Visitors Count!

Guidance for protected areas
on the economic analysis of visitation

With the generous contribution of:

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Short summary

The importance of measuring the economic impacts of tourism in protected areas

The value of protected areas is often hidden from direct view. Once managers understand the number and behaviour of visitors they host, and the revenues and costs they generate, informed decisions on management plans and tourism strategies can be made.

Demonstrating the positive impact of protected areas on the local economy can lead to greater buy-in and ownership of conservation practices and places, less poaching and land encroachment, and may also help offset some of the human-wildlife conflict where it occurs.

Drawing on case studies from around the world, Visitors Count! aims to build awareness, knowledge and capacity internationally on how to best undertake economic evaluations of tourism in protected areas, and thereby contribute towards a globally acknowledged standard methodology.

93%
of natural World Heritage sites provide recreation & tourism benefits

"Since wars began in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed"

Foreword

After years of preparation, the year 2020 was supposed to become the "super-year" for biodiversity as the Parties to the UN Convention on Biological Diversity (CBD) were set to adopt the so-called Post 2020 Global Biodiversity Framework (GBF), establishing goals and targets to underpin the 2050 vision "Living in Harmony with Nature", which states that "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

Although the COVID-2019 global pandemic has interrupted the development process of the GBF, 2020 showed that more than ever that healthy ecosystems and functioning natural systems are key to human well-being.

Protected areas, including internationally recognized areas such as UNESCO World Heritage sites, UNESCO Biosphere Reserves and Ramsar sites, are important elements of national and international conservation policies and actions and contribute significantly to the 2050 vision. Protected areas are also key natural resources and deliver a multitude of essential ecosystem services and economic benefits to people. They are central to achieving the Sustainable Development Goals 14 and 15 and contribute to many others.

However, the value of protected areas is often hidden from view because services appear to be available for free in unlimited quantities. This is why, despite legal requirements for conservation, their value is often not sufficiently considered in societal and economic decision making. This has far reaching consequences, for protected areas are only able to provide their valuable services sustainably if the processes and functions that are essential for these services are safeguarded.

These guidelines aim to provide a standardized approach for measuring economic impacts of tourism in protected areas, in order to help national stakeholders, protected area managers and researchers to count visitation consistently, and also to reliably evaluate its economic impacts. The guidelines contain methodological guidance on consistent visitor counting and surveys, while explaining how economic analysis works and how to apply this analysis in the protected area context. Guidance on reporting and communicating the results is also provided, as a way of using the findings to adapt protected area tourism management strategies.

Technical guidance on how to perform the evaluation of socio-economic benefits of tourism in protected areas has successfully been established, tested and implemented in some countries during the last year – a wealth of information and knowledge on which this publication builds on.

Such an evaluation of economic impacts of tourism in protected areas is increasingly needed to justify the establishment or maintenance of protected or to demonstrate the value to society. Findings of such analysis have also proven to be extremely important for the communication with local communities and businesses. The money visitors spend on protected area entrance fees, tours and activities, accommodation, food and drink, craft, and other products and services can be substantial. By establishing the level of visitor spending, evidence can be gathered to illustrate the economic contribution and impact of protected area tourism.

As this publication highlights, the ecosystem services provided by protected areas include important recreation values: 93 % of all natural World, Heritage sites have been found to provide benefits related to recreation and tourism and 56 % to contribute to local economies through tourism. The need for such evaluations has recently been reinforced by the global COVID-19 pandemic which has changed the scenery significantly. All across the world, parks have closed down and visitor numbers reduced to almost zero. This has resulted in a declining demand for tourism products and services and thus in a loss of enterprises and income for local communities who depend on tourism and related facilities for their livelihoods. For example, most World Heritage sites at some point in the crisis have been partially or completely closed to visitation in the 167 countries with listed sites, resulting in potentially significant impacts for surrounding communities. On the other hand, protected areas where access has not been restricted – especially

those located near densely inhabited urban areas – have experienced a locally and temporarily strong increase of visitation - sometimes putting great stress on both local infrastructure and biodiversity values.

Thus today more than ever, evaluating and understanding the economic impact of tourism in protected areas to local and regional economies is therefore not only key to designing government responses to the current crises but also for the long-term effective management of protected areas world-wide.

This guidance document aims to build awareness, knowledge, and capacity internationally on how to best undertake economic evaluations of tourism in protected areas, and thereby contribute towards a globally acknowledged standard methodology.

We believe that it will serve as a key resource for protected area managers, site managers and their respective natural and cultural heritage agencies, practitioners, academia and consultancies, as well as international stakeholders and donor agencies.

We thank all the authors and contributors to these guidelines and especially the European Commission Joint Research Centre's BIOPAMA project and the University of Würzburg for their kind support for this important work.

Dr. Mechtild Rössler (UNESCO)
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Acknowledgements

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Glossary[1]

Term	Definition
Biosphere reserve	Areas that form part of an international network of ecosystems by UNESCO, and which promote biodiversity, conservation and its sustainable use, along with interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems.
Community	A social group of any size whose members reside in a specific locality, share government and may have a common cultural and historic heritage/s. It can also refer to a group of individuals who interact within their immediate surroundings, exhibit cohesion and continuity through time, and display characteristics such as social interaction, intimacy, moral commitments, multi-faceted relations, and reciprocity.
Concession fee	User fees that concessionaires pay for the exclusive right to use the protected area to conduct business. They may take the form of a direct fee, performance bonds, fees for maintenance, and fines for breaches.
Concession; concessionaire	A contractual arrangement granted by the protected area management authority that gives an entity (usually a for-profit company) the exclusive right to offer specified services in a protected area. The entity is referred to as a concessionaire (also spelled concessioner).
Differential pricing	A system that involves setting prices based on demand, such as charging more for a lakeside campsite or a higher entrance fee during peak season.
Direct (economic) effect	Direct economic effects of protected area visitors are changes caused by visitor spending in businesses that sell directly to visitors. They include effects on income, jobs, value added, output, and taxes etc. Direct economic effects are to be distinguished from indirect and induced economic effects.
Economic activity	Money spent within region that is attributable to a given industry, event, or policy. [2]
Economic benefit	A net increase in total social welfare. Economic benefits can include both market and non-market values. [3]
Economic contribution	The gross change in economic activity associated with park visitor spending within a regional economy. Economic contribution can be interpreted as the relative magnitude and importance to regional economies of the economic activity generated through total visitor spending. Total visitor spending includes spending by both visitors that live within the local region and visitors who travel to the park from outside of the local region.[4]

Term	Definition
Economic effect	Economic effects are described in terms of "effects" or changes on the economy such as on income, jobs, value added, taxes, etc. Economic effects can be distinguished into direct, indirect, and induced economic effects.[5] Note that sometimes this term is used in literature to describe either economic impacts or economic contributions.
Economic effects analysis	Economic effects analyses describe the interrelationships between economic sectors and estimate how changes in economic activity ripple through regional economies to create or support additional economic activity. It is used for both economic contribution and economic impact analysis.[6]
Economic impact	The net economic changes to the regional economy generated by new money brought to the local economy resulting from a policy change that increases (or decreases) visitor expenditures flowing into the local economy from non-local (non-resident) visitors to the protected area.[7]
Entrance fee	Charge to visitors simply to enter the protected area.
Expenditure / Spending	The amount of money that protected area visitors spend during their stay in a defined protected area region. This often includes the protected area as well as communities surrounding the protected area. It does not include visitor spending before arrival, or after their return such as on their airfare, petrol, rental cars, train tickets or tour operator fees.
Indirect (economic) effect	The economic activity generated when directly affected businesses buy goods and services from other businesses within the local region. The cycle of spending ripples backward through the supply chain until all money leaks from the local economy.[8]
Induced (economic) effect	The changes generated through household spending of personal income received directly or indirectly from tourist spending. For example, spending by employees of tourist lodges on meals, gas, etc. supports additional jobs in non-tourism businesses, and therefore allows additional rounds of local spending across a broad range of economic sectors.[9]
Leakage	Some products that visitors buy during their visit may include imported souvenirs or imported food and beverages. The money spent that is not retained locally is called a leakage.[10]
Length of stay	Describes the length of time the visit lasts, measured in minutes, hours, or days. For visitor spending effects, length of stay in and around the protected area is an important variable.
Local community / host community	The community or communities of residents living near (and sometimes within) a protected area. Host community is synonymous.
Monitoring	A coordinated effort to track current conditions of visitor use and evaluate the efficacy of management actions in a protected area.

Term	Definition
Multiplier	A coefficient used to convert spending by visitors into the value of associated income and jobs and its circulation in the regional economy (i.e. the indirect effects and induced effects).
Nature-based tourism	Forms of tourism that use natural resources in a wild or undeveloped form. Nature-based tourism is travel for the purpose of enjoying undeveloped natural areas or wildlife.
Protected area	A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve long-term conservation of nature with associated ecosystem services and cultural values.
Recreation	Activities by visitors to protected areas undertaken either for enjoyment, physical and mental challenge, enrichment and learning, or a combination thereof.
Regional economic effects	Direct output is the sum of gross sales and change in inventory value (i.e. stock's value) in hotels, restaurants etc. Value added equals company profits, paid salaries, indirect business taxes and change in stock. Tax is the amount of taxes generated by the total economic effects. Labor income refers to a proprietor's income, salary income and wages. Employment means the number of jobs supported by visitor spending, including full-time, part-time and seasonal jobs. Household income refers to the income, salary income and wages generated by a complete household. Income equivalent means the number of (household) persons supported by visitor spending (including all non-employed persons and other household members who have to be provided for).[11]
Same day visitor	A visitor whose trip to the area does not include an overnight stay. The overnight stay takes place in another region.
Secondary effect	The sum of indirect and induced effects.[12]
Stakeholder	Persons or organization possessing direct or indirect interests and concerns with respect to land, water, and natural resources, but who do not necessarily enjoy a legally or socially recognized entitlement to them.
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Sustainable financing	Financing for protected areas that is long-term and dependable.
Sustainable tourism	Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities.
Total effect	The sum of direct, indirect, and induced effects.[13]
Tourism	The activities of persons travelling to and staying in places outside their usual environment for leisure, business and other purposes. (It includes persons travelling for not more than one consecutive year, when they become a resident).

