Economic Values of Protected Areas

Guidelines for Protected Area Managers

IUCN The World Conservation Union

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As a Union, IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. A central secretariat coordinates the IUCN Programme and serves the Union membership, representing their views on the world stage and providing them with the strategies, services, scientific knowledge and technical support they need to achieve their goals. Through its six Commissions, IUCN draws together over 10,000 expert volunteers in project teams and action groups, focusing in particular on species and biodiversity conservation and the management of habitats and natural resources. The Union has helped many countries to prepare National Conservation Strategies, and demonstrates the application of its knowledge through the field projects it supervises. Operations are increasingly decentralized and are carried forward by an expanding network of regional and country offices, located principally in developing countries.

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The Department of City and Regional Planning, Cardiff University is pleased to be a partner in the production of this important series of guidelines for protected area planning and management. The Department, through its Environmental Planning Research Unit, is actively involved in protected areas research; runs specialised courses on planning and environmental policy; and has a large Graduate School offering opportunities for persons interested in pursuing research for a PhD or as part of wider career development. If you are interested in learning more about the Department, its research capabilities and courses please write to us at the address given below.

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Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Service Unit of IUCN

Adrian Phillips, Series Editor

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Editorial preface

This is the second in a new series of Best Practice Guidelines produced by the IUCN World Commission on Protected Areas (WCPA) in partnership with the Environmental Planning Research Unit, Department of City and Regional Planning, Cardiff University, Wales, UK.

WCPA, which is an integral part of IUCN – The World Conservation Union – is a world-wide network of some 1,300 protected area experts. Its members work in a volunteer capacity to raise the standard of protected areas planning and management. The Department of City and Regional Planning at Cardiff University is the UK's leading school of planning. It has a strong international reputation and a high profile in research and teaching related to environmental topics. Together the two bodies are working to produce and distribute a series of world best practice guidelines. There will be two publications a year, prepared through experts drawn from WCPA's network, initially over a three year period. Drafting of each individual guideline publication will normally be led by a main author, usually assisted by a task force and subject to peer review with WCPA. The first in the series dealt with National System Planning for Protected Areas. The series will address other key issues facing protected areas around the world such as marine protected areas, tourism and protected areas, financing of protected areas and training.

The guidelines series is intended to be used by all those concerned with the policy and practice of protected areas, not only the practitioners but also decision-makers at the various levels of government, others such as non-governmental organisations, academics and students and international funding agencies. Through the publication and distribution of these guidelines, WCPA and Cardiff University hope to improve understanding of the needs of protected area management and the standards of management on the ground.

As series editor, I welcome feedback from readers.

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and Environmental Planning at the Department
of City and Regional Planning, Cardiff University, Wales, UK

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This guide is a publication of IUCN – The World Conservation Union. It has been prepared jointly by the Task Force on Economic Benefits of Protected Areas, a part of the World Commission on Protected Areas (WCPA) and the IUCN Economics Service Unit.

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Mr Lee Thomas (Convenor), Dr John Dixon, Dr George Hughes, Mr Effendy Sumardja, Mr Graeme Kelleher, Mr David Sheppard, Dr Michael Green, Mr Pedro Rosabal and Dr Frank Vorhies.

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The clearance process for the guide has included a review of the text by all members of the Economic Benefits of Protected Areas Task Force, Jeff McNeely, Chief Scientist and other selected IUCN professional staff, and final approval of the IUCN Director General. This process ensures that the document incorporates comments by members of the organisation, but views expressed in this publication do not necessarily reflect those of IUCN. Although IUCN assumes no responsibility for the content of the case studies, any queries can be directed to <indaba.iucn.org>. The publication is also available at: <http://economics.iucn.org/valuationparks.htm>.

The Economic Benefits Task Force wishes to acknowledge the generous support of the IUCN Economics Service Unit and Environment Australia which have assisted in funding the publication of these Guidelines. This funding has contributed to a significantly increased print run and wider distribution of these Guidelines than would otherwise have been possible.

The Task Force and ESU would like to thank Mr Francis Grey, Ms Jill Blockhus and Mr Sebastian Winkler for their contributions to the Guidelines. Comments and assistance from Mr Geert Creemers, Mr Jerry Harrison, Mr Dick Stanley, Dr Luc Peron and Dr Ken Hornback are also acknowledged.

Executive summary

Protected areas contain some of the world's most beautiful scenery and outstanding natural and cultural landscapes. These feature wildernesses, mountains and volcanoes, rain forests, untouched crystal-clear marine waters, white sandy beaches and unique cultural sites – to mention but a few.

The natural and near-natural features of protected areas offer attractions which in many countries have become the cornerstone of tourism and recreation. However promoting tourism for the economy is not the primary role of most protected areas. Their primary role is the conservation of species biodiversity, and provision of a rich natural resource which permits scientists, educators and the community at large to meet their various needs. Generally speaking, however, the market alone does not support a system of protected areas – hence society, through its various levels of government, must provide environmental protection as a public service in the same manner that it provides health, education, defence and legal systems. Failure to provide these public services impoverishes the quality of life for individuals and indeed for entire nations.

The debate over environmental protection is often about the balance between leaving areas in their natural or near-natural state, and developing and exploiting them. This choice is fraught with tension – for example should a forest be left uncleared, or logged and converted to agriculture? Should wetlands and mangroves be left in their natural state or cleared and developed?

These Guidelines are intended to help answer such questions. Part I gives an overview of how the economic values of protected areas can be assessed, provide new insights and inform the debate. The case studies in Part II identify those sites where protecting the environment has made a significant contribution to the economy – increasing national wealth, national incomes and levels of national economic output.

Public policy has a broad focus on the welfare of the community, and much work has been done by economists systematising the evaluation of welfare benefits from protected areas. The current political process largely focuses, however, on the economy and monetary returns. It is hoped that the awareness developed through these Guidelines can help to place environmental protection issues nearer the centre of the economic policy argument.

The Guidelines reveal that protected areas are often significant revenue-earning entities and can make an important contribution to local economies. For instance recent studies indicate that Canada is expected to create $C6.5 billion dollars in annual Gross Domestic Product from the expenditure of participants in wildlife-related activities; this sustains 159,000 jobs and creates $C2.5 billion in tax revenue each year. Australia receives over $A2 billion in expenditure from eight national parks - at a direct cost to Governments of some $A60 million. In Costa Rica, about $US12 million is spent

annually to maintain the national parks but foreign exchange generated in 1991 was more than $US330 million with 500,000 overseas visitors; park-generated tourism is the second largest industry in the country.

