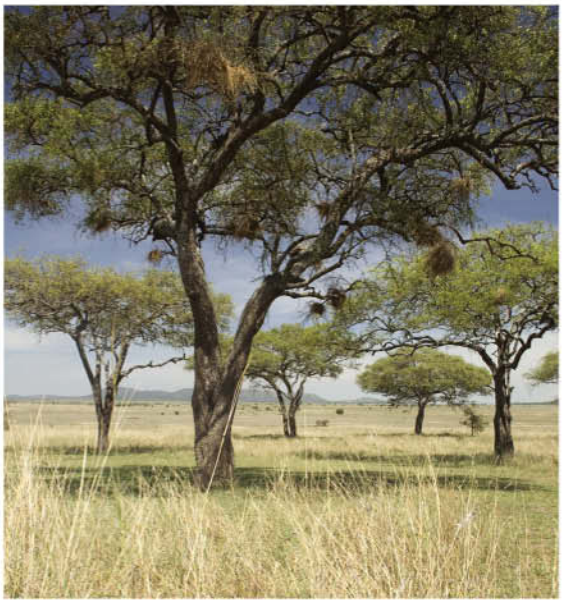
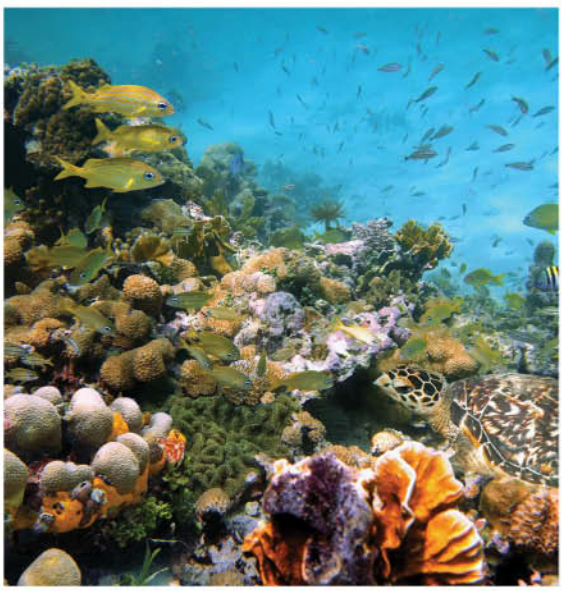


Edited by Marianne Kettunen
and Patrick ten Brink

SOCIAL AND ECONOMIC BENEFITS OF PROTECTED AREAS

An Assessment Guide



SOCIAL AND ECONOMIC BENEFITS OF PROTECTED AREAS

Protected areas (PAs) preserve biodiversity and ecosystems of high conservation value. In addition, these areas provide a range of benefits, both direct and indirect, to our societies and economies, i.e. so-called ecosystem services. These services include, for example, an ecosystem's ability to regulate floods and climate, purify water, secure the pollination of crops, and create opportunities for recreation, culture and tourism.

This book offers a comprehensive introduction to the socio-economic benefits of PAs and PA networks and provides step-by-step practical guidance on identifying, assessing and valuing the various ecosystem services and related benefits provided by PAs. It also aims to improve the communication of PA benefits to different stakeholders and the general public. It is shown that identifying and valuing the socio-economic benefits of PAs can be beneficial for several reasons. Demonstrating the socio-economic importance of a protected site can significantly increase political and stakeholder support for the site and resolve conflicts between different interest groups. This can lead to positive changes in policies and decision-making. Insights on PA benefits are also needed to identify a combination of actions and land use practices that best support the sustainable and equitable utilisation of these benefits, while retaining a site's conservation goals. Finally, demonstrating different benefits can help to discover alternative and sustainable sources for financing the management of PAs.

Marianne Kettunen is Senior Policy Analyst at the Institute for European Environmental Policy (IEEP) and Guest Researcher at the Finnish Environment Institute, Helsinki, Finland with dedicated experience in studies, capacity building and policy influence related to socio-economic role of biodiversity and ecosystem services and supporting the integration of these aspects into decision-making processes.