Term	Definition
Tourist	A visitor (domestic, inbound or outbound) whose trip to a protected area includes an overnight stay.
User fee	Charge to visitors for taking part in an activity (such as going on a guided walk) or engaging in a particular use of the protected area's facilities or resources (such as staying at a campground).
Value chain	A sequence of related business activities from the provision of specific inputs for a particular product to primary production, transformation, marketing and up to the final sale of the particular product to consumers.[14]
Visit	A measurement unit involving a person (visitor) going to a protected area for recreational purposes.
Visitor	A visitor is a person who visits a protected area for the primary purpose of recreation, for example hiking, fishing, or mountain biking. Persons who work in a protected area or who live permanently within a protected area are not visitors.
Visitor characteristic	In the context of economic effects analyses, visitor characteristics may include the length of stay in the protected area region, the number of trips made to the protected area, group size (or party size), the importance of the protected area as a reason for the trip, activities participated in, and demographic and socioeconomic characteristics.
Visitor count / numbers	The number of visits to a protected area for recreational purposes.
Visitor days	The total number of days that visitors stay in the protected area. This can be defined by the number of hours that describe one day (e.g. a day is described as 24 hours in Finland).[15]
Visitor hours	The total length of time, in hours, that visitors stay in the protected area.
Visitor nights	The count of persons staying overnight in a protected area.
Visitor spending	The total consumption expenditure made by a visitor, or on behalf of a visitor, for goods and services during his/her trip and stay at a protected area and its surroundings.
Visitor use	Any activity by visitors in a protected area.
Willingness to pay (WTP) survey	A type of research study in which respondents are asked to specify how much they are willing to pay to see that some sort of action is carried out (or not), or some condition is maintained, in a protected area.
World Heritage site	An international system of protected areas, created under the World Heritage Convention, which is intended to include the world's most outstanding examples of natural and cultural heritage.

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Mosi-oa-Tunya / Victoria Falls, Zambia and Zimbabwe ©SAPhotog/Shutterstock.com*

Preface

The idea for this guideline arose at a workshop supported by the German Federal Agency for Nature Conservation (BfN) that was held in September 2015 in Wilhelmshaven Germany.[16] At this meeting, around thirty international experts discussed the basic requirements for reliable monitoring of tourism in protected areas. The discussions highlighted the need to share experiences and make approaches available and confirmed the need to develop guidelines with a standardized approach for measuring economic impacts of tourism in protected areas. Experts from the Convention on Biological Diversity (CBD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Centre confirmed the need for such guidance. It was envisaged that developing standardized guidelines would help with:

- Comparability of visitor counts and economic impact results
- Transparency and clarity of the advantages and disadvantages of methodical approaches, and
- A better understanding of deficiencies and difficulties that hinder practitioners.

Wilhelmshaven meeting participants: Nabin Baral, Susanne Becken, Catherine Cullinane Thomas, Peter DeBrine, Marine Deguignet, Paul Eagles, Barbara Engels, Joel Erkkonen, Stephen Espiner, Christiane Gätje, Michael Harbrow, Oliver Hillel, Hubert Job, Michael Jungmeier, Lynne Koontz, Bernard Lane, Maria de Lurdes Serpa Carvalho, Marius Mayer, Daniel Metzler, Joseph K. Muriithi, Manoj Nair, Niklas Scheder, Evegny Shvarts, Anna Spenceley, Peter Südbeck, Mel Turner and Manuel Woltering ©BfN/Barbara Engels

Subsequently a small working group within the IUCN World Commission on Protected Areas (WCPA) Tourism and Protected Areas Specialist Group (TAPAS Group) was created to bring the guidelines forward. A second expert workshop was held on 'Best practice guidelines on economic evaluation of tourism in protected areas' in May 2017, at the International Nature Conservation Academy on the island of Vilm, Germany. Here the participants shared recent developments in their respective countries and organizations and shaped the structure and key concepts that should be incorporated in these guidelines.

Couched in the thinking from these meetings, these guidelines have been written by the Vilm participants, and other TAPAS Group members who joined the voluntary writing team subsequently.

Vilm meeting participants. From left to right: Liisa Kajala, Manuel Woltering, Marius Mayer, Catherine Cullinane Thomas, Jan Philipp Schägner, Anna Spenceley, Niklas Scheder, Barbara Engels, Daniel Metzler, Joel Erkkonen, and Thiago Beraldo Souza. ©BfN/Barbara Engels

1.1   Dedication

This guideline is dedicated to the memory of Dr. Daniel Metzler – one of the contributing authors – who passed away during the compilation of this guideline. Daniel's two main research interests were the application of economic science in protected area management regarding new methods in regional economic impact measurement of nature-based tourism to German parks, and also the question of sustainability and transportation in the German tourism industry. Daniel worked as GIS-consultant and market-researcher before he was appointed Professor at the University of Applied Sciences in Heilbronn from where he later on shifted to the University of Applied Sciences in Munich – each time as member of the Faculty of Tourism.

Daniel was an excellent as well as highly respected academic teacher known to be strongly devoted to his students, making himself available to them at all times. Furthermore, Daniel was an exceptional researcher who laid with his innovative doctoral thesis the cornerstone for a German socio-economic park monitoring system. It is our hope that the latter will continue as a lasting legacy of Daniel's pioneering work, including through his contribution to this guideline.

**In memoriam
Prof. Dr. Daniel Metzler
University of Applied Sciences Munich,
Department of Tourism
24.01.1976 - 24.01.2018**

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Introduction

Globally, the establishment of protected areas is a widely accepted tool for biological conservation.[17] Protected areas are primarily dedicated to the protection and enjoyment of natural or cultural heritage, the conservation of biodiversity, and the maintenance of ecological life-support services.[18] They also play an essential role in people's health and well-being,[19] and many provide environmentally friendly and socially responsible destinations for tourism.[20] Furthermore, protected areas need to involve people – particularly local stakeholders – in decisions and processes for sustainable development.[21]

Since the 1960s, there has been more than a 15-fold increase in the number of protected areas globally.[22] By 2016 there were 202,467 terrestrial and inland water protected areas recorded in the World Database on Protected Areas (WDPA), covering 14.7% (19.8 million km^2) of the world's terrestrial extent of ecosystems, excluding Antarctica. There were also 14,688 Marine Protected Areas (MPAs) recorded in the WDPA, covering 4.12% (14.9 million km^2) of the global oceans, and 10.2% of coastal and marine areas under national jurisdiction.[23] By 2019 the proportion of terrestrial protected areas had increased to 15% of the world's land, while marine protected area coverage had risen to 7.8% of the planet's oceans.[24]

Many protected areas include iconic ecosystems, habitats of charismatic species, scenic landscapes and prominent cultural landscapes. These features may attract visitors to enjoy the sights, sounds and experiences offered. Protected areas with tourism attractions may provide unique value propositions, even if they are peripheral in political or social agendas, or if they lack infrastructure and services of other regions. These characteristics provide the opportunity for mutually rewarding cooperation between nature conservation, local economic development, and nature-based tourism.[25]

In today's societies, an economic perspective of protected areas has grown in importance, and political agendas are increasingly driven by the desire for sustainable long-term growth. Tourism in protected areas represents one of the economic opportunities that can help to achieve the joint objectives of sustainable local livelihoods and biodiversity conservation. Globally, tourism in 2018 accounted for 10% of global gross domestic product (GDP), 7% of world exports and one in ten jobs.[26] Worldwide, protected areas are estimated to receive about eight billion visits per year, which generate approximately USD 600 billion in direct incountry expenditure and USD 250 billion in consumer surplus value.[27] As important natural and cultural resources, the designation and maintenance of protected areas is often linked to requirements to provide added economic value and opportunities for the region. This is particularly important in developing countries, where there may be extreme pressures for land within protected areas to be used for other purposes (e.g. where there are high population densities, and where local people need land to grow food). Furthermore, governments have to balance budget requests from protected areas with other priorities of their people, such as health, food security, job creation and education. Protected areas can use tourism opportunities to generate additional revenue to reduce their financing gap in order to improve their conservation management effectiveness. Globally, the estimated resource needs for a representative and well-managed protected area system are between USD 34 billion and USD 79 billion per year.[28] Meanwhile, the protected area costs and benefits manifest at different spatial scales: for example, the opportunity costs of protected areas are often local (e.g. human wildlife conflict; restrictions on natural resource use), while the conservation benefits generate both local and global contributions to biodiversity (e.g. providing places for plant and animal species to live[29]).

Tourism in protected areas has the potential to generate tangible economic impacts, mainly from the money that visitors spend. Their expenditure on protected area entrance fees, tours and activities, accommodation, food and drink, craft, and other products and services can be substantial. By establishing the level of visitor spending, evidence can be gathered to illustrate the economic contribution and impact of protected area tourism.

However, it is important to recognize that not all protected areas are suitable for tourism. This may be due to their level of protection (e.g. see the IUCN Protected Area Categories in Table 1), the ecological or cultural sensitivity of habitats, challenging accessibility, or security issues. Also, the tourism potential of any protected area depends on a series of factors, including location, attractiveness, uniqueness, accessibility, market demand, proximity to other popular tourism destinations, marketing, presence of local tourism businesses and infrastructure.