Numerous other examples abound. In Tanzania, poaching and uncontrolled hunting of elephants to the south-east of Tarangire National Park led to an increase in woody plants within the park, causing in turn an increase in tsetse flies and hence livestock losses; conservation of elephants would have enhanced the productivity of the livestock industry. Zaire (now Democratic Republic of Congo) receives 75% of animal protein from wild sources; 40% of the diet in Botswana comes from animal protein produced by wild sources; firewood and dung provide 90% of the energy needs in Tanzania, Nepal and Malawi, and exceed 80% in other countries. In Australia, water production in the Upper Thompson dam in Victoria was found to be more valuable than timber production from the same land. Tourism and fishing are more economically valuable than logging in the Philippines. Fijian mangroves are more valuable for firewood collection, fishing and sewage disposal than when cleared as agricultural land. The destruction of US coastal estuaries between 1954 and 1978 cost the US economy $200 million in fish production on an annual basis. In Italy, the Abruzzo National Park has been so popular that it has regenerated the economy of a poor area that previously suffered from severe depopulation. In each of these cases, the economy is demonstrably receiving a boost from the existence of protected areas, wildlife and natural and near-natural landscapes.

There is a clear message from the above that investment in protected areas can provide a significant benefit to national and local economies. Far from being locked up and lost to local users, these areas represent an opportunity for sustainable industries and for the generation of financial returns. The concept of total economic value (TEV) identifies the goods and services or “products” protected areas offer and which are suitable for capturing revenues for the protected area. With proper management, the “product” on offer can be sold over and over again without diminishing its value and revenues can be used to maintain the protected area. Unlike extractive industries, the string of returns can be maintained over a long period for the benefit of a wide range of users and stakeholders. Managers need to prepare business plans for parks and reserves so as to assess and capture these potential benefits, and thus ensure the long-term financial sustainability of protected areas in their care.

Case studies reviewed in this report show that the different approaches to valuation can lead to inconsistent reporting of outcomes. The Guidelines therefore recommend a standardised valuation methodology, based on the concept of TEV, which is described in the text. The methodology provides sound guidance for those unfamiliar with measuring costs and benefits. The adoption of a standardised approach will reduce the incidence of impacts remaining unvalued and unappreciated. Measuring the benefits of protected areas in a standard way also enables comparisons and aggregations to be made of studies in different parts of the world.

Introduction

The aims of these Guidelines are:

- to introduce protected area managers to the concept and tools of economic valuation, and
- to demonstrate the potential uses of economic valuation for protected area financing and management.

Economic valuation can be useful for protected area managers since it can help:

- support requests for funding from traditional sources,
- identify additional sources of finance,
- expose marginalised stakeholders who may impose threats to protected areas,
- indicate ways of capturing values of beneficiaries, and
- guide management practices.

An effective valuation study should be conducted by a professional economist who is servicing the needs of the protected area manager. It is the protected area manager's task to work with the economist to establish the end use of the study, and the framework for the analysis. This guide is meant to help the manager ask the right questions of the economist.

While these Guidelines should equip protected area managers with the knowledge and information needed to commission a valuation study by an economist it will not prepare either of them to undertake a study independently. A successful valuation study needs the strong guidance and concrete objectives, which the protected area manager should provide, as well as the sound understanding and knowledge of valuation tools and frameworks, which the professional economist can provide.

These Guidelines for protected area managers are in two parts:

Part I provides core information about economic valuation, and

Part II summarises a series of case studies.

Part I outlines the concepts, methodologies and language of economic valuation and is intended to be read in its entirety. The text explains the mandate for protected areas, introduces a client approach to managing protected areas, and establishes the need for valuation against a background of shrinking traditional funding sources. Part I also establishes a three-step framework for valuing protected areas, demonstrates the

valuation process through a worked example, and draws some important conclusions for protected area managers. Part II summarises a number of case studies with the aim of introducing the manager to valuation in practice. These summaries can be read selectively. The collection as a whole provides examples of the array of situations and levels at which valuation studies can be and have been undertaken.

These are guidelines for protected area managers; they are complemented by guidelines for practising economists available separately[1]. The practising economists' guide will provide background information on how valuation tools can be and have been used for protected areas and supply a tool kit of references and case studies to demonstrate 'best practice'. The two guides are intended to provide protected area managers and their economists with the common framework and language needed to work together effectively and efficiently. An effective valuation study is one which results in policy and management outcomes which improve the long term viability of the protected area; an efficient one achieves these policy and management outcomes in the most expedient and least costly way.

The hope of IUCN's World Commission on Protected Areas (WCPA) is that this guide will become a dynamic document which will be progressively refined as more protected area managers use valuation tools to aid management and finance decisions. The electronic version of the document (http://economics.iucn/valuationparks) will be updated as appropriate, as the ideas presented in this guide are shared and practised in the field. As this experience accumulates, it is hoped that the hard copy version will also be revisited and new cases included. To achieve such dynamism, we look to users of this guide to share experiences by contributing case studies to the Commission <economics@indaba.iucn.org>. These studies can be made available on the Internet, thereby initiating the exchange of experience in the economic valuation of protected areas.

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Convenor of the WCPA Economic Benefits Task Force.

[1] The economists' guidelines are being prepared and are expected to be completed by the end of 1998.

PART I

This part of the Guidelines provides background information about economic valuation techniques, examples of the various values which protected areas may have, and an explanation of how protected area managers can use valuation methodologies as input into financial and management decision-making processes. This section emphasises the need to define the purpose of the valuation study before embarking on the study – both in order to narrow the scope of the study and to ensure that the study gathers relevant information and presents it in an appropriate format.

1. A new vision for protected areas

At the 1992 Earth Summit, the governments of the world agreed on a new agenda for sustainable development. This agenda included a bold new Convention on Biological Diversity (CBD) which, *inter alia*, calls on governments to establish systems of protected areas and to manage these in support of conservation, sustainable use and equitable benefit sharing. The governments recognised protected areas as economic institutions which have a key role to play in the alleviation of poverty and the maintenance of the global community's critical life-support systems. This new vision for protected areas requires an awareness and understanding of the economic values generated by protected areas.

1.1 The global mandate for protected areas

A protected area is "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN, 1994). A protected area may be a wetland, a tropical or deciduous forest, a cultivated landscape of value, an alpine region, a savannah, a marine area or any number of other types of natural or partially modified ecosystems – or indeed any combination of types of ecosystems. In addition to covering an array of ecosystem types, protected areas are defined in a number of different ways relevant to the objectives and values for which they are managed. Box 1 highlights these various definitions as they apply to IUCN's categories of protected areas.

Traditionally one of the most widely used and, arguably, most effective tools for achieving conservation goals, protected areas today play a significant role in supporting local, national, and international biodiversity policies. They also serve as places for scientific research, wilderness protection, maintenance of environmental services, education, tourism and recreation, protection of specific natural and cultural features, and sustainable use of biological resources.