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SOCIAL AND ECONOMIC BENEFITS OF PROTECTED AREAS

An assessment guide

Edited by Marianne Kettunen and Patrick ten Brink

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'This book is [therefore] extremely welcome, coming at the moment when interest in assessment is higher than at any time before. The team of authors, led by Marianne Kettunen and Patrick ten Brink from the Institute for European Environmental Policy (IEEP), has assembled an impressive global evidence base and practical advice, drawing on years of experience. We urge everyone involved in protected areas conservation to benefit from its guidance and help to promote protected areas as natural solutions to many of the world's sustainability challenges.'

From the Foreword by Braulio F. de Souza Dias, Executive Secretary, Secretariat of the Convention on Biological Diversity (CBD) and Ernesto Enkerlin-Hoeflich, Chair of the World Commission on Protected Areas (WCPA), International Union for Conservation of Nature (IUCN)

'This book presents a timely and practical guide to assessing and communicating the multiple values of protected areas, whether inland or coastal wetlands, drylands, grasslands, forests or marine areas in the open oceans. Essential reading for all wishing to ensure that nature is more fully taken into account in decision making, including all those responsible for managing and maintaining the health of the over 2000 Ramsar Sites worldwide.'

Professor Nick Davidson, Deputy Secretary General, Ramsar Convention Secretariat

'This guidebook is incredibly comprehensive and useful for all practitioners attempting to present socio-economic values of PAs. It will undoubtedly lead to a whole host of new and strong PA valuation studies important for advancing the conservation agenda.'

Andrew Bovarnick, Lead Natural Resource Economist, UNDP

'The Guide provides a very welcome contribution to filling the gap that currently exists in the availability of practical tools and approaches for documenting, analysing and communicating the social and economic benefits of Protected Areas. Economists, conservation planners and policy-makers will all gain from the insights and techniques that are presented. The book is a core resource which will undoubtedly prove useful in strengthening protected area planning and management.'

Lucy Emerton, Director of Economics & Finance, Environment Management Group

'A timely, practical and inspiring guidebook that helps us to value the multiple benefits of protected areas and to communicate them better to local people and decision-makers. A must-read for all protected area managers!'

Sanna-Kaisa Juvonen, Senior Advisor for International Affairs, Metsähallitus Natural Heritage Services, Finland

'This book is an excellent, practice-oriented overview of current methodological approaches and challenges to assess the ecosystem services provided by protected areas. It gives clear indication and guidance how to better understand the potentials and shortcomings of assessing and valuing nature and how these values can be taken up by and communicated to the decision making processes.'

Alberto Arroyo Schnell, Senior Policy Advisor on Biodiversity, Andreas Baumüller, Head of Natural Resources and Land Use and Peter Torkler, EU Policy, WWF

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FOREWORD

In the Brazilian Amazon, meticulous calculation of the economic benefits of carbon sequestration derived from the system of national parks helped to swing public opinion behind the ambitious Amazon Regional Protected Areas programme. In Mexico, rediscovery of *Zea perennis*, a wild relative of corn presumed extinct in the wild for fifty years, led to intensive research in the mountains where it was found, discovery of other economically important crop wild relatives, the creation of a biosphere reserve to ensure their survival and a national surge in conservation initiatives.

We only seem to be capable of valuing what we are about to lose. Recognition of the importance of ecosystem services is growing among governments, international institutions and the corporate sector at the very time when natural ecosystems are disappearing faster than ever. The global protected area network is a critical tool to help stem these losses. Research shows repeatedly that protected areas are effective in slowing, halting and reversing habitat loss within their borders. While as conservationists we like to think of protected areas as a small proportion of natural ecosystems, unfortunately we are forced to admit that in an increasing number of places they contain the *only* natural habitat remaining. This means that inevitably they are important not only for biodiversity but also for local people depending on nature for their livelihood.

This massively increases what is expected of protected areas. Originally set up to conserve wild species and iconic landscapes, many are now also expected to combat climate change, alleviate poverty, and supply ecosystem services that have been degraded beyond their borders such as clean water, stable soils, protection of valuable genetic resources and even day-to-day needs like herbal medicines. Such a long list of expectations puts those managing such areas under extra pressure. But on the plus side, as people recognise that protect areas do "deliver" much more than just nature conservation, the arguments for their creation and maintenance continue to increase.