Table 1: IUCN Protected Area Categories and their approach to tourism and visitor use[30]

IUCN protected area category	Primary goal and protected value(s)	Approach to tourism and visitor use
Ia) Strict Nature Reserve	Biodiversity or geoheritage protection (ecological and scientific values)	Public access only possible through organized scientific, citizen science or volunteer service programs
Ib) Wilderness Area	Protection of the natural character and condition of unmodified or slightly modified areas (wilderness and ecological values)	Low-density, self-reliant visitor use is often a management objective Restricted public access in terms of amount of use, group size, activity, etc. Tourism activity limited and highly regulated (e.g. through special use permits)
II) National Park	Protection of an ecosystem and its large-scale ecological processes (ecological, recreation and community values)	Visitor use and experience are often a management objective A range of recreation opportunities typically provided through zoning, facility development and visitor services (countries have marked differences in their attitudes to tourism accommodation within protected areas)
III) Natural Monument	Conservation of specific natural features (ecological, recreation and community values)	Visitor use and experience are often a management objective Recreation opportunities are typically provided to facilitate feature protection and public understanding
IV) Habitat/ Species Management Area	Conservation through management intervention (ecological, community and recreation values)	Recreation, visitation and commercial tourism are usually management objectives A range of recreation opportunities is provided with associated facilities and services Commercial tourism common for wildlife viewing
V) Protected Landscape/ Seascape	Landscape / seascape conservation (community, ecological and recreation values)	Tourism is usually a management objective A range of recreation opportunities is provided with associated facilities and services Commercial tourism common
VI) Managed Resource Protected Area	Sustainable use of natural ecosystems (community, recreation and ecological values)	Recreation visitation and commercial tourism can be key objectives A range of recreation opportunities is provided with associated facilities and services Commercial tourism common

Considerable efforts have been made to establish tools to evaluate tourism's contributions and impacts. Generally, these efforts have formed parts of comprehensive monitoring systems of broader sustainable development endeavors, underlined by the monitoring and reporting obligations under the different international conventions and programs. For example:

- The Sustainable Development Goals (SDGs) adopted by the United Nations in 2015, explicitly speaks to the role of sustainable tourism, and aims to "*Develop and implement tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture and products*" (Target 12b).[31]

- Under the Convention on Biological Diversity (CBD), countries are not only requested to evaluate ecosystem services in general, but more specifically Decision XII/11 (1c) asks them, "*To monitor and review recreation, visits and other tourism activities in protected areas, as well as impacts and relevant management processes in ecologically sensitive areas, and to share results through the clearing-house mechanism and other relevant mechanisms.*"[32]

- The United Nations Educational, Scientific and Cultural Organization's (UNESCO) "*Policy for the integration of a sustainable development perspective in the processes of the World Heritage Convention*" calls on States Parties to "*Adopt adequate visitor management planning that also encourages local tourism and implement socio-economic impact assessment prior to the approval of tourism projects associated with World Heritage properties.*"[33]

- International guidelines for the UNESCO World Network of Biosphere Reserves require evaluation of the reserves and their associated facilities every decade. In doing so, one must evaluate the impact on biodiversity, as well as approaches of sustainable regional development.[34]

In this context, nature-based tourism can generate additional value by providing exceptional nature experiences and recreational activities, while contributing to sustainable development, revenue sharing with local communities, and conservation.[35]

Whilst the evaluation of economic impacts of tourism in protected areas is increasingly needed to justify protection in light of other competing land use options (e.g. agriculture or mining), or to argue the "value" of protected areas for society, many stakeholders still lack reliable economic data

or knowledge of applicable methodologies to provide this information.

Meanwhile, protected area managers, protected area agencies and research partners have been able to establish and implement well-tested methodologies. Although these methodologies might differ in their details across the world, they tend to have a similar basis. Notwithstanding their great achievements, a standard methodology has so far not been available for consistent application.

These guidelines aim to provide a standardized approach for measuring economic impacts of tourism in protected areas, in order to help national stakeholders, protected area managers and researchers to count visitation consistently, and also to reliably evaluate its economic impacts. It is envisaged that they will be able to use their visitor counting and economic data to improve their management practices, and also enhance the effective and efficient use of limited resources. On a national and international scale, a standardized approach will also help fulfil international reporting requirements to global conventions. Only a globally consistent methodology for data gathering will allow stakeholders to compile and compare regional and global data sets.

The **target audiences** for these guidelines are protected area managers, site managers and their respective natural and cultural heritage agencies, practitioners, academia and consultancies, as well as international stakeholders and donor agencies.

These guidelines **aim** to build awareness, knowledge, and capacity internationally on how to best undertake economic evaluations of tourism in protected areas, and thereby contribute towards a globally acknowledged standard methodology.

The **objectives** of this guidance are to provide readers with a better understanding of the following:

- Essential knowledge about evaluation of economic effects of tourism in protected areas: including visitor counting and economic evaluation of tourism;

- How to do visitor counting and surveys properly, and consistently;

- How economic analysis works, and how to do it;

- How to best report and communicate findings; and

- How to use findings to adapt protected area tourism management strategies sustainably.

The methodological approaches presented in this document have been developed and tested in different protected areas around the world, including national parks, protected landscapes, UNESCO World Heritage properties and UNESCO Biosphere Reserves. The guidance can be applied to any protected areas with tourism – irrespective of the governance type and legal status of the protected area. They may be used in both natural and cultural sites, because the basic approaches for visitor counting and visitor spending are the same in each. It is important to recognize that the methodologies described here are limited to evaluating the overall economic effects of tourism, and do NOT explicitly measure levels of sustainability of specific economic effects for local communities or other individual beneficiaries. Other tools are required for that form of evaluation, and the IUCN Best Practice Guidelines on 'Tourism and Visitor Management in Protected Areas'[36] is a useful resource that describes many of these.

In short: This guidance aims to share a practical approach for the evaluation of the economic effects of tourism in protected areas, rather than making readers experts in economic analysis. It also provides selected best practice examples and links to resources of more in-depth reading.

Box 1: Gender issues in visitor monitoring and economic impact analyses of protected area tourism

The tourism sector is prone to inequality between women and men.[37; 38] The importance of gender equality and women's empowerment is recognized by various policy documents such as the Millennium Development Goal (MDG3)[39], the UN Sustainable Development Goal (SDG5)[40] and 2015-2020 Gender Plan of Action of the UN Convention on Biological Diversity (CBD).[41] Consequently, a gender perspective, which includes the different roles, rights and opportunities of men and women concerning access, use, and management, is of major importance when developing protected area tourism strategies.[42] With respect to tourism in protected areas, the gender perspective mainly relates to two issues: (1) Equal access, participation and quality of the recreational experience, and (2) equal access and participation within the tourism business sector.

Issue (1) means that a gender perspective needs to be considered when conducting visitor monitoring and economic impact analyses of protected area visitation. For example, visitor counting (see chapter 4) should record the gender of protected area visitors. While empirical evidence is scarce, some studies from Germany and the USA[43] show that women and men visit protected areas almost equally (e.g. 52.3% of German visitor days are attributed to women[44]). However, this must not be the case in every protected area. Guaranteeing equal and safe access to protected areas for women, as well as gender-balanced supply of recreational activities, is crucial. Gender-sensitive visitor monitoring may support developing gender balanced tourism strategies. For example, visitor surveying (see chapter 5) should avoid underrepresenting females in their samples. To overcome this, members of groups can be randomly selected to complete questionnaires, so that there is fair chance of either men or women being selected (e.g. the adult with next birthday from a visitor group participates).[45] Another aspect to consider is whether there are gender-specific differences in visitor spending. While past research indicates that gender does not influence spending, some analyses do not control sufficiently for other factors that influence spending behavior, for example socioeconomic and cultural backgrounds (see visitor spending segmentation in chapter 5.3)[46]. To our knowledge, no systematic analysis has been done to rigorously test the influence of gender on spending behavior which points to a research gap.

With respect to issue (2), chapter 6 provides guidance on the estimation of total economic effects, but it does not include any gender-sensitive issues as this is beyond the scope of this guideline. Nevertheless, the questions of fair and equal distribution of the income earned from protected area tourism, as well as the type and quality of jobs generated, are very important.[47;48] We want to raise the importance of women's empowerment for protected area tourism development strategies, so that women get their fair share of the benefits, by taking an active role as entrepreneurs and not subordinated in low paid jobs.[49]

Example of women's involvement in nature-based tourism: The Wasini Women's Group, Wasini Island, Kenya.

The Wasini Women's Group (WWG) was founded in 1985 and consists of 65 women from the Wasini village. Their involvement in tourism initially focussed on collecting seaweed to sell to the restaurants for food, and braiding palm leaf fibres into mats and baskets to sell to visitors as souvenirs.[50] Since 2000 the WWG has offered visitors a unique tourist attraction, a 1.5 km boardwalk leading through the "coral garden" (giant fossil coral rocks reminiscent of the higher sea water level in former times). The German Agency for Technical Cooperation and the Netherlands Development Organisation supplied the funds for this important infrastructure. The money from the entrance fees and sales amounts to an average of about USD 600 monthly, which supports the salaries for the women on duty, a kindergarten for girls, and the teacher of the Qur'anic school. In addition, the WWG distributes microcredit to women opening small enterprises.[51]

3

The Big Picture and General Approach

This chapter provides an overview of the 'big picture' for this guideline, including key principles and definitions of the most relevant economic terms and approaches.

3.1 Economic Effects: Direct, Indirect, Induced and Total Effects

The money that visitors spend in and around protected areas has a range of economic effects, which we call direct, indirect or induced effects. When these effects are added together, we can establish the total effects that their money has on the local economy. To illustrate this simply, we can take the example of a family group that travels from their home to visit a protected area (see Figure 1).

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Figure 1: *A group of visitors to a protected area[52]*

During their trip to the protected area they spend money locally, in and around the protected area. They may buy local products like food, drinks or souvenirs, and also pay for services such as guided tours, hiring equipment, local transport, or for tickets to attend events or performances.

This spending defines the **direct effect** on the local economy (also called primary effect), and means the changes caused by visitor spending in businesses that sell directly to visitors[53] (see Figure 2).