The importance of protected areas is emphasised by international conventions and programmes such as the CBD, the World Heritage Convention (WHC), the Ramsar Convention on Wetlands, the UN Law of the Sea Convention, UNESCO's Man and the Biosphere (MAB) Programme of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the global programme of WCPA. Together these agreements and programmes are the backbone of international policy on the establishment and management of protected areas for biodiversity conservation and the sustainable use of natural and cultural resources.

Box 1. Six categories of protected areas

Category I

An area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species available primarily for research and/or environmental monitoring. A wilderness area is a large area of unmodified or slightly modified land and/or sea retaining its natural character and influence without permanent or significant habitation which is protected and managed so as to preserve its natural condition.

Category II

A natural area of land and/or sea designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations; (b) exclude exploitation or occupation inimical to the purposes of the area; and (c) provide foundation for spiritual, scientific, educational, recreational, and visitor opportunities all of which must be environmentally and culturally compatible.

Category III

An area containing one or more specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

Category IV

An area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category V

An area with coast and sea, as appropriate, where the interaction of people and nature over time has produced an area with significant aesthetic, ecological and/or cultural value and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Category VI

An area containing predominantly unmodified natural systems managed to ensure long term protection and maintenance of biological diversity while providing at the same time a sustainable flow of natural products and services to meet community needs.

Source: IUCN, 1994

The CBD is a particularly important endorsement of protected areas in that:

- it is globally accepted, with over 170 signatory nations adopting its objectives of conserving biodiversity, sustainably using biological resources, and equitably sharing benefits arising from this use;

- it defines biodiversity broadly as the variability among living organisms at the genetic, species and ecosystems levels; and
- it presents a powerful array of actions and tools for implementing a global biodiversity agenda.

The CBD envisions a major role for protected areas in national plans for biodiversity. Article 8 calls for the establishment and maintenance of systems of protected areas. As experts, IUCN has given advice on the focus and design of national systems of protected areas – see Davey, A. G. (1998). Article 8 establishes global priorities and policies for the *in-situ* conservation of biodiversity and obliges Parties:

- to establish systems of protected areas or areas where special measures need to be taken to conserve biodiversity;
- to develop guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biodiversity;
- to regulate or manage biological resources important for the conservation of biodiversity whether within or outside protected areas, with a view to assuring their conservation and sustainable use;
- to promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas; and
- to provide financial and other support for *in-situ* conservation.

The central role of protected areas in Article 8 is reflected in the decisions of the Conference of the Parties (COP). These emphasise the importance of protected areas in achieving biodiversity goals for forest, marine, coastal, and other ecosystems. For example, the third COP (November 1996) recommended that strategies for sustainable forest management be based on an ecosystem approach, which integrates conservation measures such as protected areas and the sustainable use of biological resources.

The WHC also provides a global foundation for protected areas by encouraging the identification, protection and preservation of the cultural and natural heritage around the world. The WHC is a mechanism for ensuring that globally important sites are protected and properly managed. Under the WHC, countries submit sites for inclusion on the World Heritage List of sites which are then eligible for funding from the World Heritage Fund. Thus this Convention provides countries with an incentive to create and maintain protected areas of global significance.

Further agreements and action in the international arena also support protected areas. The UN Law of the Sea provides the framework for establishing marine protected areas by allocating rights to territorial seas. The Ramsar Convention encourages mutual commitment from signatories in the designation of wetland protected areas important to waterfowl and which can also promote the "wise use" of wetland ecosystems. UNESCO's MAB Programme recognises protected areas as key components in the design and management of biosphere reserves and important tools for meeting sustainable use objectives. Through the implementation of the biosphere reserve

concept, the programme provides an international framework to: (a) conserve natural and cultural diversity; (b) promote models of land management and of approaches to sustainable development; and (c) improve knowledge on the interaction between humanity and nature through research, monitoring, education and training.

IUCN's WCPA is the major global network of protected area specialists. The mission of WCPA is "to promote the establishment and effective management of a representative world-wide network of terrestrial and marine protected areas", as an integral contribution to the IUCN mission. The mission of IUCN is "to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable". The main purposes of protected area management, as outlined by the WCPA, are: scientific research, wilderness protection, preservation of species and genetic diversity, maintenance of environmental services, protection of specific natural and cultural features, tourism and recreation, education, sustainable use of resources from natural ecosystems, and maintenance of cultural traditions and attitudes.

1.2 The need for innovative approaches

Strong as this international mandate may be, global conventions and programmes alone are not enough to ensure the continued existence of, and sufficient funding for, protected areas. In times of fiscal austerity and tightening government budgets – especially in developing countries which are home to much of the world's biodiversity – traditional funding sources for protected areas are increasingly under threat. Innovative alternatives to these traditional sources are needed in order to secure the long term viability of protected areas. In addition to strengthening traditional funding, finding additional funding sources has the added benefit of diversifying a protected area's income sources. This makes the protected area more viable and helps it to withstand times of economic hardship.

Where does a protected area manager look for alternative funding sources? What do these potential supporters want from the protected area? And what does the protected area manager communicate to these supporters? Valuation can help the protected area manager find the answers to these questions, and more.

The process of valuation provides protected area managers with information about the protected area's goods and services, the values which people (potential supporters or customers) place on those, which values are being captured and which are not, and which groups could derive more benefits through alternative uses of the protected area and are therefore inclined to be a 'threat' to the protected area. In this way, valuation provides useful information for management and financing decisions regarding protected areas.

A thorough scoping stage of a valuation study identifies the array of benefits flowing from the protected area and the people who value those benefits. This information is likely to expose those who are not contributing to the protected area but derive benefits from it (and are therefore potential sources of funding), as well as those who are

excluded from deriving benefits from the protected area but are being asked to 'pay' for the protected area, e.g. through taxes, property loss or foregone opportunities.

For instance, a protected area manager searching for additional financing may realise, in the preliminary stages of a valuation study, that the protected area is not capturing any of the value held by bird watchers using the area. To capture this, the manager might decide to start renting out binoculars and bird-books or to start a fund directed at donations from bird-watchers earmarked for bird conservation efforts. On the other hand, if the bird-watchers are a low-income group and unlikely to be able to pay for the benefits they receive, the protected area manager may approach a potential donor, such as the Royal Society for the Protection of Birds or the Ramsar small projects fund, which may be willing to be a benefactor for the bird-watching group. By knowing the benefits and the groups receiving these benefits, alternative avenues for funding protected areas are indicated.

In another instance, a protected area manager might find that neighbouring people are not deriving any benefits from the protected area and, in fact, have been forced to forego opportunities of using the land for agriculture, forestry or other uses due to the establishment of the protected area. This manager needs to look for alternative management practices that enable the protected area's neighbours to derive some benefit from the presence of the area without compromising its overall conservation objectives, thereby reducing the pressure to convert the land to other uses. Alternatives may be to open the protected area to sustainable harvesting of forest products or to develop local capacity to service tourists visiting the protected area. In this case, identifying marginalised groups and the benefits that they have foregone helps the manager solve conflicts and thus reduce threats.