A thorough social and economic understanding of these benefits can consolidate public support for conservation; and if a figure can be put on ecosystem

benefits, so much the better. Economic benefits are of course not everything: we can't put a dollar sign against many of the aesthetic, spiritual and cultural values of natural ecosystems, nor the ethical duty we have to halt runaway extinction and environmental degradation. But for decision and policy makers socio-economic analysis, relying on a range of qualitative, quantitative and monetary indicators of value, still plays an extremely important role complementing the insights related to biodiversity values. The challenge for the evaluators is that any one protected area can provide many different benefits, and also bring a range of costs that need to be included in the balance.

Protected area agencies are looking for clear advice about how to identify and assess the benefits provided by their ecosystems. This book is therefore extremely welcome, coming at the moment when interest in assessment is higher than at any time before. The team of authors, led by Marianne Kettunen and Patrick ten Brink from the Institute for European Environmental Policy (IEEP), has assembled an impressive global evidence base and practical advice, drawing on years of experience. We urge everyone involved in protected areas conservation to benefit from its guidance and help to promote protected areas as natural solutions to many of the world's sustainability challenges.

Braulio F. de Souza Dias, Executive Secretary, Secretariat of the Convention on Biological Diversity (CBD) and Ernesto Enkerlin-Hoeflich, Chair of the World Commission on Protected Areas (WCPA), International Union for Conservation of Nature (IUCN)

PREFACE

> 'Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul alike.'
>
> John Muir in 'The Yosemite' (1912)

The global network of protected areas is like a web of life underlining our welfare: it will help to keep us fed and to quench our thirst, and it provides us with both tranquillity and entertainment while protecting us from many sources of harm. It is an endless source of inspiration and a living library of life holding a key to scientific knowledge and future innovations. It also maintains an open-access pharmacy and a 24-hour gym that will help to keep us healthy for years to come. However, while the awareness of the value of nature is increasing, there is still a widespread under-appreciation of the variety of social and economic benefits it provides us, especially at the practical level. Nature conservation, including investing in establishing and managing protected areas, is often considered as a hindrance rather than a benefit to increasing our welfare. Work remains to be done to increase understanding of the benefits associated with protected areas, and to demonstrate and take account of their values in concrete decision-making.

Over the past decade we have been closely engaged with the developments related to the mainstreaming of ecosystem services into biodiversity policies and the rise of socio-economic arguments as a tool to promote conservation. During these years we have become increasingly aware that highlighting the social and economic values of biodiversity can help to make a case for investing in protected areas and encouraging due measures to avoid their degradation or loss. At the same time we are conscious that the objective of protected areas – protecting rare, unique species, ecosystems, habitats and genetic resources – and objectives of achieving socio-economic benefits can sometimes work in the same direction and sometimes cause conflicts. However, we feel that the potential positive outcomes of assessing and communicating the benefits merits their systematic assessment while the risk of conflicts can often be addressed by careful planning (e.g. ensuring due zoning of

protected areas) and ascertaining that any assessment of socio-economic benefits is presented in the context of biodiversity values.

We are therefore pleased to have prepared this book, with due engagement of a range of contributing authors and building on more than ten years of assessing, valuing and raising awareness on biodiversity and related socio-economic benefits. We have tried to take a cautious but positive approach as regards to valuation, including considering both monetary and non-monetary assessment of benefits. We have aimed to encourage the development of carefully crafted assessments that build on up-to-date scientific understanding and existing practical experiences, and we have aimed to do that in a manner that is accessible also to a non-academic audience. We hope that this assessment guide supports site managers and others to better understand and systematically identify, assess and communicate benefits associated with protected areas, leading to concrete results such as increasing investment in protected areas and integrating them into local land use and planning.

This book has been motivated by our genuine desire to increase the common understanding of multiple values associated with protected areas and, most importantly, to translate this understanding into concrete actions. We hope that it will be a relevant contribution to the existing knowledge base and advice available, helping to secure the future of protected areas for generations to come.