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Figure 2: *Direct Effect – visitor spending in the local economy[54]*

The enterprises that sell products and services to visitors spend the money that they receive from visitors. For example, a restaurant may buy fruit and vegetables from local farmers. The spending by these enterprises is the **indirect effect** on the local economy. It means the changes generated when tourism businesses and other directly affected enterprises buy goods and services from others within the local area (see Figure 3).
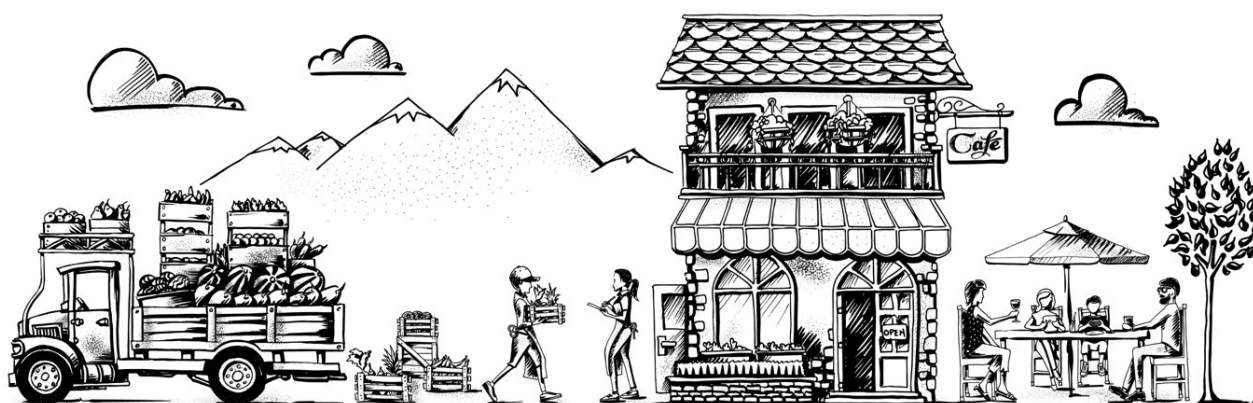
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Figure 3: *Indirect Effect – businesses buying goods and services from other local businesses[55]*

Furthermore, the people that receive income from providing products and services to visitors – such as from their salaries or tips – may spend that money locally. For example, they may use it to support their families, and purchase household goods such as groceries, clothes, or to pay for services such as childcare or security. This spending generates **induced effects** on the local economy. This means changes generated through household spending of personal income received directly or indirectly from visitor spending[56] (see Figure 4).
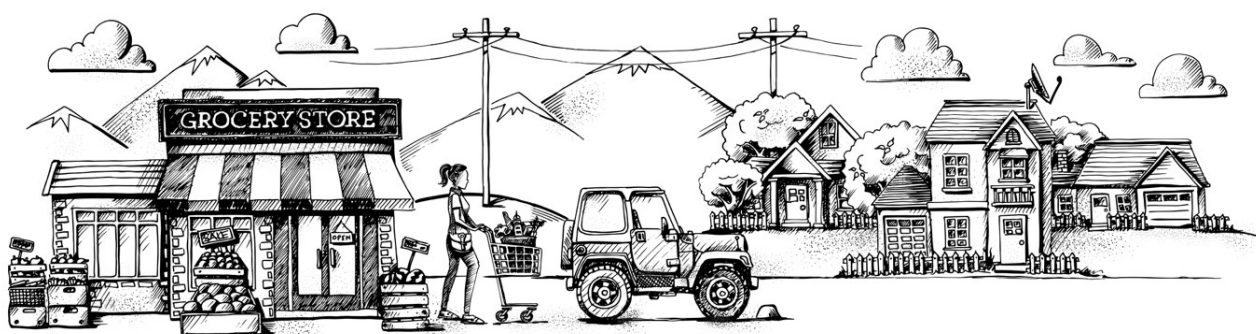
©Shepherd Wolfe

Figure 4: *Induced Effects – household spending of personal income received directly or indirectly from visitor spending[57]*

Adding together the direct, indirect and induced effects of tourism establishes the **total economic effects** of visitor spending[58] (see below). While direct effects also referred to as primary effects, indirect and induced effects are also called secondary effects.

3.2 Economic Contribution vs. Economic Impacts

There are two main economic terms that are commonly used when looking at the economic effects of protected area tourism: economic contributions and economic impacts.[59] Both can be subdivided into direct, indirect and induced economic effects of tourism spending, and they include effects on income, jobs, value added, output, and taxes etc.

- **Economic contributions** describe the gross economic activity associated with tourism spending within a regional economy. Results of an economic contribution analysis can be interpreted as the relative magnitude and importance of the economic activity generated through protected area visitor spending in a regional economy. Economic contributions are estimated by multiplying total visitor spending (of all visitors, including locals) by regional economic multipliers. Contribution analyses are often used to demonstrate and communicate the importance of protected area tourism to the economic vitality of the local region or to a national economy. They track the share of the total economic activity that is related to protected area under consideration. Such analyses are fairly common, as they require slightly less data and expertise than economic impact studies.

- **Economic impacts** describe the net effects of policies that bring new revenues into the protected area region that would otherwise not occur, or policies that keep revenues in a protected area region that would otherwise be lost.[60] Economic impact analyses are most often used to estimate how changes in visitation or visitor spending might affect local economies. Economic impacts describe the economic activities that are either brought into a region as a result of a protected area designation or describe the economic activity that would be lost from the region if the protected area designation was removed. Therefore, economic impact studies do not include spending by locals.

Economic impact analyses are more complicated to perform than economic contribution analyses, as they require comparing the current situation of the economy with another policy scenario (e.g. protected area designation or removal), and this may require additional data and assumptions on visitors' likely behavior. However, economic impact analyses can be more relevant to policy makers, and they provide information about the consequences of protected area designation or other policies that may affect their visitation. These analyses can be conducted ex-ante, to estimate the effects of potential new protected areas, or expost, to evaluate the economic effects of past protected area designations.[61]

The differences between economic contribution and economic impacts can be illustrated by a group of visitors that visit a protected area and spend USD 100 in a nearby restaurant. The USD 100 is considered a regional **economic contribution** of the protected area. Whether the USD 100 is **also** considered an **economic impact** from protected area depends on whether or not the money would have been spent in the same region in absence of the protected area. Had the group of visitors spent the money in the same region without the protected area being there – then it would not be an economic impact of the protected area.

The economic contribution represents the economic effects that result from the spending of all protected area visitors, while the economic impact represents only the economic effects that result from the spending of protected area visitors that come to the region **because** of the protected area.[62] While the economic contribution is always positive, economic impacts can be negative. This is because policy interventions that cause the economy to shrink generate a negative impact on the economy. For example, a protected area could close a section to visitors during breeding seasons to protect bird populations. This could lead to fewer visitors to the protected area, and less money spent, and consequently a negative economic impact. Since the reduced numbers of visitors to the protected area still spend money, the protected area continues to generate an economic contribution – but with a smaller value.

3.3 Estimating Economic Contribution vs. Economic Impacts

The **economic contribution** of visitation can be calculated by multiplying (a) the number of visitors to a protected area (including local and non-local visitors), by (b) the average amount of money they spend, and (c) an economic multiplier (see below).[63]

| Economic contribution (see Chapter 6) | = | Visitor numbers (see Chapter 4) | x | Average visitor spending (see Chapter 5) | x | Economic multipliers (see Chapter 6) |

a. **Visitor numbers** are the numbers of individuals that visit a protected area for recreational purposes. Methods to help establish visitor numbers are described in Chapter 4.

b. **Average visitor spending** relates to the average money visitors spend in or around a protected area. It is usually described as the average spending per party per day (or night), or else the average spending per person per day (or night). Guidance on how to work out average visitor spending is provided in Chapter 5. The total spending of all visitors defines the direct economic effect of tourism (see Figure 2).

c. **Economic multipliers** are coefficients used to convert direct economic effects into the total economic effects (i.e. direct, indirect and induced economic effects [see Figure 4]). This essentially involves estimating the money that tourists spend, and tracking the effect as the money goes through the different economic sectors of the local economy, and accounting for any leakages (see Figure 4). Approaches to establishing multipliers are described in Chapter 6.

To estimate the share of the economic contribution that is also considered an economic impact, researchers need to establish the share of the visitors and visitors' spending which would not take place in absence of the protected area. This is a tricky exercise, as it requires assumptions on how visitors would spend their money. Some studies try to estimate the effect of protected area designation on visitor behavior by regression analysis using large amounts of visitor monitoring data from protected and non-protected areas. This can be used to estimate the effect of protected area designation, and statistical models can be used for predicting such effects.[64] Alternatively, surveys of the visitors to a protected area can be used. Survey participants are asked for the motivations of their trip and spending, as well as the role of the protected area designation in choosing their trip destination. The visitors are divided into two subgroups by their "protected area affinity": (1) Visitors with a high protected area affinity, for those who state that the protected area is a primary reason to come to the area, and (2) visitors with a low protected area affinity, for those to whom the protected area designation is less important.[65]

$$\text{Economic } \underline{\text{impact}} \text{ (see Chapter 6)} = \text{Visitor numbers with protected area affinity (see Chapters 4 \& 5)} \times \text{Average visitor spending (see Chapter 5)} \times \text{Economic multipliers (see Chapter 6)}$$

The following chapters guide you through how to obtain the required information to fill the equations for calculating either economic contributions or economic impacts, first the number of visitors (Chapter 4), secondly the visitor spending and share of visitors with protected area affinity (Chapter 5), and finally the multipliers (Chapter 6). Chapter 7 introduces some special considerations that are important when implementing a long-term monitoring. Some considerations for troubleshooting economic assessments are described in Box 2.

Box 2: Troubleshooting economic assessments

The economic analysis is most applicable to situations where visitors stay in or next to a protected area, and their stay is mainly due to the protected area (also see section 5.6). Economic analysis is less easy to use if:

a. visitors only take a half-day or short visit to a specific protected area, such as a marine protected area, or on a small island within a country.

b. visitors are on a part of a longer tour-itinerary, and the protected area is just a small part of their overall costs.

c. the majority of the spending is done outside the area (e.g. paid to a tour operator before travelling).

d. tourism multipliers are unavailable, or difficult to calculate without substantial resources.

Also note that for larger protected areas, it is appropriate to include local visitors if some are living inside the protected area (for example a Biosphere Reserve, Transfrontier Conservation Area, or Nature Park). First it is necessary to capture the whole structure of the protected area tourists (i.e. overnight stays vs. day visitors vs. local visitors). In smaller protected areas, it is easier to separate tourists from local visitors (i.e. local residents), as the access to the protected area is clearer. In case of extensive challenges, it is suggested to consider alternative approaches such as a value chain analysis (see Annex 10.4)

4

Visitor Counting

Economic contribution *(see Chapter 6)*	=	Visitor numbers *(this Chapter)*	x	Average visitor spending *(see Chapter 5)*	x	Economic multipliers *(see Chapter 6)*

The starting point of all economic analyses for protected areas is a reliable and accurate estimate of the total annual visitation to the area. Past research has shown that visitation differs greatly across different protected areas – ranging from thousands of visits per hectare and year for some tourism hot spots within protected areas (e.g. variations across Iguaçu National Park, Brazil and across Yellowstone National Park, USA) – to almost zero in large remote areas (e.g. Sakteng Wildlife Sanctuary, Bhutan). Empirical evidence suggests that visitation differs much more across sites than the economic value and the

economic impact per visit, and therefore it is important to obtain accurate visitation figures to estimate the economic contribution of tourism in a protected area.[66]

To obtain accurate visitation figures while efficiently using available resources, visitor-counting programs need to be designed with caution. In this chapter, guidance is provided on how to set up a visitor-counting program for any particular protected area. Key questions on how to design a visitor-counting program are discussed and a decision tree will help to find the best sight-specific solution.

