential detriment of conservation values. The extent to which this is actually a problem depends on whether such tradeoffs result in harm to conservation overall or whether a positive contribution can nevertheless be made to conservation outcomes, albeit one that is perceived as incomplete or less than 'ideal'.

Both private or public conservation initiatives may focus on conserving selected 'charismatic' or popular native species such as koala or platypus to attract greater revenue from visitors. Overall conservation could be adversely affected if less valued native species were discriminated against or neglected in favour of higher valued native species. However, even 'limited' conservation activities can still contribute as part of a much broader perspective of conservation provided by the public and private sectors. In practice, some private sanctuaries may aspire to restore whole ecosystems as 'non-charismatic' species are needed to ensure the survival of the 'charismatic' species.

It has also been suggested that the private sector would focus on establishing reserves close to human settlements to generate tourism revenue compared to conserving representative areas of biodiversity including those remote from human settlements:

> The reality is that some parks would be too remote to be of interest to an ecotourism operator, and some would not provide opportunities for visitors to view 'attractive' flora and fauna. As a consequence, the private sector would have an incentive to provide parks only in areas where large numbers of paying visitors could be attracted, and this represents only a part of what is required of a national parks estate. (Hundloe 1996, p. 50)

Nevertheless, private conservation initiatives are occurring in remote areas — for example, ESL's Scotia and Buckaringa Sanctuaries, and Birds Australia's Newhaven and Gluepot Reserves. Bennett (2001) observes that a private landholder

may find that if costs are low then even a small revenue flow could be sufficient to generate a return on the capital invested in the remote area. Conservation may also be undertaken in remote areas for altruistic reasons such as the large and remote conservation reserves established and managed by Birds Australia and Australian Wildlife Conservancy.

Some remote reserves may require additional funding from other sources to be financially viable — these funding sources may include governments, sponsoring corporations or not-for-profit groups, or funding may come from a private provider's own activities elsewhere. A small amount of 'top-up' funding to a private provider may be much less expensive to taxpayers than outright provision by a government agency and may be more effective in an operational sense. In the case of a commercial conservation provider like ESL, the existence of more remote protected areas may have value to shareholders and visitors to other sanctuaries, even if low visitor rates at the remote location result in little revenue being collected directly from that site (Aretino et al. 2001a).

In some cases, it may not be viable for individual resource users to undertake activities that conserve biodiversity on their own because the costs of doing so may exceed the benefits. However, the activity may be viable if jointly funded and undertaken where net benefits result to all parties. High transaction costs may limit such coordination.

Hundloe (1996) has questioned whether a private owner would necessarily maintain the environmental quality of a national park or protected area in perpetuity:

> … we would expect that a wise business person would not wish to see their property degraded if this diminished their profits. Furthermore, even if the present owner of a park intended to sell it some time in the future an incentive to protect its environmental quality would exist. Quite simply if the park was degraded the selling price would be less. Certainly, these propositions would make sense in a static world. In a dynamic world it can make sense to 'mine' (deplete) a resource and invest the profits in some new activity which is returning even higher profits. This approach would be consistent with rational economic behaviour. (Hundloe 1996, p. 50)

When private operators seek to maximise the value of their assets over time, there is less incentive to focus on short term financial gains at the expense of conservation. This is because decisions that compromise conservation in the future would also compromise future profits, and hence current asset values of firms. However, with imperfect information about future values and prices or uncertainty about the long term impacts of activities on the environment, operators may unknowingly degrade the asset. Further, if there is information asymmetry between the seller and buyer of a conservation service, the seller may be able to hide degradation of the asset to obtain a higher price while taking advantage of any short term gains from asset

degradation. Private operators may also simply make mistakes in their conservation decisions, as can public sector managers (Aretino et al 2001a).

Commercial incentives may, in some circumstances, lead to the severe modification of habitat and/or the exploitation of a species to extinction (box 2.5). The exploitation of a species to extinction may increase private profits but it could generate significant external costs and reduce biodiversity. However, few of the private organisations involved directly in biodiversity conservation are engaged in commercial harvesting and 'consumption' of native wildlife. By clarifying rights and responsibilities, governments could address concerns about overexploitation and optimal depletion of resources. For example, a duty of care could be clarified for landholders on private land (for example, see Bates 2001) or community service obligations could be specified for private provision of conservation on public land. Voluntary permanent covenants to protect natural habitats could also reduce this risk.