Marianne Kettunen and Patrick ten Brink

ACKNOWLEDGEMENTS

This book has benefited significantly from the ever-increasing global body of evidence on the socio-economic importance of protected areas. We wish to thank all authors of the individual studies synthesised in the context of this book for their excellent – and often pioneering – efforts to explore, assess and raise awareness of the diverse values of protected areas across the world.

This book also builds on several core studies and initiatives. The concept for and core content of the book is based on the 'Toolkit for Assessing Socio-economic Benefits of Natura 2000' developed as a part of the project 'Financing Natura 2000: Cost estimate and benefits of Natura 2000' financed by the European Commission/ DG Environment (Contract No. 070307/2007/484403/MAR/B2). In addition, the book draws from the work carried out by the authors in the context of The Economics of Ecosystems and Biodiversity (TEEB)[1] and a number of further studies by the European Commission on costs, benefits and overall economic value of the EU Natura 2000 PA network.[2]

We are thankful for the support by the Institute for European Environmental Policy (IEEP) to our endeavour, with special thanks to David Baldock, Claire Froomberg, Graham Tucker and IEEP's board of trustees.

The encouragement and support (review, cooperation, comments, material, inspiration, moral support etc.) of the following colleagues is gratefully acknowledged: Braulio F. de Souza Dias, Sarat Babu Gidda and Markus Lehmann (Secretariat of the Convention on Biological Diversity), Prof. Ernesto Enkerlin Hoeflich and Dr Kathy MacKinnon (World Commission on Protected Areas – IUCN), Prof. Nicholas Davidson (Secretariat of Ramsar Convention on Wetlands), Stefan Leiner (European Commission, DG Environment), Elisabeth Schlaudt (IEEP), Peter Torkler (WWF Germany), Dr Rob Tinch (Environmental Futures Ltd./Iodine SPRL), Sanna-Kaisa Juvonen, Liisa Kajala, Mervi Heinonen and the rest of Metsähallitus Natural Heritage Services team, Dr Joachim Maes and Dr Grazia Zulian (Joint Research Centre of the European Commission), Dr Marius Mayer (University of Würzburg), Dr Pieter van Beukering (IVM – Institute for Environmental Studies), Lucy Emerton, Director of Economics &

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The authors of the individual chapters of this book who heroically – and in retrospect perhaps even ever so foolishly – agreed to embark with us on this journey: Dalia, Nigel, Samuela, Sonja, Sue and Tomas, a sincere thanks for your dedication and hard work, without which this book would not exist.

On a personal note, we thank our family members and friends for their support during the process of composing this volume. Special thanks to Stefan Simis for his encouragement, patience and keeping up good spirits, and to Annikki and Hannu Kettunen for supporting their daughter to work in and experience protected areas around the world. Special thanks also to Catherine Magnant for her continued, unwavering support and Chloé and Éléa ten Brink for being an endless source of joy and inspiration.

Finally, this book is dedicated to all the protected areas around the world and to those maintaining them, safeguarding biodiversity and our well-being.

Marianne Kettunen and Patrick ten Brink (IEEP)

Notes

1 www.teebweb.org
2 http://ec.europa.eu/environment/nature/natura2000/financing/index_en.htm

ACRONYMS AND ABBREVIATIONS

CBA	Cost-benefit analysis
CBD	Convention on Biological Diversity
CVM	Contingent Valuation Method
CWR	Crop Wild Relative
ETS	Emissions Trading Scheme
FAO	Food and Agriculture Organization
FTE	Full-Time Equivalent
GEF	Global Environment Facility
GIS	Geographic Information System
IBA	Important Bird Areas
IE	Income Equivalent
IPA	Indigenous Protected Area
InVEST	Integrated Valuation of Ecosystem Services and Trade-offs
IUCN	International Union for Conservation of Nature
MA	Millennium Ecosystem Assessment
MPA	Marine Protected Area
NGO	Non-governmental organization
NP	National Park
NPP	Net primary production
NPV	Net present value
NTFP	Non-timber forest product
PA	Protected Area
PA-BAT	Protected Areas Benefits Assessment Tool
PES	Payments for Ecosystem Services
REDD	Reduced Emissions from Deforestation and Forest Degradation
RSPB	Royal Society for the Protection of Birds
TEEB	The Economics of Ecosystems and Biodiversity
TEV	Total Economic Value
UK NEA	United Kingdom National Ecosystem Assessment

UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	United Nations World Tourism Organization
WTP	Willingness to pay
WWF	World Wide Fund for Nature
WHO	World Health Organisation

1

INTRODUCTION, OBJECTIVES AND APPROACH

Kettunen, M. and ten Brink, P.