4.1 Planning your Visitor Counting Program

The design of a visitor counting program depends on the specific policy needs, available resources and the local circumstances at the site of interest (i.e. the physical settings and the visitor use patterns).[67] Protected area managers and policy makers may either desire rough estimates of visitation to highlight the general importance of nature tourism in protected areas, or may demand accurate figures for inter-site comparison and recreation facility planning. The site characteristics and visitor use patterns may define where and when to count visitors best. Resources are required to purchase the counting devices, to train staff, to operate the counting program and to publish results.

These key questions should be answered when planning a visitor counting program:

1. **What to count?** Visitors, visits, visitor days etc.

2. **How to count?** Direct, indirect, automatic etc.

3. **How to sample?** The sampling strategy:
   - **Where to count?** Entrance gates, visitor centers, natural attractions (e.g. waterfalls), remote places etc.
   - **When to count?** High season, low season, entire year, once a week, for one hour etc.

4. **How to estimate total annual visitation for the entire site from the counted visits** (or other counted objects)?

4.2   What to Count?

Typically, a visitor monitoring program counts entrants, visits, visitors or visitor days[68]. (see Figure 5 below).

Entrant	- A person going into a protected area for any purpose. - The number of entrants includes all recreational visits and other activities (e.g. people just driving through, local people passing through a corner of the park, or the daily activities of workers). - Entrant figures can overestimate the recreational use of the park.
Visits	- The number of times a person goes into a protected area for recreational purposes. - For example, a person who enters a protected area twice in a day would be reported as two visits.
Visitors	- A person who visits a protected area for recreational purposes. - For example, a person who enters a protected area twice in a day is one visitors.
Visitor days	- The total number of days that a visitor stays in a protected area. - One overnight stay, or twelve visit hours of a visitor in a protected area is reported as one visitor day.

Figure 5: *What to count – entrants, visits, visitors and visitor days*

Deciding which of these to count is very important – because it needs to be linked to an appropriate average spending figure (such as the average spending per visit, per visitor or per visitor day). To illustrate some of the considerations:

- Spending by entrants can vary widely because (a) they include non-recreational visitors whose spending is not considered in the economic analysis for tourism; and (b) visits by entrants lasting only a few minutes that tend to have lower average spending than visits lasting several days.

- Counting local, domestic, and international visitors can be useful.

- Distinguishing between day visits and overnight stays is necessary as overnight stays tend to generate higher mean spending because of accommodation costs and associated purchases over longer time-periods.

4.3   Counting Methods: How to Count?

There are many ways to count that fall under three broad types: direct, indirect, and automated (see Figure 6).[69] Every counting method has advantages and disadvantages, and the option selected will depend on the policy needs, available financial resources, labor costs, available staff and expertise, the characteristics of the site of interest and also the desired sampling strategy.

Direct	- Counts relying on researchers directly counting. - Observations are made at the site, or observing video camera recordings, or using observations from the air. - Number of visits or entrants can be counted directly.
Indirect	- Inferred counts to provide on-site estimates (e.g. social media posts). - Options include counting parking/entrance fees, permits/licences, guest records at accomodation, entries in guestbooks, trail logs, signs of use and social media posts. - Numbers of visits or visitors can be counted by permits issued for people entering the site.
Automatic	- Counts with mechanical and electronic devices of the numbers of visitors on-site. - Counters include traffic counters, and tumstiles of video counters. - Entrants can be counted with these devices.

Figure 6: *How to count: direct, indirect, and automated methods*

Sometimes it is necessary to use a combination of these methods together. For example, numbers of visitor days are counted by multiplying the number of visits (or number of visitors) by the number of days the visitor spends in the protected area. The number of visitor days is found by adding together the lengths of various visits[70].

Table 2 describes the main alternative counting options and their specific advantages and disadvantages,[71] and important considerations for each type are highlighted below:

- **Direct counts:** Personal on-site counting has the advantage of providing flexibility to counting times and locations. While it requires minimal equipment and a certain level of expertise, it is labor intense and may only be used where labor costs are low, where counts are made over a limited period of time, or where there is a lack of funds for automated counters. Nevertheless, by employing local people or using volunteers for visitor counting a protected area may enhance local engagement with their stakeholders and communities.

- **Indirect counts:** Accurate indirect count information may be available from counting entrance tickets (or records of permits sold) if visitors required these to enter a site. These can provide an easy and accurate

way to estimate the number of visits. Other data sources include the number of guests staying at accommodation in or around the protected area, or the number of passengers transported to the site (e.g. in buses or boats). However, the usefulness of such data sets for visitor counting depends on their accuracy, the share of the total visitors covered by the data, and on the share of people covered by the data who are no visitors. For example, the number of entrances may be underestimated if (a) some visitors do not use official entrance gates, (b) if staff do not declare all permits issued, or (c) if accommodations do not report all of their guests. Other indirect methods include observations of trail use and volumes of waste accumulation, but these require expert knowledge and may not result in accurate visitation figures. Self-registration counting methods such as mountain rescue summit books at protected area entrances, or accommodation guest books, also provide a low-cost visitor counting option. However, not all visitors complete them and therefore the level of accuracy is low – particularly as people that visit locations on a frequent basis tend not to complete them. Adjustments may be required to control the sources of errors.

- **Automated counts:** Automated counting devices require high investment costs for purchasing counting

devices, mounting and calibrating them as well as training staff. They need to be calibrated to check that they count all visitors, installed in appropriate locations, and that they do not count other things (e.g. passing wildlife or leaves falling from trees etc.). They may also have disadvantages if visitors do not pass through them, that they cannot distinguish between entrants and visitors, and that devices may be vandalized. Their accuracy also depends strongly on the way they are set up and the type of device. Recent advances among automated counting devices allows them to distinguish between different user groups, they may have batteries lasting for up to ten years and can transmit counting records through mobile phone networks. A big advantage of automated counters is that they may count visitors continuously all year round after installation. However, due to their mounting and calibrating requirements, they are not as flexible for covering multiple counting locations as direct methods. While some devices may be moved relatively easily (e.g. optical counters), others require built-in structures (e.g. turnstiles, gates). However, investment in automated counting devices may pay off if labor costs are high, long counting periods are planned and if visitor counting programs are considered to last for more than one year, or if locations are remote or difficult to access.

An automated visitor counter and turnstile at the Ras Alkhor Reserve in the Emirate of Dubai, UAE

©Anna Spenceley

Remember: Only count each visitor once on the same day! With direct counts and automated counters, ensure that visitors are not counted both going in and coming out of a protected area. Either count entrances or exits. Alternatively, if they count everyone twice, simply divide the total from the counter by two.

Box 3: Using automated counters in Pallas-Yllästunturi National Park, Finland[72]

Pallas-Yllästunturi National Park is relatively narrow, but more than 100 km long. Due to its shape and the large amount of entrance points, it is a very challenging area as regards covering strategic points with counters. Here ten counters were set up in 2005 in the most critical locations in the park. Some of the counters were suitable only for summer use, while some other counters were able to work all year round. Counters work all year round in order to produce a more reliable estimate of the number of visits and seasonal changes in the recreational use volume within the park. These counters are especially suitable for trails that are less than four meters wide. They have been used to estimate that there were 310,000 visits to the park in 2006.

Since 2006 Pallas-Yllästunturi National Park has been able to enlarge its counting locations significantly. Now there are more than 30 electronic counters recording visitation on an hourly basis and operating all year round. This has improved accuracy of counting significantly compared to when the automated counters were installed.

Table 2: *Overview of the visitor counting options[73]*

Counting Method	Description	Advantages	Disadvantages
Direct observation methods			
Personal	Trained staff counts visitors passing the counting location	High accuracy; high flexibility (spatial and temporal); low investment costs; simple, no validation; can be used for calibration of counting devices; visual interpretation of visitor characteristics; combination with interviews	High labor costs for long term counting
Camera Recordings	(Time-lapse) video or photographic recordings on-site combined with a manual or computer aided visitor count on the videos or photographs	High accuracy; high temporal flexibility; realtime monitoring possible using digital cameras with image transmission via high-speed mobile data; visual interpretation of visitor characteristics	Low spatial flexibility; high labor costs (if no computeraided counts are feasible); high investment costs; expert knowledge for installation; short battery life; privacy issues
Remote Sensing	Aerial photography (drones, planes or satellite)	Accuracy from low to high (depending on setup); high spatial flexibility; large-area coverage with regular repetition; assessment of visitor distribution possible; investment costs are decreasing (e.g. for drones)	High investment costs; expert knowledge for operation; most devices only usable in open spaces and cloudless conditions; automated image recognition counting still under development; still limited experiences. Privacy concerns
Indirect observation methods			
Permits bookings, fees, licenses	Records of entry permits sales, facility or trip bookings and customer data from private travel, accommodation or facility providers	Accuracy from low to high (depending on data sources and local circumstances); all year coverage; low costs; simple (if no corrections)	Validation and calibration (depending on data source); data only available for some sites and/or locations within the site; subject to visitor compliance; subject to cooperation of private enterprises
Indicative counts	Counts of elements linked to visitor traffic/use (e.g. public transport, litter, trail use etc.)	Mainly low accuracy (depending on data source and local circumstances); all year coverage, low costs	Expert knowledge for operation; validation and calibration; data only available for some sites and/or locations within the site; no date/time reference