Box 2.5 **Overexploitation and depletion of a species**

Models of open access overexploitation have often served as the basis for determining policies for the conservation of endangered species. Overexploitation, even to the point of extinction, may occur where there is open access to a resource, high prices relative to the cost of harvesting the resource and low population growth rates (Clarke 1973).

Traditional conservation solutions to overexploitation have often focussed on providing regulatory protection to endangered species by restricting or banning domestic and/or international use and trade. These restrictions and bans on use and trade have sought to reduce the demand for an endangered species and raise the cost of (illegal) harvest.

Despite these regulatory measures, overexploitation of certain species and the more general loss of biodiversity has continued. Restrictions on use and poor specification of, and ineffective enforcement of, property rights can reduce the incentive for a private owner to manage and invest in the conservation of species and associated habitat. Private owners are not rewarded for the conservation of biodiversity in so far as property rights are not defined over the existence benefits that are provided.

Swanson (1994) has proposed that the problems of specific endangered species and general biodiversity losses have their sources in the same fundamental problem — the relative rate of investment in endangered species compared to other species and habitat. When habitat and/or a species is viewed as a poor asset with a low rate of return — for example, a species with a low population growth rate and requiring large areas of habitat — then the selection of another asset with a higher rate of return will result in the inevitable decline of the original habitat or species.

The process of disinvestment lies at the base of the decline in any species although there are three ways in which the conversion process might occur:

- stock disinvestments — the removal of the stocks of the asset for sale and investment in more competitive assets (the scenario of optimal depletion);
- management services reallocation — the refusal of an allocation of management services to the asset and allocation of these services to other more competitive assets (overexploitation); and
- base resource reallocation — the refusal of an allocation of base resources (habitat, water, foods) to the asset and allocation of these base resources to other more competitive assets (biodiversity depletion) (Swanson 1994).

Although investment in stocks is necessary to avoid extinction, it is not often that the decline of species fits the stock disinvestment case — for example, if there is no demand for the species' products then there is no incentive for stock level disinvestments of this type. Most species and biodiversity loss would appear to occur through base resource reallocation and the modification of habitat — the passive 'undercutting' and unwillingness to invest in the ancillary resources required for biological survival (Swanson 1994).

Sources: Clarke (1973); Swanson (1994).

2.3 Summary

- The 'public good' characteristics of biodiversity conservation have often been used as the rationale for direct government provision of conservation. However, some of the arguments used to justify public provision of conservation can be weak. There are also some limitations to public provision of conservation.
- Some of the benefits of biodiversity conservation are purely public. However, the existence of conservation activities with both public and private good characteristics suggests that there can be a role for the private sector where sufficient private benefits can be obtained.
- Whether the result of altruism, market incentives, or both, the private sector can complement existing public conservation initiatives. Private sector activity can also supplement the role of the public sector by reducing the need for public sector involvement in the provision of conservation on both public and private land.
- Market incentives and mechanisms can play a role in facilitating private conservation of biodiversity. Well-functioning markets can mobilise and direct scarce environmental resources to those uses, and among those users, that value them most highly.
- Conservation activities are already occurring through joint production with other activities such as agriculture. From a conservation perspective, the advantage of markets is that they can facilitate the sustainable use of biodiversity.
- New markets for conservation are emerging but many of these markets are incomplete, poorly functioning and/or still in the developmental stages. Consequently, these markets may not operate as effectively as possible and may not allocate resources as efficiently as a fully functioning market.
- If markets for conservation do not function well, then there can be a role for governments to establish well-defined and enforceable property rights and facilitate the emergence and operation of efficient markets. Poorly defined property rights can increase transaction costs and this can act as a constraint on market formation or efficient and effective operation.

3 Enabling private markets

Private conservation activities have been constrained by various legislative and regulatory factors (PC 2001). Such constraints increase transaction costs of private operators and decrease incentives for further investment. Modifying or removing inappropriate constraints may facilitate an effective market for conservation and/or provide biodiversity conservation benefits. Aspects discussed in this chapter include:

- modifying or removing those regulatory constraints that unnecessarily increase the costs and risks associated with private conservation (section 3.1);
- improving the competitive environment between the public and private sectors (section 3.2);
- clarifying an appropriate duty of care and appropriate cost sharing principles (section 3.3); and
- creating markets associated with biodiversity (section 3.4).