1.1 Introduction

Protected areas (PAs) are established to protect the world's biological diversity (ecosystems, habitat, species and genes) (Box 1.1). In addition, these areas maintain and deliver a range of benefits (direct and indirect) to societies and economies. For example, ecosystems within PAs can provide clean water, maintain healthy populations of pollinators and help to mitigate different natural hazards (floods, drought, wild fires, etc.). In addition, PAs form an important basis for maintaining human health (both physical and mental), creating opportunities for recreation and tourism, and forming cultural characteristics and values. PAs support food security by maintaining crop diversity and species with economic and/or subsistence value. They also play an important role in ecosystem-based approaches to climate change adaptation and contribute to mitigation by storing and sequestering carbon.

The understanding and appreciation of the benefits and related socio-economic values provided by PAs, however, remains limited, particularly in the context of different sectoral policies and practices affecting land use. This is especially the case at the practical level where, rather than a source of local to global benefits, PAs are often perceived as imposing costs or restrictions on communities and economies. While biodiversity values alone might be enough to guarantee support to (and resources for) the establishment and management of PAs, identifying and assessing (e.g. economically valuing) related benefits and socio-economic values can be a useful tool to enhance these efforts. Demonstrating the socio-economic importance of PAs can significantly increase political and stakeholder support for these sites by conveying a clear message on the value of biodiversity and functioning ecosystems to broader stakeholder groups. This support can further lead to positive changes in policies and decision-making. Identification and socio-economic valuation of benefits will also provide useful information for decision-making at a practical level, such

BOX 1.1

Definitions of protected areas

There are two protected area definitions, from the Convention on Biological Diversity (CBD) and the IUCN World Commission on Protected Areas: both convey a similar general message. These definitions encompass several other international classifications, such as natural World Heritage sites and biosphere reserves established by UNESCO.

CBD definition: 'A geographically defined area which is designated or regulated and managed to achieve specific conservation objectives'. (Article 2 of CBD) (CBD, 1992)

IUCN definition: 'A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values'. (updated definition from 2007 in Dudley, 2008)

as advice about local and regional land use planning to support sustainable land use in the area. In addition, demonstrating different benefits associated with PAs – and their related beneficiaries – can help to identify alternative and sustainable sources for financing the management actions. For example, visitors' fees could contribute to covering the management or maintenance costs of PAs. Similarly, municipalities in the vicinity of a protected wetland could financially support the maintenance of the site in recognition of its water purification capacity benefitting.

The understanding of the role nature plays in underpinning human welfare is slowly increasing thanks to initiatives such as the Millennium Ecosystem Assessment (MA 2005) and *The Economics of Ecosystems and Biodiversity* – TEEB initiative (Kumar, 2010; ten Brink, 2011; Kettunen *et al.*, 2011; Bishop, 2012; Wittmer and Gundimeda, 2012). Building on these developments, the Strategic Plan for Biodiversity 2011-2020 adopted in 2010 to implement the UN Convention on Biological Diversity (CBD) outlines that 'By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems' (Aichi Biodiversity Target 2 of the CBD Strategic Plan) (CBD, 2012).

The increased understanding has also led to a more concrete appreciation of how the sustainable use, protection and restoration of nature – including PAs – can be a key to more sustainable and 'greener' economic development (UNEP, 2011; ten Brink *et al.*, 2012). For example, investment in nature conservation can create a range of business opportunities and provide cost-effective solutions for different sectors. In June 2012 the UN Conference on Sustainable Development (Rio+20) agreed to consider green economy as one of the important tools available for achieving

sustainable development and eradicating poverty (UNCSD, 2012), creating further political impetus for more sustainable use and management of nature's capital.