Counting Method	Description	Advantages	Disadvantages
Visit registers	Count of voluntary or compulsory self-registration of visits (e.g. hut or other site guest books, track registers)	Medium accuracy, all year coverage; low costs; simple (if no corrections); long history of experiences in some regions	Accuracy differs by user groups; validation and calibration; data only available for some sites and/or locations within the site; subject to visitor compliance
Automatic observation methods			
Mechanical counters	Counts with the help of mechanical devices (e.g. turnstiles, gates) triggered through a physical movement/displacement	Medium accuracy; continuous long-term counting; medium investment cost; low labor costs; simple; can be linked to electronic loggers; long history of experience	Low spatial flexibility; specific on-site structures; validation and calibration
Pressure	Counting by reaction of pressure counters to the steps of the visitors triggering a sensor (e.g. pressure pads, pneumatic tubes, sensor cables) which transmits the count data to a data recording device	Medium accuracy; continuous long-term counting; medium investment costs; low labor costs; wide variety of technologies for different situations (e.g. people, vehicles) that can be connected to various devices (e.g. camera, video, electronic loggers); relatively easy handling (easy to hide away, small size and weight, weather-proof)	Low spatial flexibility; expert knowledge for installation and operation; wildlife may trigger counts; possibly temperature-responsive; limited battery life; usually needs to be built into a structure
Active optical counters	Counting by interruption of light beams (e.g. active infra-red, visible) with transmission of the count to a data recording device	Medium accuracy; continuous long-term counting; low to medium investment costs; low labor costs; long range across wider tracks; relatively easy handling (small size and weight, weather-proof); low power use	Medium spatial flexibility; validation and calibration; wildlife or branches may trigger counts; expert knowledge for installation and operation (careful alignment of transmitter and receiver); alignment highly sensitive to disturbance; hard to conceal and thus susceptible to vandalism; limited battery life
Passive optical counters	Counting by changing a background infrared signature (e.g. passive infra-red) with transmission of the count to a data recording device	Medium accuracy; continuous long-term counting; low to medium investment costs; low labor costs; relatively easy handling (small size and weight, weather-proof); low power use	Medium spatial flexibility; validation and calibration; expert knowledge for installation and operation; false counts due to infrared signature masking clothes, lighting changes or big groups; limited battery life

Counting Method	Description	Advantages	Disadvantages
Magnetic sensing counters	Counting by changing magnetic fields caused by passing metallic objects (e.g. vehicles, sports and camping gear) with transmission of the count to a data recording device	Continuous long-term counting; medium investment costs; low labor costs; distinction between type of vehicle; relatively easy handling (small size and weight, weather-proof)	Low to medium accuracy (passengers per car unknown); low spatial flexibility; expert knowledge for installation and operation; validation and calibration; only useful for vehicle detection (including bikes); limited battery life
Microwave sensing	Counting by detection of changes in reflected radio waves from moving objects with transmission of the count to a data recording device	Continuous long-term counting; low labor costs; relatively easy handling (small size and weight, weather-proof); vehicles and people	Low to medium accuracy (tend to undercount groups); low spatial flexibility; high investment costs; expert knowledge for installation and operation; validation and calibration; require a clear line of sight; high power consumption; primarily used for cars

4.4   The Future of Visitor Counting

In the past the most common method used for estimating visitor numbers was on-site counting by people, ticket sales or expert judgment based on indirect methods such as trail use. Automated remote-controlled counting devices have now become more widely used, and offer great opportunities for continuous counting at various locations at relatively low costs. Further technical developments will improve options for even more accurate and detailed information on visitor numbers and their spatial distribution.[74] For example, drones and high-resolution satellite images can be used to take aerial images of human crowds, and for large-scale visitor counting[75] (where views are not impeded by weather or trees).

Vast amounts of "big data" available in the digital age also expand our opportunities to estimate visitor numbers, and

these still need to be explored. For example, smartphone apps such as geocaching or sports activity trackers record detailed movement patterns and the activity of recreational visitors.[76] Smartphones offer also great opportunities to engage a wider public in citizen science by allowing them to contribute data on their recreational activities and locations voluntarily. Mobile phone traffic and Wi-Fi tracking could be used to monitor visitors and their movements on-sites (as it is already used to estimate traffic jams[77]). In addition, the vast amount of data from social media platforms could be analyzed to estimate users' recreational behavior.[78] Search engine queries reveal the interest in certain locations, while crowdsourced photo posts on platforms like Flickr are used to estimate visitor numbers at various sites.[79]

4.5   Sampling Strategy: Where and When to Count?

Ideally, every visitor entering the site in a given year is counted. The number of visitors counted represents the total annual number of visits.[80] This is easy to do if entrance tickets are issued at controlled access points, or if automated counters are operated all year long at every access point.

However, directly counting every visitor entering the site may be costly and inefficient, and so counting may only take place at certain locations and times, and then used to estimate the number of visits at other times of the year. This is called sampling.

Sampling may avoid unnecessary counting effort and still result in accurate figures of the total visitation, but it requires detailed planning. The right sampling strategy depends mainly on visitation patterns within the site (e.g. regarding their timing and location) and also on the available visitor counting methods. A broad variety of sampling strategies exists in literature and depending on the local circumstances combinations of different sampling strategies may be appropriate (see Box 4).

Box 4: Types of sampling[81]

Random sampling is where each visitor has an equal probability of being selected. They are selected at random.

Systematic or **interval sampling** is when there is a random group, and then select visitors at regular intervals. For example, every fifth visitor to enter a protected area.

Stratified sampling is where the visitors are categorized into fairly similar groups, for example by age, gender, country, or another category of interest (e.g. travelling independently or with a guided group; high-season or off-season; good or bad weather). Each of these categories (or stratum) is sampled as an independent sub-population. This can help researchers draw out characteristics of specific sub-groups that could be lost if they were combined in a general random sample. This can require a larger sample than other methods.

Cluster sampling is sampling by geography (e.g. particular entrance points) or time periods and is an approach that can help to reduce travel and administrative costs of surveys.

Convenience or **accidental sampling** means simply including visitors when they are close to hand, or when it is convenient. For example, a researcher happens to meet a visitor and then interviews them. These samples cannot be used to make scientific generalizations about the total population as they are not representative.

To design a sampling strategy two main questions should be answered:

1. Where to count visitors?
2. When to count visitors?

Guidance to help answer these two questions is provided below.

4.5.1 Where to Count? Choosing Counting Locations

The process of selecting locations needs to consider the **type of site** and also the **number of sites** where counting will be done.

Type of site: There are different types of sites where counting can be done. For example, there may be sites with a limited number of clearly defined access points (e.g. a small number of entrance gates), sites with multiple access points (e.g. several entrance points in form of adjacent forestry roads or paths), or sites with access points that are not clearly defined (e.g. open access across water, a broad beach or from numerous informal paths or roads that are not mapped and are used mainly by locals).

Stratified sampling can classify counting locations into groups that have similar visitor flows (e.g. grouped as main, secondary and minor entrance points). Then counting may take place only at a certain proportion of the counting locations in each group. The visitation at entrance points where there is no counting done is then estimated based on the counts at other locations from the same group. Within each group, locations may be selected based on another sampling strategy (e.g. random or convenience sampling). However, it is crucial that the counting locations selected are representative for their groups, to avoid over or under-estimates. For greater accuracy, more counting locations should be chosen from groups where higher numbers of entrances are expected. Convenience sampling may reduce traveling time to counting locations but may also decrease the representativeness of the counting locations. If stratified sampling is not possible, because similar groups of locations cannot be defined, then simple random or systematic sampling may be applied to the counting locations.

In some cases, it may be desirable to count within a protected area (e.g. at central trail crossings, strategic bottlenecks or major sites of interest), particularly where there are open access options. However, counting within protected areas may introduce the problem of double counting if it is combined with entrance counts, and this may lead to over-estimates of visitors. Choosing the right counting relies heavily on the knowledge of local experts such as protected area rangers and site managers.

Number of sites: Reliable figures can also be obtained by using a few counting locations with a few clear entrance points. Where there are multiple access points, increasing the number of counting locations can increase the accuracy of visitor counts. If a stratified sampling strategy is applied to group counting locations, then counting should take place

at least at one counting location within each relevant group. However, if there is considerable variation within each group, more counting locations per group may be required so that counting fairly represents the actual visitation within each group. The number of counting locations should be just enough to understand the visitation within each relevant group with the desired degree of accuracy. Therefore, the total number of counting locations needed to obtain reliable figures depends on the size and the diversity of the visitor use patterns within the site (see Figure 7 and Box 5).
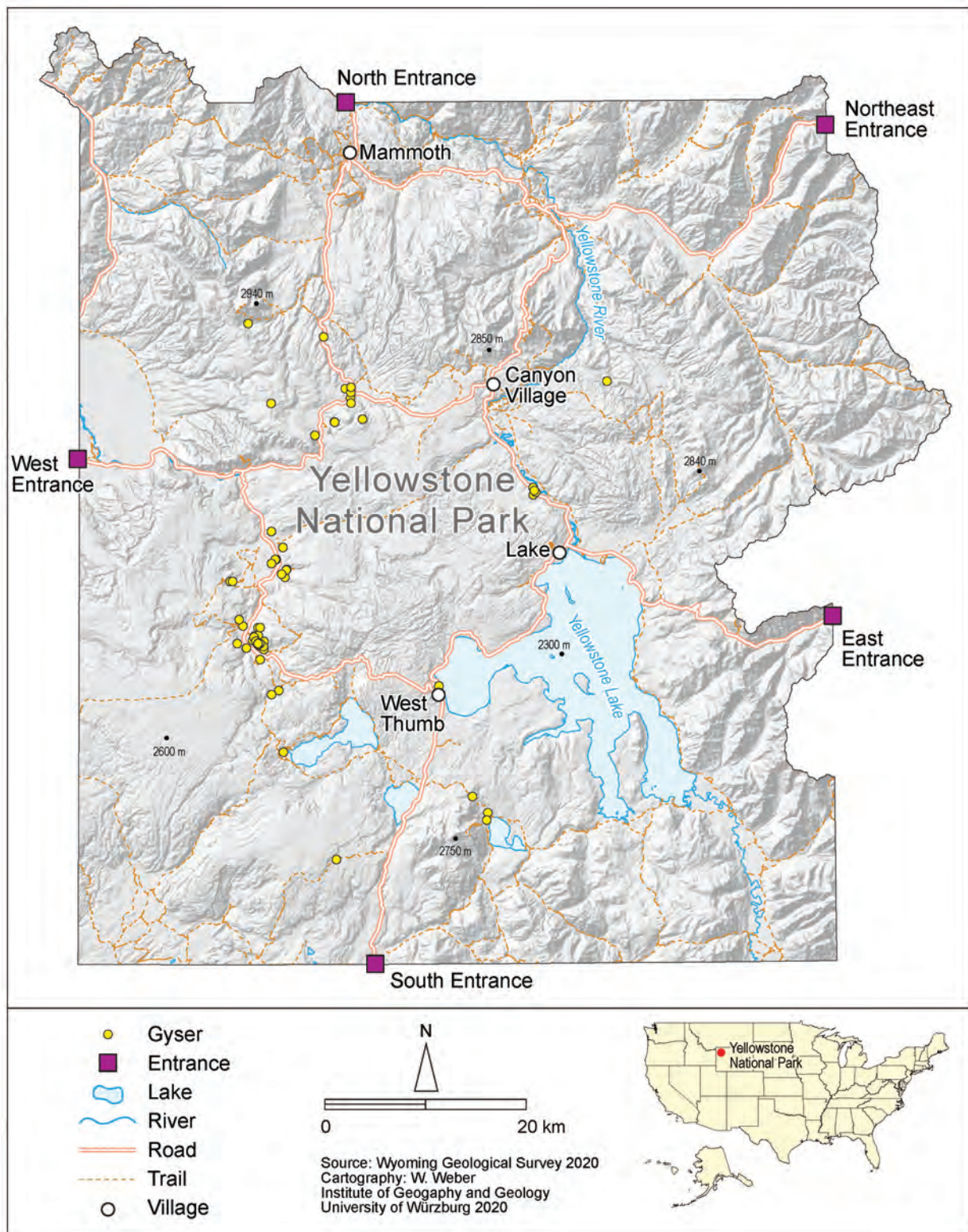
©Hubert Job