3.1 Modifying or removing institutional constraints

Legislation and regulation may not adequately address conservation of biodiversity when it:

- prohibits potentially desirable private sector initiatives;
- reduces the incentive to develop innovative approaches to improve conservation outcomes; and
- imposes significant (and unnecessary) costs on private business and the community.

A number of institutional arrangements — particularly aspects of the frameworks for land tenure, competitive neutrality, native wildlife and taxation — are characterised by extensive and often complex legislation and regulation (PC 2001). These factors can increase the relative costs and risks of private conservation activities compared with those of other viable land uses. This may influence investment decisions and lead to less efficient and effective conservation outcomes.

Property rights are not always well specified. For example, property rights for native flora and fauna are not always explicitly, consistently or fully defined in native wildlife legislation, and may vary according to the jurisdiction and any conditions of a licence. The ownership of captive native fauna held under licence in some jurisdictions may be uncertain and some rights appear to be untested, which may limit private conservation initiatives (PC 2001).

Sometimes legislation unnecessarily prohibits potentially desirable private sector initiatives. For example, only public sector agencies and zoos are allowed to undertake international trade in native fauna — commercial conservation firms are excluded from international trade in native species for profit. However, it is unclear whether such general trade restrictions are effective (for example, in terms of protecting native wildlife from illegal activities) or whether other policy options would improve conservation outcomes at a lower cost (PC 2001).

At times, legislation and regulation also reduce incentives to develop innovative approaches to improve conservation outcomes. For example, most jurisdictions use extensive licensing systems and a broad range of regulatory controls to control specific pre-conceived end-uses (such as keeping or exhibiting native wildlife). This can restrict private sector initiatives unless they are in accordance with a licence or the native wildlife has been declared unprotected or exempt from the provisions (PC 2001).

Uncertainty regarding the approach or application of legislation and regulations also increases transaction costs and may discourage investment. For example, altering prescribed grazing or stocking levels under existing pastoral lease conditions is usually at the discretion of the relevant minister or pastoral board. The lack of explicit administrative processes or decision criteria can create uncertainty for landholders wishing to undertake conservation activities that require reductions in stocking levels.

Problems can also occur when legislation and regulation is applied inconsistently. For example, different treatments of donations to environment and heritage organisations affect the relative costs (and therefore attractiveness) of alternative types of donations and may consequently influence the type and amount of ‘environmental altruism’ undertaken (PC 2001). Amendments to existing gifting provisions in income tax law to address these issues have been proposed (Howard 2001).

These problems may be magnified by other government measures (such as agricultural assistance) and/or tax treatments that encourage other land uses that may adversely impact on biodiversity. For example, concessions that lower the relative operating costs of production and land use may make those businesses

relatively more attractive, consequently drawing more resources to them and, potentially, away from biodiversity conservation.

Inconsistencies also exist between the approach and application of legislation and regulation across jurisdictions. For example, significant differences exist between the State-based licensing systems and controls on the keeping and trading of native wildlife (PC 2001). Some jurisdictions, such as South Australia, have a more flexible and non-restrictive system where applications can be made to keep any native fauna. New South Wales, Queensland and Western Australia, have more restrictions and controls which appear to be more complex than necessary and may unduly constrain private conservation initiatives.

3.2 Improving the competitive environment

Public conservation needs to be well-targeted, carefully designed and appropriately implemented. Public sector conservation can crowd out desirable private initiatives when, for example:

- public sector initiatives enjoy a net competitive advantage simply because of their public ownership status, or
- legislation and regulation facilitates anticompetitive behaviour by the public sector enterprise.

In 1993, the Hilmer Committee (Hilmer et al 1993) found that many government businesses that compete with private businesses had been advantaged by virtue of their government ownership. It considered that such advantages impacted negatively on economic efficiency and community welfare as they led to government delivery of goods and services which could more efficiently be provided by the private sector. In April 1995, Australian governments agreed to implement nationwide reforms under National Competition Policy (NCP) to address these concerns.

Competitive neutrality

Under the Competition Principles Agreement, Commonwealth and State governments committed to a number of policies, including that government businesses should not enjoy net competitive advantages over private sector competitors simply as a result of their public ownership unless the costs can be shown to exceed the benefits (box 3.1). Despite the apparent generality of this competitive neutrality principle, in practice it has a limited application to specific government businesses. Only businesses listed or considered 'significant' are

obliged to implement competitive neutrality measures, leading some government businesses to be exempt.