With the increased attention being focused on the benefits provided by nature and PAs increasing, there is arguably a need to provide accurate information and advice to a range of interested stakeholders on how to assess and communicate the values of PAs. Many stakeholders have limited expertise in assessing the socio-economic benefits of nature. It is important to understand that identifying, assessing and valuing such benefits should always be carefully considered, planned and carried out, based on a basic understanding of both ecology and environmental economics (TEEB, 2010). It also needs to be recognised that emphasising the role PAs play in supporting well-being should not be seen as replacing or undermining PAs' focus on biodiversity, nor should it jeopardise their set goals for conservation.

When appropriately applied, an assessment of PA-related benefits and their socio-economic value can be an influential tool for both supporting human welfare and stepping up conservation efforts. Experience shows that PAs demonstrating a high value for society enjoy much greater and more consistent political support, across the political divide, than PAs where these values are unknown or unreported (e.g. Kajala, 2013). Socio-economic assessments can also help to improve PA management efficiency by, for example, identifying areas for investment (tourism and recreation, branding and marketing of PA produces, etc.), helping to develop various forms of payments for ecosystem services, assessing compensation payments for values forgone, encouraging sustainable resource use and supporting zoning of PAs based on different management objectives.

1.2 Objectives, scope and audience

The purpose of this assessment guide is to increase the global awareness of and information on the benefits and socio-economic values of PAs and PA networks. This guide aims to do so by synthesising wide-ranging global evidence on benefits provided by PAs and providing concrete, step-wise and practice-oriented guidance on how to identify, assess and communicate the various benefits, with a specific focus on their socio-economic valuation. The guidance provided is applicable to existing PAs and it can also be used to support the designation of new PAs. In a broader policy context, this guide also aims to facilitate the integration of biodiversity, ecosystems and related services into decision-making processes at global and national levels, supporting the implementation of biodiversity goals for 2020.

This assessment guide is, first and foremost, a consolidated source of information for practitioners involved in the designation and management of PAs at national, regional and local level who are interested in exploring the socio-economic arguments for conservation (regional land use planners, local site managers, landowners and other land users, etc.). These practitioners, who are often trained in biology or wildlife management, nowadays find themselves expected to place PAs into the broader economic and societal context and respond to what must often appear to be a bewilderingly wide range of issues. It is hoped that the guide will

inspire and help these practitioners identify and assess the different benefits and socio-economic 'potential' of their sites, such as possible socio-economic gains achieved by managing sites and land in a sustainable manner. This guide can also be used by a broader audience (decision-makers, researchers, academics, students, etc.) interested in the benefits and socio-economic values provided by biodiversity and ecosystem services, particularly in the context of PAs.

It is to be noted that the guide does not solely focus on carrying out a monetary assessment of the final (net) value of PAs. It rather aims to provide information on different approaches and methods available – qualitative, quantitative and monetary alike – that practitioners can use to highlight the socio-economic importance of PAs, depending on the information and resources at their disposal. It also hopes to help the practitioner put the available estimates into a proper context, and interpret and communicate them correctly. In other words, while this assessment guide helps to gain an overall picture of the benefits and socio-economic values related to PAs, it does not attempt to turn these benefits into a single aggregated monetary value (see Section 1.3 below).

Finally, it is to be noted that this guide does not aim to replace or duplicate existing information on assessing the socio-economic value of biodiversity and ecosystem services, including available guidance on economic valuation. Rather than providing a detailed account of the theory and use of specific economic valuation methodologies, the objective of this publication is to offer a systematic framework and guidance for applying these methodologies in the context of PAs, with due references to key existing literature and (generic) guidance documents.

1.3 Guiding principles

This assessment guide builds on a number of underlining guiding principles that should be kept in mind throughout its application.