Figure 7: *Entrance locations to Yellowstone National Park used for visitor monitoring locations[82]*

Box 5: Case study example of selecting counting locations in Finland[83]

Pallas-Ounastunturi National Park is a long but narrow park with several entrance points. In 2003 intensive counting was implemented with 20 counters aimed at covering all the entrance points. In 2004, only a few counters were used, and the results were extrapolated to the rest of the entrances, assuming that the visitor flow patterns remained the same as in 2003. In 2005 the park was enlarged and became part of Pallas-Yllästunturi National Park.

In the Arctic Circle Hiking Area most visitors have to cross one of two narrow bridges (Vikaköngäs or Vaat-tunkiköngäs) to gain access to or leave the area. These two entrance and exit points are estimated to be used by 90% of visitors, and therefore are ideal counting locations.

The number of counting locations may also be affected by the chosen counting method (see section 4.3). For example, direct on-site counting locations may be moved easily between sites allowing for more counting locations, whereas automatic counters may require time-consuming mounting and validation at each new counting location.

4.5.2   When to Count? Choosing Counting Times and Duration

Automated counters may run continuously, but for direct counts it is useful to be more selective on counting times to reduce costs. To choose the right time periods for counting, we need to consider **when to count visitors, how often,** and **for how long.**

When to count: Stratified sampling strategies may be used to classify counting into periods with similar visitation rates. For example, periods may include busy periods (e.g. weekends, holidays, high-season, peak hours, during special events, good weather) and less busy periods (e.g. weekdays, low-season, off-peak hours, bad weather). Visitor counting may be conducted in each of the defined periods in order to generate a clear picture of visitation rates. The exact time when visitors may be counted in each of the defined periods may be selected by random or using convenience sampling.

How often and how long to count: The number and the length of counting periods required depends on the patterns of visitor use over time. Counting should be done during each period when there is relatively uniform visitation. The number and length of counting samples within each counting period depends on the similarity of the flows of visitation during the periods. It is crucial that the counting samples are representative for the different periods. For example, if the flow of visitors is relatively constant during a counting period at a certain counting location, then a few short counting samples may be enough (i.e. additional, longer counting samples would not reveal much if the visitor flows were similar). By contrast, if the counting location is characterized by long periods where there are only a few visitors, but suddenly big groups enter at random times (e.g. an organized tour group arrives), then a greater number and longer counting samples are needed. Periods with higher levels of visitation should receive more and longer counting samples, because a relative error in the measurement of visitation during periods with higher visitor numbers introduces a bigger error to the overall visitor figure of the site.

Box 6: Designing timing of comprehensive visitor counting in Finland[84]

At Seitseminen National Park, visitor counts taken at the two locations in the two previous years were used to select the comprehensive counting days. Three comprehensive counting days were held during one summer season to calculate the coverage percentage of the counters:

- One day in mid-July was selected to represent the most popular period for holidays.
- Two weekend days at the beginning of August represented the end of the holiday season, when visits are concentrated at the weekends.
- One day in mid-September, when larger groups and mushroom-gatherers visit the park.

The observation period ran from 8 a.m. to 8 p.m. in July and August, and from 11 a.m. to 5 p.m. in September.

The comprehensive counting was implemented in a single research project together with the Forest Research Institute, Finland. In practice, park managers have neither had time nor the resources to repeat this kind of comprehensive counting in any of Finland's protected areas. Therefore, managers have come up with a different method for producing the counter coverage percentage.

4.6   How to Estimate Annual Visits for the Entire Site from Counted Visits

If visitors are not counted at every access point all year round, the total annual number of visits for the entire site needs be estimated based on the number of visits that were actually counted at certain locations and at certain times. This process is referred to as upscaling, aggregation, interpolation or extrapolation. Depending on how comprehensive and representative the counting is across time and space, the method of upscaling may have a substantial effect on the accuracy of the overall visitation figure. If counting locations are representative for all types of relevant access points or locations within the site (i.e. stratified sampling), visitor numbers estimated for each

group of counting locations may easily be transferred to other locations of the same group. Similarly, upscaling may be conducted across time if visitors are counted during representative periods (e.g. similar seasons, weekdays and times of the day). For temporal upscaling, it is crucial that the exact length and time are recorded for each counting sample. If the counting has not included certain periods and locations, the upscaling procedures needs to include assumptions on how visitation differs at locations and times that are not covered by the counting, based on local knowledge.

4.7   Presentation and Reporting

The way that visitor counting results are presented and reported is very important so that it is easy to understand what was counted, and how (also see Chapter 8). It is recommended to report at least on the following methodological aspects:[85]

- **Number of visits:** The total number of visits made for the entire site and over the entire year.

- **Counting object:** A definition of the counting object for which the visitation figures are reported (i.e. counting visits, visitors, visitor days etc., see Figure 5).

- **Year:** The year for which the visitation figures are reported.

- **Study area:** A clear definition of the study area including the name, the size and preferably a map indicating the clear borders of the site.

- **Counting methods:** All applied counting methods (e.g. ticket counting, direct on-site counting, automated counters etc., see Figure 6) and the total number of visitors that are actually counted.

- **Counting locations:** The number of the counting locations and a description of the counting locations (e.g. access point, central hub etc.) and preferably, a map indicating the counting locations (see example in Figure 7).

- **Counting periods:** When counting took place (e.g. seasons, weekdays, daytimes), how often counting took place and for how long.

- **Upscaling methodology:** How are visitor numbers scaled up to the entire site and the entire year and what type of assumptions are involved.

Sharing visitor data offers great benefits to research, policy makers and managers. Preferably, results are freely accessible online such as on the websites of the protected areas and nature conservation agencies of the country. In order to evaluate the quality of the estimated visitor numbers and to distinguish sound studies from visitor numbers that are based on rough guesses only, detailed reporting of the methodology is required.

4.8   Decision Tree: Design a Counting Program

Figure 8 shows a decision tree that helps to design a visitor counting program, by working through a series of steps, which are described below.

Step 1. Is data on visitation available? Explore whether there is data available already that can be used to estimate visitation, such as bookkeeping data from ticket sales, overnight stays or operators controlling the access (e.g. boat trips to islands; car parking tickets). Check if the

information is accurate, and if it includes the majority of visitors. If it is, then use this information for the visitation figure. If not, set up a visitor counting program.

Step 2. Select the counting locations: Choose locations for counting visitation. If the site has a limited number of clearly defined access points that can be covered by visitor counting, simply count at all of these access points. If the site has multiple and/or open access points, then choose

representative counting locations that include all types of relevant locations of the protected area (e.g. main access points, secondary access points, major sites of interest etc.). Grouping of different types of protected area locations may be required (see section 4.5.1). Areas with higher visitations should receive proportionally more counting locations. Avoid double counting visitation by different means.

Step 3. Select the counting periods: Decide when to count visitation (counting samples). Counting should cover all relevant periods of visitation by representative counting samples. Therefore, grouping of different periods may be required (e.g. high and off-season, peak and off-peak hours

etc., see section 4.5.2). Again, periods with higher visitation should receive proportionally more counting effort. The required number and length of counting samples depends on the variation of visitation during the different counting periods.