Box 3.1 **Competitive neutrality**

Under the principle of competitive neutrality, significant government businesses should not have competitive advantages or disadvantages relative to their private sector competitors simply by virtue of their government ownership.

The competitive neutrality framework is not intended to apply to all government businesses including:

- to non profit, non business public sector activities;
- to government businesses which are not considered 'significant'; or
- where the costs exceed the benefits.

Jurisdictions have progressively implemented competitive neutrality across a range of government businesses:

- each jurisdiction established policy implementation guidelines that, among other things, determine what characteristics constitute a government business for the purposes of the competitive neutrality agreement. The guidelines also specified a range of measures to be applied to eligible businesses to lead to competitively neutral outcomes.
- each jurisdiction established a mechanism for interested parties to lodge complaints against government businesses believed to be competing unfairly against private businesses. This can enable more effective competitive neutrality measures to be applied to non-compliant businesses or to have competitive neutrality measures applied to businesses previously not considered subject to competitive neutrality.

Sources: CCNCO (2001); PC (2001).

Private wildlife parks and reserves (sanctuaries) can face unfair competition from public sector businesses since few, if any, public sanctuaries have been listed as significant. Although jurisdictions have a complaints mechanism, in part to test the significance of public businesses, some do not allow additional businesses to be added to those already subject to competitive neutrality.

Despite the apparent limited application of competitive neutrality principles and measures to public wildlife sanctuaries, there has been one successful complaint (PC 2001). In 1998, the South Australian Competition Commissioner found clear similarities between the operations of the private Warrawong Sanctuary and the public Cleland Wildlife Park. The Commissioner determined that the two entities were competing in the same market segment and the application of competitive neutrality principles to the Cleland Wildlife Park was likely to generate net benefits to the community, primarily through cost efficiency, management performance and

service quality. However, this case demonstrates that in practice the implementation of competitive neutrality can be an uncertain and lengthy process.

In addition, cost reflective pricing — a cornerstone of competitive neutrality — can be difficult to implement in sanctuaries (PC 2001). For example, it can be difficult to separately price some commercial and non-commercial activities — basic sanctuary operations such as the containment and display of endangered native wildlife are essentially commercial revenue-raising activities, but also generate public benefits through educating the public about conservation.

Anticompetitive legislation

Another important aspect of the competitive environment is the obligation of jurisdictions to review existing Acts restricting competition. A guiding principle is that the Acts should not restrict competition, unless the benefits of the restriction to the community as a whole can be shown to outweigh the costs, and the objectives of the legislation can only be achieved by restricting competition (NCC 1998).

While reviews of legislation have been undertaken, there appears to have been little change to legislation in specific areas related to conservation. Pastoral lease arrangements and native wildlife regulatory frameworks continue to constrain private sector conservation (PC 2001). Aspects of these arrangements may be anticompetitive and overly prescriptive. For example, private sanctuaries have to obtain some licences that are not required by competing public providers and face a broad range of regulatory controls on keeping, use, trade and movement of native wildlife (box 3.2).

Box 3.2 **Keeping of native fauna in Victoria**

The Victorian *Wildlife Act 1975* exempts State-owned zoological parks within the meaning of the *Zoological Parks and Gardens Act 1995* from the general requirement to obtain a licence to exhibit animals.

Victoria has seventeen categories of recreational and commercial licences for specific activities with certain listed species. Different categories of licence have specific regulatory controls, for example:

- a holder of a commercial wildlife displayer licence must display wildlife for at least six hours per day during the daylight hours of at least 50 days in a six month period ending on 31 March and 30 September in each year;
- a commercial wildlife dealer licence authorises the holder to possess, keep, breed, buy, sell and dispose of those taxa of wildlife listed in the schedule for that licence. The holder must not charge a fee for the display of the wildlife; and
- all licence holders must 'enter clearly and legibly and in ink all the information required by the Secretary into the record book' and periodically make returns.

Source: PC (2001).

3.3 Property rights and cost sharing principles

To facilitate private conservation it is important to:

- clarify the rights and responsibilities of the private sector for conservation of biodiversity; and
- establish a framework to clarify how the costs of providing additional conservation should be shared between the public and private sectors.