The possibility of looking for alternative management practices depends on different factors that should be considered as part of the valuation process:

- What is the management category for the area? A Category V or VI protected area has the potential to accommodate a wide range of uses by zoning the resources within the area. A Category I area offers a much more limited array of use options such as research.
- Is the protected area well managed? Capturing the values attributed to a protected area in turn requires the capacity to manage that area to maintain these values.
- Is the protected area attractive enough? As this paper explains there are a number of different kinds of values attributable to protected areas. Tourism and recreation values are particularly attractive to managers because they are relatively easy to capture and because they can be a source of significant funds. But some areas may not have the ability to draw tourists. An economic valuation study conducted at a national level can indicate which areas are most able to obtain funding from tourists and which are not. A system of cross-subsidisation, or a separate funding strategy, can then be used to support wildlife which may be biologically important, but with little appeal to tourists.

Such management and finance decisions are not limited to the local protected area manager. Often decisions, such as increasing access fees and the opening up of areas for new tourist concessions, are considered under national or provincial laws and

regulations on protected areas. The valuation process, however, can inform decisions taken at national and international levels and should provide recommendations on how to enhance the national legal framework for protected areas management.

All governments have limited resources to spend on services for their citizens and must make decisions about how and where to spend these resources. Sectors within government compete for a share of the fiscal budget. Thus protected areas compete with development programmes, health and welfare services, education, and the military, and so forth. Valuing protected areas can provide the economic reasons, to complement the biodiversity ones, why governments – and others – should invest in them.

1.3 The client approach

Governments, donors, tourists and local people decide what goods and services to buy with their money. In economic terms, such groups are the real or potential 'customers' of the goods and services of protected areas: they are the 'clients' of the protected area. Since protected areas supply goods and services in a generally competitive marketplace they are, in an economic sense, businesses facing a complex array of customers who may wish to spend their limited funds elsewhere.

A business is in business to make profits. It makes profits by selling goods and services to customers at a price marginally higher than the cost of producing these goods and services. Though a protected area is in the business of providing biodiversity services, it can use a business approach – profit-centred and entrepreneurial so as to maximise its financial capacity to achieve conservation aims.

To illustrate this client approach, consider some examples of protected areas – a wildlife sanctuary in South Asia, a savannah park in southern Africa, a forest reserve in South America, a protected landscape in Europe or a marine protected area in the South Pacific. All such areas provide a stream of goods and services (benefits) to a host of customers (those who hold a value for the benefits).

What benefits do such protected areas generate and to whom? Are these benefits and their distribution sufficient to ensure that the protected area will be conserved? In particular, do these benefits result in adequate financial flows to maintain the protected area? If not, what measures are needed to generate revenues for managing this protected area and achieve the conservation and development objectives of the protected area?

Think of the customers of the protected area. Think of its neighbours and those living within it as customers. What goods and services do they want from the protected area? Timber to convert into charcoal for fuel? Non-timber products such as fruits and honey? Medicinal plants? Thatching grasses? Do they want access to lands for grazing their livestock or to watering holes during the dry season? Do they want to have access to coral reefs for seafood? What measures are necessary to ensure that the uses they make of protected area resources are sustainable and that they pay for the goods and services provided by the protected area?

Should the neighbouring or resident community be involved in a collaborative management scheme? Can a system of tradable harvesting permits for timber, honey, fish or grasses be developed? What about access rights for grazing, hunting, or watering? How can support be maintained for traditional land use practices which conserve biodiversity?

Alternatively, think of neighbours or residents as a direct threat to the protected area. Their interest in protected area land for intensive farming or ranching may outweigh their interest in conserving the protected area. Is it in their immediate economic interest to convert the protected area to other uses that threaten biodiversity? If so, why? Are there existing measures, such as agricultural or prospecting subsidies or poorly-defined access rights to wild resources, which threaten biodiversity? Are such "perverse incentives" actually encouraging neighbours to destroy the protected area? Are there positive incentives which can be put in place instead?

Now think of commercial customers of the protected area. What goods and services can be harvested sustainably from the protected area and sold on the open market? Tourism, of course, is often an important non-consumptive service. What about the commercial sales of timber and non-timber products, including medicinal and ornamental plants, honey, bush meat, and so on? Does the protected area offer opportunities for hunting or fishing? Is it a prime site for bio-prospecting? Are there potential genetic resources to be harvested? How can such commercial operations be structured to generate revenues for the protected area so as to support the overall goal of biodiversity conservation?

Additionally, there are probably downstream or indirect customers of the protected area. What benefits accrue to downstream communities and enterprises or more generally to the entire country or region? If the protected area serves as a watershed, it provides benefits to downstream water users including farmers, ranchers, miners, manufacturers and villagers. If it is an area visited by people from cities nearby, then it offers a range of benefits (recreational, educational etc.) to urban dwellers. These groups have a stake in conserving the protected area, but do they have any means to express that interest? What measures will encourage and enable them to support the protected area? Can fiscal measures be used to collect revenues from these downstream customers?

Also, consider the global customers of this protected area. Within the mandates of global environmental agreements, the protected area may provide several global benefits. These could include biodiversity conservation, carbon sequestration, habitat for endangered species and migratory species, replenishing fish stock for traditional and commercial fisheries, mitigation of natural disasters and impacts related to climate change, and so on. What measures will enable the global community to support the protected area? Can the Global Environmental Facility (GEF) be used as a means of finance in such cases?

In short, a protected area can provide a diverse array of biological goods and services to a diverse array of customers. Bringing an entrepreneurial, private sector perspective to protected area management – in the first instance, by thinking of customers for protected area products – can help the protected area to sell goods and services in a way

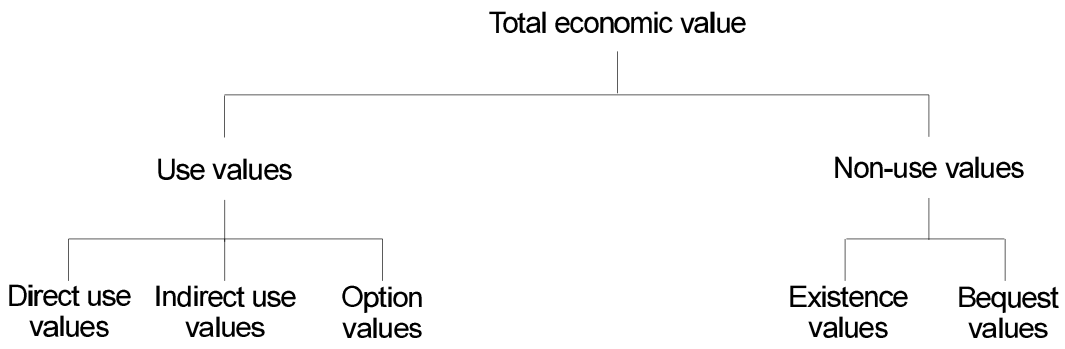
that will strengthen the ability of the protected area to support the conservation of biodiversity and sustainable use of natural resources. Valuation is a tool which can help protected area managers to start thinking like a business manager by providing a structured approach for identifying real and potential customers, estimating appropriate prices for goods and services, and signalling ways of capturing those prices.