Assessing the socio-economic importance and value of PAs does not aim to undermine the intrinsic value of biodiversity. The intrinsic value of biodiversity is separate from the anthropocentrically orientated consideration of PAs' benefits and socio-economic values. Regardless of the recent (policy) focus on the latter, the former still continues to be a reason enough for establishing PAs and investing money in their management (e.g. CBD, 2008; Kettunen *et al*., 2011). However, PAs clearly also play an important role in supporting human well-being and highlighting these arguments can be justified in terms of increasing support for their conservation. There are important synergies between conserving nature for its intrinsic value and protecting the functions that underpin well-being. On the other hand, focusing only on the anthropocentric aspects can lead to overlooking the needs for biodiversity conservation. Finding the synergies while avoiding the possible risks is also part of the guidance in this book.

The identification, assessment and valuation of benefits provided by PAs can be structured and carried out in different ways and using different metrics of value (monetary and non-monetary), depending on the situation. This is also the basic premise of the global

TEEB initiative (TEEB, 2010). Simply recognising (e.g. identifying) the benefits and socio-economic values related to PAs can sometimes be sufficient to ensure their conservation and sustainable use (Step I of this guide). This may be the case, for example, where the spiritual or cultural benefits are a prominent feature of a PA. However, demonstrating benefits in economic terms is often useful for decision-making purposes, for example when trying to determine the full costs and benefits of conservation (including private and public, monetary and non-monetary benefits) (Step II of this guide). Such valuation enables one to identify and address trade-offs between different land use and management choices in a more informed manner by correcting the bias typical of much decision-making today, which tends to favour private wealth and physical capital above public wealth and natural capital (TEEB, 2010). Finally, capturing the benefits and socio-economic values of PAs involves the adoption of mechanisms that incorporate these benefits and values into PA management through different economic incentives and/or price signals (Step III of this guide). This can include payments for ecosystem services (PES) or the creation of new markets for sustainably produced goods and ecosystem services from PAs.

The benefits and socio-economic values related to PAs are manifold and cannot always be captured in monetary terms. The total benefits related to the socio-economic values of PAs consist of different components including, for example, tourism, recreational and cultural heritage value, a site's role in supporting wild pollinators and the value of wild berries and game provided by the site. In practice, only some of these benefits and values can be estimated in monetary terms (see Chapter 3) and therefore the final assessment of the overall value of a PA is always likely to be a combination of different estimates that cannot easily be merged into a single aggregated figure. Consequently, it is considered that the overall socio-economic role and importance of PAs (both for individual and multiple sites) can best – and most accurately – be assessed and expressed through a range of different qualitative, quantitative and monetary estimates, each of which is selected to reflect the value(s) of a specific benefit.

Identified benefits should be used sustainably by respecting sites' overall biodiversity goals and management plans. The socio-economic value of any benefit considered in the context of this guide should be determined on the basis of its sustainable use. This is of particular importance when considering the benefits related to the extraction of PAs' biodiversity resources; estimated values should not be calculated based on non-sustainable levels of producing crops or harvesting timber, fish, etc. In addition, the benefits considered and promoted should be compatible with the objectives and management plans of PAs. In some cases, conflicts between the two might arise. For example, an important wetland for birds could, in principle, be used for mitigating the impacts of floods (i.e. by providing a flood storage area). However, water levels might need to be kept lower than desirable for wetland habitats in order to maximise the area's flood mitigation potential, thus there might be a conflict between the specific conservation goals of the site and its potential to provide benefits for flood mitigation. Similarly, rapidly growing forest plantations are often very effective in sequestrating carbon but they are also rather biodiversity

poor. In a number of cases, possible conflicts could be addressed by delineating different areas within PAs, some focused primarily on biodiversity values (core areas) and other on maintaining and sustainably using different ecosystem services (buffer areas) (see Chapter 15).

Benefits are often linked and these linkages should be understood in order not to overestimate the total value of PAs. Ecological processes, related benefits (ecosystem services and related goods) and socio-economic values are often interlinked (see Chapter 3). For example, provisioning of crops is often dependent on the availability of fresh water, pollinators, flood and erosion control, etc. Therefore, the economic value of pollination and flood and erosion control is already partly captured in the value of crops. Consequently, assessing the total socio-economic value of a PA by simply summing up the different (monetary) value estimates available can lead to overestimating the total value. This problem, called 'double counting', is further explained in Chapters 3 and 12 and it should be kept in mind when interpreting and communicating the valuation results.