Clarifying property rights

Clear property rights are an important foundation of any incentive-based or regulatory approach to biodiversity conservation. Emergence of private markets associated with conservation activities will be hampered where the rights and responsibilities of the private sector are unclear. The rights and responsibilities of resource managers and users for biodiversity implied by existing property rights are often not clear. For example, property rights for native wildlife are not always explicitly, consistently or fully defined. While it is desirable for economic efficiency that rights and responsibilities be more clearly defined, this should only occur to the extent that it is feasible or cost effective to do so.

Property rights evolve over time in response to changing information and community preferences. These changes may occur through the common law or through government legislation. However, redefinition of property rights needs to be undertaken with care and any changes to property rights can give rise to questions of compensation or other assistance.

One approach to clarifying rights and responsibilities could be through an appropriate duty of care. A duty of care may exist in either common law or statutory law (box 3.3). Common law only recognises the harm to personal interest. Hence common law can only protect the environment indirectly through legal liability for impacts on people and their property arising from activities that harm.

Bates observes:

> The common law duty of care is continuing to evolve in Australian courts … In many cases it is not possible to say whether a duty exists until a judicial pronouncement of the highest authority clarifies the issue. (Bates 2001, p. vii)

In its 1998 inquiry into Ecologically Sustainable Land Management, the Industry Commission proposed the introduction of a statutory duty of care:

> Everyone who could influence the risk of environmental harm should be required to take *all reasonable and practical* steps to prevent any foreseeable harm from their actions. (IC 1998, p. 7)

The concept of a statutory duty of care is not new. A statutory duty of care has been successfully used to address occupational health and safety risks and a limited version of the Industry Commission proposal already exists in Queensland, Victoria and South Australia.

Box 3.3 **A 'duty of care' in common and statutory law**

In **common law** only harm to personal interests are actionable. This means that the common law can only protect the environment indirectly through legal liability for impacts on persons and property arising out of activities that harm it. In other words, it is harm to personal interests that are actionable under common law, not harm to the environment *per se*. The standard of care expected is that which is reasonable under the particular circumstances: the more hazardous the undertaking, the higher the standard of care that may be required.

A **statutory duty of care** may either make the duty of care owed to the individual or to the environment. An example of the former approach is section 20 of the Victorian *Catchment Land Protection Act 1994*, which requires landholders to take all reasonable steps to avoid causing or contributing to land degradation that causes or may cause damage to the land of another landholder. An example of the latter is pollution control legislation in Queensland, South Australia and the Australian Capital Territory, where a person must not undertake an activity that pollutes or may pollute the environment, unless that person takes reasonable and practical measures to prevent or minimise environmental harm. Individuals also can be required to enhance the quality of the environment, although this approach is less common.

Bates observes that while imposition of statutory duties of care may not provide much additional protection for biodiversity where direct legislation for environmental protection exists, they can fill gaps in existing legislation where no specific duties are imposed. They also provide a means to articulate required environmental standards and positive measures for environmental management can be stipulated.

Source: Bates (2001).

Bates suggests:

> …A statutory duty of care can potentially be more precise about when and how a duty will arise, provided it is clearly defined … When backed by explicit guidelines the educational effect of a duty of care can be a significant benefit for guiding individuals in sustainable resource use. (Bates 2001, pp. vii-viii)

A legislated duty of care, in conjunction with voluntary codes of practice, can be more flexible and less prescriptive than many alternative approaches. It could complement other initiatives such as voluntary community action, education and financial incentives and targeted regulation. Further research and public discussion, particularly on implementation issues, are needed.

Cost sharing

Clarifying the rights and responsibilities of the private sector is a fundamental step in determining who should bear the cost of additional conservation on private land.

Establishing appropriate cost sharing frameworks can create incentives for individuals to use resources more efficiently — governments can reduce costs of beneficial private conservation activities and increase the costs to private entities which harm biodiversity. Cost sharing arrangements can also help to ensure that limited public funds to promote social (including environmental) goals encourage efficient resource allocation (Aretino et al 2001b).

Although private conservation can generate public benefits, governments need not necessarily bear the cost of provision of those public benefits. If the private sector is already undertaking certain conservation activities, then there may be no need for the government to further encourage this activity. This allows effective leverage of government funds. As Marshall (1998) observes:

> … governments in the long run will be unable to address more than a small proportion of the costs of environmental problems associated with agricultural activity (Batie 1986). Thus there is a pressing need to maximise the conservation dividend from the limited government funds that are available. (Marshall 1998, p. 1)

How these rights and responsibilities are assigned is a matter for political judgement based on perceptions of equity or fairness rather than efficiency.