2. Economic values of protected areas

Identifying a protected area's goods and services, determining who values those goods and services, and measuring these values is not always a straightforward process. The goods and services include recreation and tourism, plant and wildlife habitat, genetic resources, water supply, protection against natural disasters, and so on. Many of these goods and services are not traded on commercial markets and therefore have no evident market value. The values of non-market goods and services need to be measured and expressed in monetary terms, where possible, so that they can be weighed on the same scale as commercially traded components.

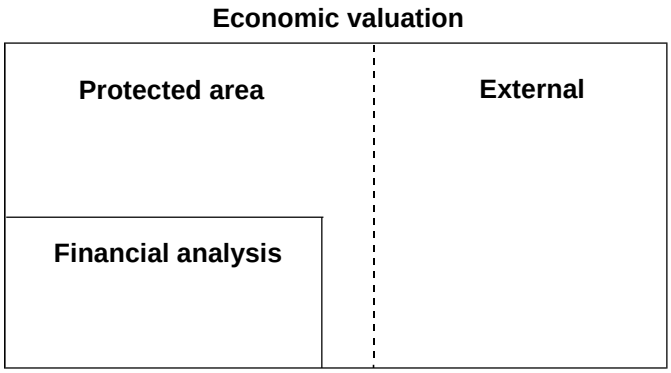
The concept of total economic value (TEV) is now a well-established and useful framework for identifying the various values associated with protected areas. The total economic value of a protected area consists of its use values and non-use values. A protected area's use values are in turn made up of its direct use values, indirect use values, and option values. Non-use values include bequest values and existence values. Box 2 illustrates the relationships between these values, and these terms are explained below.

Box 2. Total economic value



The difference between economic valuation and financial analysis should be made clear at this stage. Economic valuation, based on economic value, measures market and non-market values that people hold for a protected area. Financial analysis is a subset of economic valuation and measures the flow only of money through a protected area. Box 3 depicts the relationship between the two. Though financial analysis is a very useful tool, it may not be the most appropriate for all situations. This guide uses economic valuation as a framework because it captures a broader array of values.

Box 3. Economic valuation and financial analysis



The **direct use values** of a protected area are values derived from the direct use of the protected area for activities such as recreation, tourism, natural resource harvesting, hunting, gene pool services, education and research. These activities can be commercial, meaning they are traded on a market (resource harvesting, tourism and research), or non-commercial, meaning there is no formal or regular market on which they are traded (fuelwood collection and informal grazing). The value of commercial uses will generally be a straight-forward process of directly obtaining market-priced values. However, if these prices are administratively set, they may not reflect the true value for the product. Valuing non-commercial uses is more complex and entails a range of techniques which solicit values for goods and services of a roughly comparable nature from other markets.

The **indirect use values** of a protected area are values derived from the indirect uses of the protected area. Indirect uses are largely comprised of the protected area's ecological functions such as watershed protection, breeding habitat for migratory species, climatic stabilisation and carbon sequestration. Protected areas also provide natural services, such as habitat for insects which pollinate local crops or for raptors which control rodent populations. Indirect use values are often widely dispersed and thus go unmeasured by markets. Alternative valuation techniques discussed later are necessary for measuring them.

The **option values** of a protected area are values derived from the option of using the protected area sometime in the future. These future uses may be either direct or indirect and may include the future value of information derived from the protected area. Future information is often cited as particularly important for biodiversity as untested genes may provide future inputs into agricultural, pharmaceutical or cosmetic products.

Non-use values are values which humans hold for a protected area which are in no way linked to the use of the protected area. Two common examples of non-use values are bequest values and existence values. **Bequest values** relate to the benefit of knowing that others benefit or will benefit from the protected area. **Existence values** reflect the benefit of knowing that the protected area exists even though one is unlikely to visit it or use it in any other way. Non-use values are particularly difficult to measure. Box 4 provides examples of each of the types of values attributed to protected areas.

Box 4. Total economic values of protected areas

Use values			Non-use values	
Direct use value	**Indirect use value**	**Option value**	**Bequest values**	**Existence values**
Recreation	*Ecosystem services*	Future information	Use and non-use values for legacy	*Biodiversity*
Sustainable harvesting	*Climate stabilisation*	Future uses (indirect and direct)		Ritual or spiritual values
Wildlife harvesting	*Flood control*			Culture, heritage
Fuel-wood	Ground-water recharge			Community values
Grazing	*Carbon sequestration*			Landscape
Agriculture	Habitat			
Gene harvesting	Nutrient retention			
Education	Natural disaster prevention			
Research	*Watershed protection* Natural services			

Source: Adapted from Barbier *et al.*, (1997)

The values which appear in italic in Box 4 are likely to be particularly important to protected areas.

This guide has adopted a TEV approach for identifying the array of values that are attributed to protected areas because of its holistic perspective of values. But the reader should keep three things in mind about TEV:

1. TEV is anthropocentric in that the values in the TEV framework are human-held values. The framework does not account for possible intrinsic values of biodiversity. There is a continuing debate within the conservation community over whether nature in general, and species in particular, have values unrelated to humans. This guide recognises that economics cannot fully account for all the values attributed to protected areas or the species reliant on them;
2. there are likely to be conflicting values identified through the TEV. This is because people may very well hold more than one type of value for the goods and services attributed to a protected area which are in potential conflict. One person may value the viewing of an elephant in its natural habitat, while another may value harvesting or hunting the elephant. Any attempt to calculate an actual total economic value for a protected area is likely to be burdened with problems of missing values, conflicting values and double counting; and
3. undertaking a full TEV study is usually unnecessary. Such an extensive exercise would be very costly, time-consuming and difficult. The park manager should be sure however to have measured the values which are most important for his/her needs. Just what kinds of arguments can be made with valuation studies and which values are needed for such arguments is the subject of the next section.

3. A framework for valuing protected areas

Identifying the values which people hold for a protected area may be an interesting intellectual exercise, but without a framework which embeds the values in a broader context, the process is just that – an exercise. A structured assessment process gives purpose and direction to a valuation study and saves time and money in the end. Such a process identifies what the values will be used for, which values are important to measure, and which techniques of valuation are most appropriate. The assessment process proposed in this section involves three basic steps:

1. Define the audience.
2. Determine the scope of the study.
3. Choose the appropriate analytical techniques.

The decisions taken in these steps are interrelated in that the interests of the audience will help to define the scope of the study and the scope will dictate, to some extent, the relevant techniques. Box 5 provides some general guidance about how the audience, the type of analysis and the scope of the study relate.