1.4 Approach, data, structure and application

The approach adopted in this publication is twofold. First, the assessment guide aims to provide its reader with a basic understanding of the ecological and economic principles and key considerations behind assessing the socio-economic importance of nature (e.g. basic principles of economic valuation) (Part I). Second, building on this conceptual basis, the guide offers a structured approach and guidance for identifying, assessing and communicating benefits related to PAs – including possible methods for determining the socio-economic (e.g. monetary) value of these benefits (Part II). The guidance provided in Part II attempts to be as accessible and practice-oriented as possible, drawing on actual examples and experiences from PAs. However, since the socio-economic valuation of PAs is a relatively new field some sections of the guide might be less applied than others.

The approach builds on identifying various ecosystem services provided by PAs and assessing the benefits of and socio-economic values related to and/or arising from these services. This is because the guide does not wish to target only the tangible and most commonly understood benefits derived from PAs (sustainably harvested timber, crops and game, etc.). Instead, it seeks to draw a specific attention to the more hidden benefits and values related to PAs, such as the socio-economic significance of different ecosystem processes they support (regulation of floods, climate and water quality, etc.). These benefits and values are traditionally overlooked, thus raising awareness of their role is considered of high importance. The identification and classification of ecosystem services, related benefits and socio-economic values is based on the approaches adopted in the context of the key pioneering initiatives, including the Millennium Ecosystem Assessment (MA, 2005), TEEB (2010) and the UK National Ecosystem Assessment (UK NEA, 2011).

The book synthesises a range of existing studies assessing the benefits and/or socio-economic value of PAs around the world. While the authors of this book

have made dedicated attempts to ensure the robustness and accuracy of these studies (e.g. the majority of studies are from peer-reviewed sources) it has not been feasible to carry out a detailed estimate of these aspects for each individual study. Furthermore, while most of the studies used in the book are less than ten years old – to ensure the best possible current relevance of the examples provided – the benefits provided by and/or socio-economic values associated with individual PAs might have changed. Consequently, readers are always advised to refer back to the original source and/or contact the original authors of studies before interpreting examples synthesised in this book and building on them for their own purposes.

The publication consists of three main parts:

- Part 1 'Contextual guidance' provides an overview of the benefits (ecosystem services and related goods) and associated socio-economic values provided by PAs. In addition, Part 1 gives an introduction to the general contextual framework for and principles of economic valuation in the PA context.
- Part 2 'Practical guidance' provides a structured framework and practical guidance for identifying, assessing and communicating the benefits and socio-economic values related to PAs. This part consists of three main steps that are summarised below.
    - *Step I: A (rapid) scoping assessment of possible benefits*. This first step shows how to carry out a rapid, first-stage scoping assessment of the possible benefits (ecosystem services) provided by PAs. This preliminary assessment 1) helps to obtain a general view of the full range of benefits provided by a site, including an initial assessment of their relative socio-economic importance and 2) helps to identify which benefits/ecosystem services could be selected for further in-depth analysis and valuation (Step 2). Step I is supported by a concrete example of the application of rapid assessment made available in Annex 1.
    - *Step II: Detailed socio-economic valuation of benefits, including step-wise guidance*. The purpose of this second step is to provide more specific guidance on methodologies available for estimating the socio-economic value of PA-related benefits. The introduced methodologies are used to derive estimates on the qualitative, quantitative and monetary value of different services. Step 2 focuses specifically on value estimates considered feasible to be obtained by practitioners, such as site managers and other interested stakeholders. Step 2 is supported by a detailed stand-alone, step-wise guidance for socio-economic valuation of key ecosystem services and related benefits (Annexes 2 to 6). These step-wise guidance documents are supported by concrete case study examples of using the methods in practice.
    - *Step III: Guidance on how to interpret and use the results of socio-economic assessments*. This step provides general guidance on using the results of valuation(s). In particular, Step 3 aims to assist in understanding the robustness of value estimates and using the different estimates to form an

overall picture of the total socio-economic importance and value of the site. In addition, advice on communicating the results to different relevant stakeholders and using them to support PA management is provided.

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