Where there is a public demand for more conservation than would be provided voluntarily by the private sector alone, an important question arises as to how the burden of such additional conservation should be shared. If property rights effectively require resource users to maintain an environmental standard, resource users who fail to achieve this standard may be considered to generate external costs. In such situations the 'impacter pays' principle (box 3.4) should generally be adopted. This effectively amounts to enforcement of an individual's existing legal responsibilities.

In contrast, application of the 'beneficiary pays' principle in such cases would effectively undermine the responsibilities imposed by property rights. However, there may be cases where governments would choose not to adopt the 'impacter pays' principle — for example, because it is not technically feasible or cost effective to do so, or because it is considered to generate an excessive burden on the resource user. In these cases the 'beneficiary pays' principle may be preferred.

Box 3.4 **Cost sharing principles**

There are two broad cost sharing principles:

The **'impacter pays' principle**, requires individuals causing environmental damage to meet the full costs of their actions — contributing to the costs of activities that ameliorate or prevent biodiversity damage in proportion to their impacts on biodiversity. As impacters may pass on some of these costs as higher prices, consumers who benefit from activities that adversely impact biodiversity may also meet a portion of the higher costs.

The **'beneficiary pays' principle** requires anyone who benefits from an activity to contribute to the costs of undertaking it. Under this principle, benefits can accrue to individuals, groups of individuals, or the community more broadly.

Source: Aretino et al (2001b).

Where the community requires resource users to meet a higher environmental standard than that required under existing property rights, the 'beneficiary pays' principle is generally relevant to encourage voluntary conservation in the short term. Box 3.5 provides an example of cost sharing arrangements in practice.

If community demands for a higher level of environmental management persist in the long term, governments may choose to share costs under the 'beneficiary pays' principle or may consider changes to property rights to reflect new community expectations. It is also possible that defacto or dejure property rights will evolve and adapt to reflect these community expectations.

Cost sharing arrangements can have social implications. For example, adoption of the 'impacter pays' principle may add significantly to the costs faced by resource users (although some costs may be passed on to consumers through higher prices). While the financial viability, or otherwise, of resource users may not be a sufficient justification to not adopt the 'impacter pays' principle (see, for example, Sustainable Land and Water Resource Committee 1999, Marshall 1998), financial hardship could be expected to affect compliance levels among resource users (and consequently the potential benefits of applying it). In addition, cost sharing arrangements that are accepted as fair and reasonable by the community are more likely to receive support and therefore may incur lower compliance and enforcement costs.

The final choice of cost sharing principle would need to weigh the costs of implementation as well as equity considerations. Governments may also choose to adjust cost shares in favour of some individuals in the short term to help them adjust. Issues surrounding the social consequences of cost sharing arrangements, and the possible need for adjustment assistance, are complex and require further

examination on a case by case basis. This should involve consideration of the implications of any precedents that may be established.

Box 3.5 **Cost sharing in practice**

The South Australian Coorong and Districts Local Action Plan addresses various environmental issues including dryland salinity, erosion, water quality decline and feral species invasion. Projects under the Local Action Plan are eligible for government funding and detailed cost sharing arrangements are based on the 'beneficiary pays' principle. The Local Action Plan recommends cost shares for landholders, the local community and the wider community, based on each sector's share of the estimated present value of market and nonmarket benefits accruing from particular activities.

Cost shares are established for activities such as native revegetation, farm forestry, saline land reclamation and remnant vegetation, and wetlands and habitat conservation. The cost shares for each of these activities differ according to the private and public benefits they generate; for example, landholders may pay up to 93 per cent of the cost of activities aimed at saline land reclamation, while the local community pays 3 per cent and the wider community pays the balance. The higher cost share of landholders implies that these activities generate significant private benefits. Conversely, landholders pay only 6 per cent of the costs of activities aimed at remnant vegetation, wetlands and habitat conservation, while the local community pays 17 per cent and the wider community pays 77 per cent. This arrangement implies that these activities generate mainly public benefits that accrue to the general community.

Sources: Aretino (2001b); Coorong and Districts Local Action Plan Steering Committee (1997); Dames and Moore (2000).

3.4 Creating new markets

Biodiversity may not be adequately conserved because markets typically exist only for ecosystem goods derived from biodiversity (such as harvested plants and animals) – there are few markets for ecosystem services (such as flood control, nutrient cycling and waste assimilation) derived from biodiversity, hence these are largely ignored in decision making about natural resource use.