Box 5. Analytical matrix for protected areas

Audience	Analysis	Scope
local	financial/economic	local area
national	financial/economic	national
global	economic	international

3.1 Define the audience

Before starting a valuation study, the end use and audience for that study need to be determined. Defining the eventual use of the valuation study gives the study a *raison d'être*, enables it to be carried out efficiently and effectively, and ensures that the information arrived at is relevant and clear to those who must use it.

Valuations can be used to procure support for the continued existence of protected areas. But a valuation study can also inform decisions about the management or financing of the protected area. There are many types of decisions which are made by many different groups. Decisions are made about:

- designing and carrying out projects in or adjacent to protected areas;

- designing and carrying out projects which use protected area goods or services;
- designing and carrying out projects upstream to, or downstream from, protected areas which may impact them;
- establishing and implementing sectoral programmes relating to protected areas;
- establishing and implementing policies for protected area management;
- establishing and implementing policies for protected area financing; and
- designing strategic plans at local, regional, national and international levels.

These decisions are made by protected area managers, community members, government officials, sectoral ministries, private enterprise, donor agencies, NGO's, the international community, and more. A brainstorming session with the economist and relevant stakeholders may help the protected area manager to identify the type of decision to be made and the groups that need to be involved.

The type of decision and the nature of the stakeholder groups help determine which values need to be measured and how those measurements should be expressed. For instance, a decision about carrying out a construction project adjacent to a protected area requires information about a set of values different from those needed for a decision about how much global funding to seek in support of maintaining biodiversity in a protected area. Additionally, a group involved in the public enquiry of the construction project will need the information presented in a manner different from a ministry of finance or the GEF.

The perspectives of the relevant stakeholder groups will also influence what is considered a benefit and what is a cost. Assigning the title of benefit or cost is ultimately a subjective process. One person's costs may be another person's benefits. In some cases it may be necessary for a protected area manager to represent what is a 'cost' to taxpayers (civil service jobs) as a 'benefit' to a particular constituency (local communities).

Valuation studies can be expensive and time consuming. But not only is it unlikely to be necessary to measure all the values for a protected area, the values arrived at will not be valid for long. Values which people ascribe to a protected area are like preferences and prices, and thus are likely to change over time. Tailoring the valuation study to suit the particular needs of the decision at hand and the targeted stakeholder groups will make for a more efficient and effective study.

3.2 Determine the scope in terms of the time, data, resources and institutional structure

Having determined what the valuation information will be used for and who will use it, the next step is to determine the appropriate scope for the study. The scope of the study must be defined in geographical, temporal and subject terms.

It is necessary to know what geographical area the valuation study should cover. Protected areas can cover a vast area of land or water, not all of which may be relevant

to the decision-making process. For instance, if a local planner needs to know the impact of an infrastructure project proposed for a site on the north-east corner of the protected area then it is probably unnecessary to measure values of unimpacted goods from the south-west corner. On the other hand, an international donor agency which needs information about the protected area's contribution to the global climate change mitigation is likely to need values relating to the carbon sequestration services of the entire protected area, but not the values of viewing its predators by tourists.

Also, for a valuation study to be relevant, there needs to be a clear idea of the timeline involved in the decision-making process. A valuation study that arrives two years after decisions have been taken is irrelevant – no matter how valid the data. Likewise, the decision-makers using the valuation study need to be realistic about time limitations they impose on the study. The time required to conduct a valuation study depends on the types of benefits being measured, the state and relevance of existing data, the level of measurement required, the amount of certainty desired, the capacity to conduct the study, and so forth. Protected area managers must be realistic about their demands – it is unlikely, for example, that a full contingent valuation study can be done in three weeks – and if time is short, then expectations should be realistic.

Finally, it is important to define the scope of the study in subject terms. That is to say, the scoping stage of the study must identify exactly which values are relevant and should be (and can be) measured. As pointed out in Section 2, people ascribe many types of values to protected areas. The first step to determining which values are relevant is to get a broad idea of the benefits attributed to the protected area and the people who value those benefits – or in other words, the people who are stakeholders in the protected area.

The process of conducting this broad scoping exercise is itself a useful tool for internal management and finance decisions. This is because identifying the various values people hold for the protected area and the groups that derive benefits from the protected area highlights opportunities for obtaining revenues, improving services and minimising exposure to threats. Often the actual measurement of all or some of the values is unnecessary.

Of course, not all values identified through this broad scoping process are relevant to every decision. The next task in the scoping process is determining which values are relevant to the end decision. The type of decision will influence the ranking of the values. For instance, a decision about the impact of a development project on the protected area needs information about the values of goods or services affected by the project – therefore measuring these values should be a priority. On the other hand, a decision regarding alternative uses for the protected area needs information about the most important goods and services that would be foregone if an alternative use were chosen.

It is also important to consider the likelihood of being able to measure the values, and the costs of measuring them. As mentioned before, time and money are likely to be constraints on the study and may limit the types of values which can be measured. This is linked to the next stage in the framework – identifying methods of data collection – because the methodologies used will influence the time required and costs involved.

3.3 Choose the analytical technique

Measuring the direct use values which are traded on commercial markets is likely to be a more straightforward process than measuring the other values attributed to protected areas. This is because the markets have already done the work of eliciting values from the 'customers' of the protected area. The task of measuring these values involves identifying the markets for them, gathering data about prices paid in these markets, and determining the amount of the good or service traded on the market. For instance, the direct use values of tourism could be measured through the direct sales to tourists which may include expenditures on lodging and meals, entrance fees, concessions, rentals, guides and so on. Where prices such as entrance fees are administratively set and not market driven, however, it may also be necessary to estimate the likely market prices.

The markets where some of the direct values associated with protected areas are measured are given in the middle column of Box 6. Indicative methods available to protected area managers for capturing these values are given in the right column. These include collecting rents from those regularly using the land, applying user fees through systems such as hunting or camping permits, charging for access to the land or resources and so on.

Box 6. Markets and some means of capturing direct use values

Benefit	Market	Capturing the values
sustainable harvest	income from sales, market prices for similar goods, proportion of income from final products	user fees, access charges
recreation	tourism expenditures	gate fees, concessions, rents, tax
education	price of alternative courses on offer elsewhere	user fees, interpreter fees, gate fees
scientific	proportion of income from final research products	access charges
national ecosystem services	price of alternative service	tax, user fees

A study which arrives at a value by tracing the flow of money through the official market is termed a financial analysis. A protected area's contributions to the financial transactions of the economy are its financial values. Values which fall outside of these financial transactions – such as many non-use and indirect use values –would not be included in a financial analysis. As is revealed in the case studies in Part II, these are the very values which often contribute significantly to the overall economic value of protected areas.

As emphasised before, the type of decision which the valuation information will be used for, and the people making the decision, have a significant influence over the nature of the valuation study. In fact, the group making the decision may hold a set of priorities far different from the protected area manager and the study may take on an

entirely different perspective because of this. For instance, the Money Generation Model – used by the US National Parks Service to inform local communities of the value of nearby parks – counts jobs and local tax revenues generated by the park among the benefits attributed to it. Treating jobs as benefits can be rational from the perspective of the local community which may indeed see local jobs created by the park and local tax revenues derived from expenditures in the park as direct and indirect benefits attributable to the park. But from the perspective of the park manager who is running the park like a business, jobs and taxes are costs, not benefits. Taxes are, of course, also a cost to the taxpayers.

It is important to know the priorities of the group which will be using the valuation information as this will further affect which values are chosen and how they are presented. For instance, a local community is likely to be more interested in the number of local jobs created by the protected area, rather than the total number of jobs created. On the other hand a national government will be interested in considering employment prospects overall.

Employment may also take on a different significance when the ratio of foreign specialists to local workers is considered. In comparing protected area employment to other uses for which the area could be considered, a preference for work offered to local people may provide added support for the protected area. Alternatively, as is common in many developing economies, emphasis may be placed on the hard currency earnings and this becomes a determining factor.

The process of the **Money Generation Model** is detailed in Box 7 along with some means of adapting the model for international use. As this model is specifically addressing a local community decision of whether or not to support the protected area, it may not provide much useful or appropriate information for a Ministry of Finance deciding how much national funding to allocate to the protected area. Indeed, national government expenditure on the protected area is measured as a benefit in the Money Generation Model rather than as a cost. Nevertheless, such a model offers a simple approach to capturing some of the values of a protected area, for site-specific, local audience situations.

Where markets do not exist, values held by ‘customers’ must be elicited. An array of methods for eliciting both market and non-market values from people for environmental goods and services have been developed over the last few decades. Though still a developing field, some of the more common and widely used methods include:

- contingent valuation,
- hedonic pricing,
- travel cost method,
- change in productivity,
- loss (or gain) of earnings,
- opportunity cost, and
- replacement cost.

Box 7. The Money Generation Model

The Money Generation Model uses protected area-related expenditures from non-local tourists and Governments to determine the neighbouring communities' benefits in terms of jobs and tax revenues. An example from a study of Federal Interest Lands in South Florida done by FAU/FIU Joint Center for Environmental and Urban Problems (Correia, 1995) is used here to demonstrate the model.

Tourism

A. Sales benefits
- 1. Estimated non-local % of protected area use 90%
- 2. Annual recreation visitor day 398,120
- 3. Average daily expenditure $119
- 4. Direct sales (1) x (2) x (3) $42,638,652
- 5. Indirect and induced sales multiplier[1] 1.95
- 6. Sales benefits from tourism (4) x (5) $83,145,371

B. Tax revenue benefits from tourism sales
- 1. Sales benefits (A.6) $83,145,371
- 2. Retail sales tax rate (state and local)[2] 6.5%
- 3. Sales tax revenue benefits from tourism $5,404,449

C. Job benefits from tourism sales
- 1. Sales benefits from tourism (A.6) in millions 83.1
- 2. Multiplier for jobs created per million[3] 41.4
- 3. New jobs from tourism sales 3,440

Federal government expenditures [4]

A. Sales benefits
- 1. Direct sales $18,021,448
- 2. Indirect and induced sales multiplier[1] 1.8
- 3. Total sales benefits (1) x (2) $32,438,606

B. Tax revenue benefits from government related sales
- 1. Sales benefits (A.3) $32,438,606
- 2. Retail sales tax (state and local) 6.5%
- 3. Sales tax revenue benefits (1) x (2) $2,108,509

C. Job benefits from government related sales
- 1. Sales benefits (A.3) $32.4m
- 2. Multiplier for jobs per million dollars 41.4
- 3. New jobs from government expenditures 1,341

[1]Indirect and induced sales multipliers (usually 1.2–2.8 for the US) vary with the complexity of the local community. More isolated areas are likely to have lower multipliers because a larger portion of spending will be conducted outside the area. If this multiplier is small, one option for the community is to devise ways of providing more services and goods for tourists in the area.

[2]The US retail tax system is comprised of state and local taxes. This is unlikely to be the case in many countries and the level of government collecting retail taxes will affect whether or not they can be considered 'local' benefits.

[3]The jobs multiplier will vary from industry to industry and range from 10 to 50 per million dollars in total sales in the US tourism industry. Additionally, rural areas tend to have larger jobs multipliers than towns and cities.

[4]The procedures for calculating the job and tax revenue benefits 'non-local' (State) government expenditures in the protected area follow these Federal Government expenditure procedures. Managers in developing countries may consider including Donor and International Government expenditures in this model.

Source: Adapted from US National Parks Service 1995–1996

The **contingent valuation method** (CVM) uses a direct approach to valuing an environmental good or service in that it asks people through surveys or experiments what they are willing to pay for the good or willing to accept for the loss of the good. The concepts of willingness to pay (WTP) and willingness to accept (WTA) and the issues surrounding their use are discussed in Box 8. Contingent valuation is particularly attractive because it can estimate values where markets do not exist or where market substitutes cannot be found. For these reasons, CVM is widely used to measure existence values, option values, indirect use values and non-use values.

Hedonic pricing uses existing markets – such as the housing or labour markets – to determine the value of an environmental good. The assumption is that property values or wages reflect a stream of benefits, some of which are attributable to the environmental good. The analyst's task is to isolate that value which is attributable to the good. Hedonic pricing can be used to establish some of the more aesthetic values of protected areas as residential property adjoining a protected area is likely to hold a higher value because the protected area is viewed as a benefit. On the other hand, hedonic pricing can be used to value environmental damages, and their effects on property values or wages. Hedonic pricing becomes problematic where alternative markets are distorted or where information about environmental products is not widespread and data are scarce.

Travel cost method also uses existing markets, determining a person's value of an environmental good from what they spend on travelling in terms of time, travel expenditures and entry fees. Travel cost methods are particularly useful for assessing

Box 8. Willingness to pay and willingness to accept

People reveal their value for the benefits derived from a protected area through their willingness to pay (WTP) for those benefits. A person's WTP can be elicited through surveys or surrogate markets. People also reveal their value for an environmental benefit through their willingness to accept (WTA) compensation for foregoing the benefit. In the case of environmental loss, people reveal their values through a willingness to pay to prevent the loss and their willingness to accept compensation to tolerate the loss.

These two concepts of benefit, WTP and WTA, should reveal the same values for the protected area. But empirical studies suggest this is not the case. It is generally believed that this is because people value the things they have more than those things they do not have. Therefore WTP is usually smaller than WTA.