In some instances governments could establish or allocate property rights in ways that can lead to the creation of markets where they currently do not exist. For example, tradeable water rights have been created and some governments (for example, Western Australia, Victoria and New South Wales) have provided, or are developing, statutory recognition of rights arising from the benefits of carbon sequestration.

Emissions trading systems are an example of markets created by governments to pursue environmental goals which impact on biodiversity. An emissions trading system for carbon has been proposed as one means to reduce greenhouse gas emissions. A trading system has also been in place for some time to deal with saline discharges in the Hunter River — by establishing a price for salt, incentives are created to reduce salt discharges at least cost (box 3.6). In the United States, a system for tradeable permits for sulphur dioxide and nitrogen oxide emissions from electricity utilities has been established (NCEE 2001).

Box 3.6 **Hunter River Salinity Trading Scheme**

A pilot Hunter River Salinity Trading Scheme has been operating in the Hunter catchment in New South Wales since January 1995. This scheme aims to ensure that industrial salinity discharges to both the upper and lower reaches of the river do not exceed specified targets through:

- discharge scheduling — only allowing discharge at times when the river's flow and salinity levels are such that salt discharged does not breach salinity targets; and
- sharing allowable discharge according to participants' holdings of tradeable salinity credits.

Under the scheme, limits set on discharges vary according to the river flow:

- during 'low' flows (when discharge impacts are high), discharges are not permitted;
- during 'high' flows, participants in the scheme may discharge saline water provided they hold sufficient salinity credits; and
- during 'flood' flow (when the environmental impact of discharges is minimal), unlimited discharges are permitted.

Specific volume limits are also set for each site, to protect tributaries carrying discharge to the main river.

During 'high' flows, a total allowable salt discharge is calculated and is shared amongst participants according to their holdings of tradeable salinity 'credits'. The scheme involves 1000 credits — 913 have been issued to scheme participants and 87 remain with the EPA to provide a buffer for new developments. Participants wanting to discharge more salt than they have credit for, may purchase credits at the existing price in the market from other participants who have surplus credits. There were relatively few trades in the early years of the scheme. However, the number of trades has increased substantially in the last few years.

Source: NSW EPA (2001).

A further example of the application of a market based mechanism for delivery of conservation is the pilot BushTender program of the Victorian Department of Natural Resources and Environment (DNRE) (box 3.7). This program will use an auction process to purchase conservation services from landholders. Under this

scheme, DNRE requests bids from private landholders to undertake conservation activities on their land that have environmental objectives consistent with government policy. The trial targets priority regions where there is good information and community support (the North-East and North-Central regions of Victoria) and is designed to improve information on developing a biodiversity benefit index, improving the auction system design and determining necessary information disclosure requirements.

Box 3.7 **BushTender pilot auction scheme**

The Victorian Department of Natural Resources and Environment's (DNRE) pilot scheme for auctioning land management agreements for biodiversity conservation on private land (BushTender) commenced in June 2001. The pilot is designed on the assumption that competitive bidding should reduce the price of achieving conservation goals.

Under the scheme, landholders establish their own price for the conservation services they are prepared to offer to improve the quality and extent of native vegetation on their land. This price forms the basis for their bid, which is assessed and compared with the bids from all other landholders participating in the trial.

The successful bids will be those that offer the 'best value for money', assessed according to a biodiversity benefits index which reflects the:

- current conservation value of the site;
- amount of service offered; and
- cost of the bid.

It is intended that successful landholders would receive periodic payments for their services under a three year management agreement with DNRE.

Source: DNRE (2001).

A common feature of these markets is the allocation of rights and responsibilities in ways that provide incentives for the delivery of conservation outcomes. In some circumstances, the creation of these new markets could potentially be a mechanism for governments to achieve environmental objectives with minimal distortion and cost.

The adoption of markets for pursuing environmental goals has several potential strengths. The flexibility provided by market approaches can help ensure that environmental goals are achieved at a lower cost than traditional command and control regulatory approaches. However, this will depend on how well markets are designed and implemented in practice. The ability of governments to design successful markets for the pursuit of conservation may depend significantly on the environmental issue being addressed. For instance, it may be relatively easier to

define and get agreement on the 'unit' to be measured and traded in an emissions trading system involving carbon trading than for a trading system involving biodiversity as a whole where the relationships comprising the elements of biodiversity are not as well understood. Nevertheless, individual trading schemes for specific aspects of biodiversity such as a particular species, could make a potentially important contribution to the conservation of biodiversity more broadly.