An additional problem arising from the concept of WTP in practice is that people with high incomes can afford to pay more than those with low incomes. This is particularly problematic when valuing a protected area in a developing country which is used by developed country tourists because the tourists will be able to place a higher value on their use and non-use benefits than the local people. In order to compare two such sets of value it may be necessary to measure the two sets of values as a percentage of income. Such a split may also support segmented pricing for local and foreign tourists as is increasingly common in developing countries.

the non-commercial tourism, recreation and leisure values of a protected area. Travel cost methods, however, can be problematic in that they are data intensive, they rely on restrictive assumptions about consumer behaviour (e.g. multifunctional trips), and they are highly sensitive to the statistical methods used.

Change in productivity methods value the goods and services of a protected area by estimating the change in the value of production of a good or service that occurs as a result of the change in land of the protected area. Measuring the change in productivity is particularly useful when trying to discover the ecological values of a protected area. To take an example, a forested protected area is being considered for a clear-cutting operation. As it stands, the forest provides a service to farmers downstream by keeping the river from silting up. The change in productivity method would measure the current level of productivity and estimate its level after the clear-cutting, and calculate the difference between these levels to derive the loss in productivity. This loss is then a value of the protected area as it correctly stands.

Loss (or gain) of earnings methods evaluate the change in productivity of humans resulting from environmental deterioration (or improvement). Such methods may be useful in determining some of the more concrete effects of a change in the regulatory functions of protected areas. These regulatory functions include watershed protection, storage and recycling of organic matter, nutrients, and human waste, and climate regulation. For example, if water quality improvements reduce the levels of disease resulting from poor water quality, then the loss-of-earnings approach can be used to estimate benefits of clean water.

The **opportunity cost approach** provides an estimate of the value of a protected area based on the foregone income of the best alternative use of the area. Measuring the opportunity cost of the protected area can give the manager an idea of the competitive threats to the area. In the case of potential threats from people living adjacent to a protected area, the relevant opportunity costs will be the value of alternative land uses they may prefer, such as farming or ranching. Other interest in the area may come from pressures for industrial or urban development, mining or intensely modified recreation uses.

The **replacement cost approach** can be used to measure the cost of damage done to the protected area by looking at how much it would cost to replace the assets that are damaged. For example, the cost of restoring a protected area could be used as an estimate of the cost of environmental damage to the protected area. These costs are then compared to the costs of preventing the damage in the first place. If the replacement costs exceed the prevention costs then the damage should be avoided.

Case studies in Part II use these and other related methods to determine protected area value. As is evident from the cases, the methods used for a valuation study largely depend on the specific situation of that study and will likely be adapted for the study's specific needs. The methodology for valuing environmental goods and services is continually developing. New methods are devised and old ones amended with every study that is conducted. Deciding on the methods which suit the needs of the study requires imagination and ingenuity. Those described in this section should not be seen as all inclusive, but as an introduction to the possible approaches to valuing protected areas.

4. Conclusion

The potential uses of economic valuation for protected area managers are certainly great and varied. Hopefully this guide has given managers the encouragement and information they need to enlist the skills of a professional economist and embark on a valuation study of their protected area. As has been made explicit throughout this guide, though, such a study must be designed and carried out with a specific purpose in mind. A valuation study will be most useful, effective and efficient when it has a clearly defined purpose and audience – whether it is to secure funding for global ecosystem services from the GEF, to present an economic rationale for a share of the national

Resource Economics within the Natal Parks Board

The Natal Parks Board started the development of its own resource economics expertise some five years ago. At that time, one of our prime protected areas was subject to a mining threat. We felt that unless we would be able to develop sound economic arguments in defence of nature conservation and tourism as a land-use option, we would have difficulties fighting off the threat, and any other future threats that could be anticipated in South Africa's transforming society.

After five years, resource economics is routinely assisting the Board in decision-making by assessing economic values of conservation benefits, and their distribution spatially and among stakeholders, and by recommending ways to optimise these values. The latter can lead to more efficiency by enhancing the economic contribution of protected areas, or to more fairness by creating a more equitable distribution of benefits and costs among stakeholders and regions.

Resource economics perspectives are used at two levels: general advocacy and management support. General advocacy is needed to raise the awareness among political decision-makers and policy makers of the fact that conservation creates a myriad of monetary and non-monetary benefits to a variety of stakeholders, the overall sum of which exceeds the opportunity costs of the state subsidy. Policy and management decisions at all levels draw on resource economic perspectives to quantify the benefits and costs of alternative options, such as various tourism development strategies and pricing policies.

Finally, and perhaps most importantly, the value of resource economics to the Board is reflected in the integration of resource economic thinking and capacity into decision-making at all levels, which ensures that well-balanced and innovative approaches are developed towards the achievement of nature conservation objectives.

Dr G. R. Hughes
Chief Executive, Natal Parks Board

Economic Assessment and Parks Canada

The use of an economic impact assessment to help determine the feasibility of establishing a proposed national park is now accepted as being an important tool for decision makers in Canada. Quite often in the past, from an economic perspective, we found that it was difficult to argue that establishing a national park was a sound land-use decision. The park often faced other land use alternatives such as logging the area's forest, building a dam, or developing a mine, the kind of development projects for which the economic impacts are usually highly visible, often immediate, easily quantified and very appealing.

The ability to predict the economic impacts of a potential national park has proven useful in Canada. By providing decision makers at the local, provincial and national levels with a measurable estimate of the economic benefits that a national park can provide, we can offer stronger arguments for a park's establishment. Of particular importance to us in the business of establishing national parks is the ability of economic assessments to measure objectively and demonstrate such sustainable economic benefits as direct government spending, ecotourism, economic spin-offs to local and regional economies, local job creation, and so on. With this kind of information in hand, Parks Canada's conservation initiatives are better able to hold their own when compared to other land-use alternatives.

Moreover, with 15 new national parks and 25 national marine conservation areas yet to be established before these systems are considered complete, I am convinced that the use of economic valuation will continue to be an essential component of the park establishment process in Canada.

Bruce Amos
Director General, Parks Canada

budget or to identify and develop means for neighbouring communities to derive benefits from the protected area. It is therefore vitally important that the protected area manager understands the array of possible uses for economic valuation, identifies the specific use for a valuation study of their protected area, and conveys that information to the economist so that there is a strong and appropriate framework for the study.

It would be misleading to recommend a single, simple method which will address every issue of every study for every protected area. Instead this guide has attempted to give protected area managers the basic concepts of economic valuation, and a framework for starting to think about a valuation study. By defining the audience, determining the scope, and choosing the appropriate analytical technique, a protected area manager should be able to commission a practical and useful valuation study which will help to guide management and financial decisions. Valuation is a tool which can help protected area managers conserve and sustainably use biodiversity, and more equitably share the benefits derived from that use of biodiversity.