Other factors may also have a significant bearing on how well markets are likely to operate to deliver conservation. For instance, if the transaction costs associated with identifying parties to trade with, and obtaining approval of trades, are significant, they may deter trades thereby limiting the potential for markets to deliver conservation at a lower cost than other policy approaches. In other cases, there may be adverse effects delivered by market approaches that need to be addressed. For example, there may be a need to address the potential for 'hotspots' to occur when trading is allowed — such as where the re-distribution of emissions through trading results in peaks of emissions in certain geographical areas that can, in some cases, have adverse effects on the environment.

While the use of market based mechanisms and the creation of new markets offers potential solutions to help deliver some desired conservation outcomes, it is unlikely to be suitable as a policy option for addressing all conservation issues. Rather, it is likely that a combination of policy instruments will be required.

3.5 Summary

- Private conservation activities have been constrained by various legislative and regulatory factors — particularly aspects of the frameworks for land tenure, competitive neutrality, native wildlife and taxation. Such constraints increase transaction costs of private operators and decrease incentives for further investment.
- Clear property rights are an important foundation of any incentive-based or regulatory approach to biodiversity conservation. The rights and responsibilities of resource managers and users for biodiversity implied by existing property rights are often not clear.
- One approach to clarifying rights and responsibilities could be through an appropriate duty of care. A legislated duty of care, in conjunction with voluntary codes of practice, can be more flexible and less prescriptive than many alternative approaches. Further research and public discussion, particularly on implementation issues, are needed.

- Clarifying the rights and responsibilities of the private sector is a fundamental step in determining who should bear the cost of additional conservation on private land. Establishing appropriate cost sharing frameworks can create incentives for individuals to use resources more efficiently. How these rights and responsibilities are assigned is a matter for political judgement based on perceptions of equity or fairness rather than efficiency.
- In some instances governments could establish or allocate property rights in ways that can lead to the creation of markets where they currently do not exist. While the use of market based mechanisms and the creation of new markets offers potential solutions to help deliver some desirable biodiversity conservation comes, it is unlikely to be suitable as a policy option for addressing all conservation issues. Rather, it is likely that a combination of policy instruments will be required.

4 Conclusion

Conservation of biodiversity is undertaken in many ways across Australia. Historically, the public sector has been the most prominent provider of conservation. It has been assumed that the private sector would be unwilling or unable to provide these services, as it was thought to be 'unprofitable'. But private resource managers and users are now finding ways whereby they can earn profits by conserving (and using) biodiversity. This relies on them being able to charge the direct users of their services, even though many others derive some intangible benefits without having to pay. In addition, conservation for altruistic motives is important and such initiatives should not be discouraged.

Private sector conservation is essential to complement and supplement public sector conservation. For example, there are well recognised ecological limitations of the public reserve system. With more than 60 per cent of Australia's land area under private management, conservation cannot be adequately addressed without private sector participation.

Clear property rights are an important foundation of any incentive-based or effective regulatory approach to biodiversity conservation. In some instances governments can create markets by defining new property rights.

Emergence of private markets associated with conservation activities will be hampered where the rights and responsibilities of the private sector are unclear. Opportunities exist for governments to define property rights more clearly and effectively, and thereby harness the potential of the private sector. One means of clarification could be through legislating to establish an appropriate 'duty of care', given a duty of care, in conjunction with voluntary codes of practice, is likely to be more flexible and less prescriptive than many alternative approaches.

Clarifying the rights and responsibilities of the private sector is a fundamental step in determining who should bear the cost of additional conservation on private land. Establishing appropriate cost sharing frameworks can create incentives for individuals to use resources more efficiently.

Where incentives do exist for the private sector to undertake conservation, individuals, firms and organisations should not be constrained or crowded out by inappropriate regulation or unfair competition from the public sector.

Complex relationships and interlinkages exist between these potential reforms. It is important to view the reforms as a complementary suite that governments could use to alleviate unnecessary restrictions and realise the incentives the private sector can have to conserve biodiversity. Care must be taken to ensure that legislation and the broader institutional framework support rather than contradict desired objectives.

In addition to examining ways to ensure the efficiency and effectiveness of biodiversity conservation activities by the private sector, it will be important to examine measures to improve the efficiency and effectiveness of public sector provision of conservation.

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