Step 4. Select the counting method: Choose the right counting methodology to fit the sampling strategy best, given the available resources. Personal on-site counting may allow many counting locations with multiple short counting samples. Automated counters are less flexible but can count visitation at certain locations for long periods. Therefore, they may qualify in particular for locations with high and fluctuating visitation.
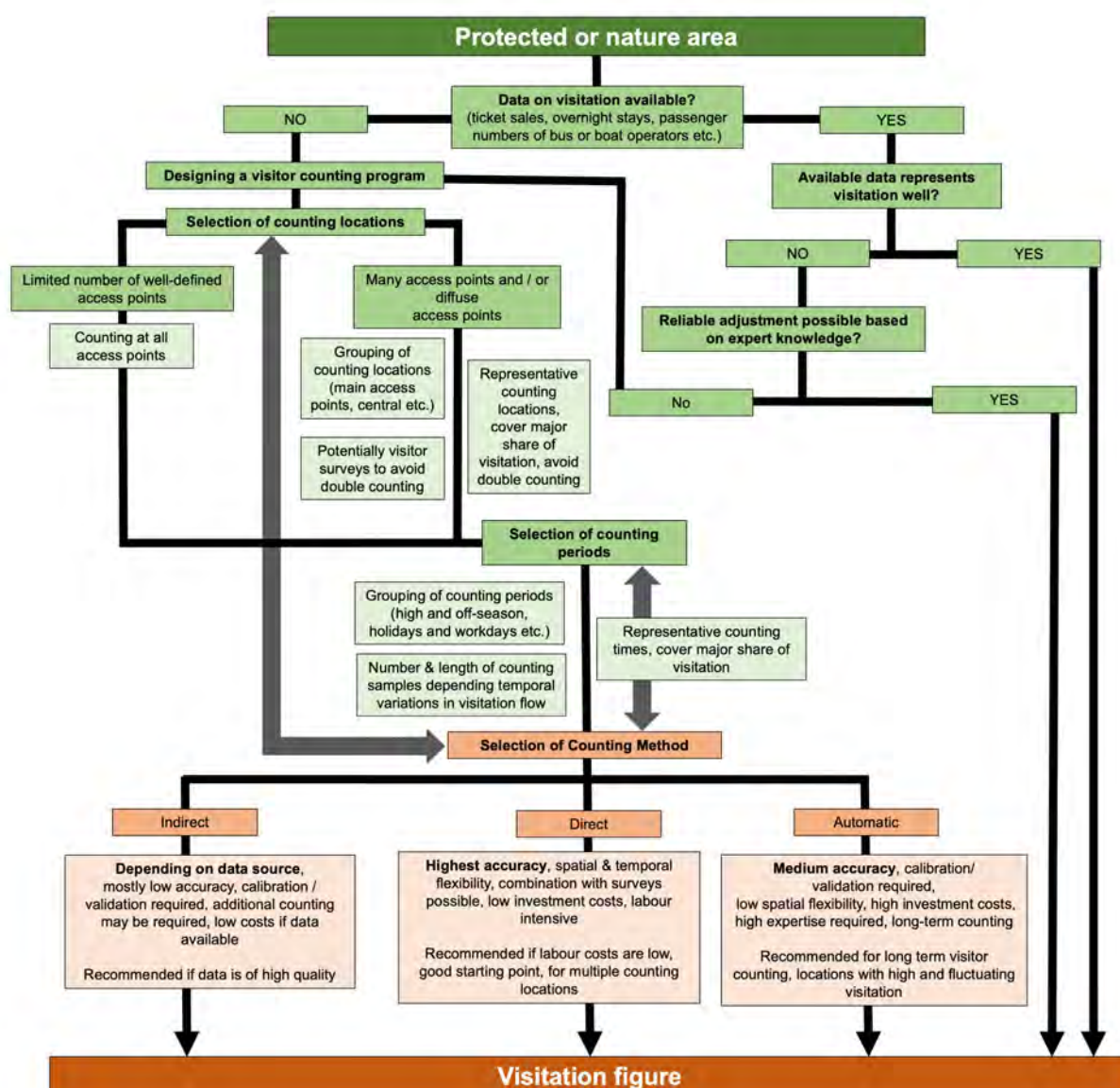
Figure 8: Decision tree for a visitor counting program

Box 7: Visitor counting in Germany[86]

How many counting points are chosen and why?

The number of counting points within a protected area depends essentially on its size, location (e.g. remoteness), structure (e.g. settlements) and different types of outdoor recreation activities encountered and frequency of visitors. Generally speaking: the larger an area and the more different attraction points there are, the more counting locations are needed. We work with a maximum of twelve counting points per protected area in the few large national parks or larger biosphere reserves (e.g. Lower Saxon Wadden Sea National Park) and a minimum of six in small parks (e.g. Jasmund National Park). These points are used at the same time and locations for face-to-face interviews.

Where is counting conducted and why?

In the case of a closed national park area, usually the main entrances are selected as counting points. These include parking lots or other starting points for walking, hiking, biking etc. In the case of the structurally much more complex biosphere reserves that are open and include even larger settlements, visitor focal sites are selected as counting points, including both natural and cultural attraction points. In both cases one should manage to cover the different zones of a protected area.

When is counting conducted and why?

Visitor number recordings are carried out by field observers on predetermined days over a full year covering all four tourism seasons (mostly 20 survey days, sometimes 18 days and to a lesser extent twelve days), as well as weekends, weekdays and public holidays, taking into account weather conditions.

What counting method is used and why? It is a variant of direct counting by field observers (trained students) with paper and pencil. The counts are always carried out together with short and longer interviews. That is why this type of counting is used, as it is usually very precise and flexible at the same time. As back-up, and to validate the visitor calculations for the whole year, a few (two or three) automatic counting machines are also installed at some counting points.

Wadden Sea, Germany ©Annika Bostelmann/CWSS

5

Visitor Surveys and Expenditure

Economic contribution *(see Chapter 6)*	=	Visitor numbers *(see Chapter 4)*	x	Average visitor spending *(this Chapter)*	x	Economic multipliers *(see Chapter 6)*

This chapter describes methods and considerations for designing and administering a visitor survey, with the specific goal of estimating how much money visitors spend in protected areas and the local areas surrounding them. Surveys can provide a range of valuable information to protected area managers and policy makers about the protected area visitors, including how visitors interact with the area, visitor satisfaction and visitor spending. Questions required for visitor spending analyses can be combined with other questions so that protected area surveys can serve multiple needs (as long as the survey is not too time consuming).

Note: Three examples of visitor questionnaires from Wind Cave National Park in the USA, Urho Kekkonen National Park in Finland, and Swabian Alb Biosphere Reserve in Germany are provided in Annex 10.2 and are referred to throughout this chapter.

Figure 9 gives a summary of the types of questions that are often asked in protected area visitor surveys, with questions required for visitor spending and economic analyses highlighted in green.

Trip planning	Paths / trails used	Visitor satisfaction	Local area spending	Visitor origin and travel distance
Importance of the protected area in choosing destination	Information / services used	Accessibility	Consumer surplus / willingness to pay	Local visitor or non-local visitor
Trip characteristics – party size, type of accomodations	Activities	Crowding	Health benefits	Subtitute destinations and previous visits
Length of time spent in the local area surrounding the protected area	Amount of time spent within the protected area	Mode of Transportation	Other management-relevant questions	Demographics

Figure 9: *An overview of the types of questions that are often asked in visitor surveys*

5.1   Defining the Local Area

Visitor spending estimates describe expenditures made by protected area visitors within a protected area and the surrounding local area. When determining an appropriate local area, the goal is to select a region that describes a working economy linked to the protected area. This is the area where visitors' expenditures that are directly linked to the protected area visit are made. It can be established by talking with protected area staff to identify the nearby towns and cities where visitors typically stop and make purchases, or where they spend the night while visiting the protected area. Another approach is to define the local area based on adjacency, radius, or travel distance from the protected area. For example, a local area could be defined as being within 50 kilometers, or 30 minutes' drive, of the protected area. Local areas are often defined as the immediate communities surrounding a protected area; however, in some cases it may make more sense for local areas to include broader geographic regions such as provinces, states, or an entire nation.

Remember: Communicate clearly which study area the results refer to, and how the study area is delimited.

5.2   Questionnaire Design and Visitor Spending Estimation

The survey instrument (i.e. the questionnaire) design is of crucial importance to achieve valid results. Questions need to be understandable, clear and unambiguous. The questions asked in a visitor spending survey are relatively complex and therefore require very careful wording. The order of questions and also their presentation should be considered. It is important to obtain feedback on the draft questionnaire from experts[88], and when possible test the survey instrument using focus groups or a pilot study before implementing the full survey.

A well-designed questionnaire will ensure that every question asked fulfils its specific purpose in the analysis. The questions should allow analysts to:

- Split visitors into visitor segments that describe differences in spending patterns.
- Develop visitor spending profiles to describe average expenditures made within protected areas and surrounding regions for each visitor segment.
- Convert visitor count estimates and visitor spending profiles into compatible units of measure. For example, if visitor counts are measured in visitor days, then visitor spending profiles will need to be in terms of spending per visitor day. Similarly, if spending profiles are in terms of spending per party per day, then visitation counts will need to be converted into party-days.
- Determine the portion of visitor spending that is attributable to the protected area.

> **Box 8: Explaining visitor segments and profiles**
>
> **Visitor segments:** Visitors are divided into sub-groups with different characteristics, such as international versus domestic visitors, people on overnight trips or day trips, or another category that may affect spending patterns (e.g. travelling independently or with a guided group).
>
> **Visitor spending profiles:** A pattern of expenditures made by a particular visitor segment.

5.3   Splitting Visitors into Visitor Segments

Total visitor spending supported by protected area visitation is estimated by developing spending profiles that describe average expenditures made by visitors during their trip to a protected area and its surrounding local area. For most protected areas it is reasonable to estimate separate spending profiles for subgroups of visitors with distinct spending patterns[89] (see also section 5.9). For example, visitors staying overnight in the area are likely to have different spending patterns from those who are only visiting the area for a day (not paying for their accommodation).[90] For this reason, splitting visitors into day and overnight segments is suggested as a minimum segmentation strategy. Segments are also often based on visitors' place of residence with respect to the protected area. For example, visitors could be classified into local visitors, non-local domestic visitors, and foreign visitors. Segments can also be classified based on visitor activities (e.g. camping, hiking, hunting, bird watching, etc.), locations within the sites (e.g. northern vs. southern entries) or socio-economic characteristics (e.g. age groups, families etc.). The survey questionnaire needs to include a question or a combination of questions that can be used to classify respondents into segments.

> **Note:** See for example questions 19 and 24 in the Wind Cave National Park survey, question 3 in the Urho Kekkonen National Park survey, and question 1d in the Swabian Alb Biosphere Reserve survey.

Visitor segment shares represent the percentage of protected area visits that fall into each segment and are used to split visit counts into visits by segment. Visitor structure surveys can be conducted prior to the main survey to gather information on visitor segment splits (see section 5.9 on sample design). If a pre-survey of visitor structure was completed, then the analyst will already have information on the distribution of visits across visitor segments. If a pre-survey was not completed, then the analyst can estimate segment shares from the final expenditure survey.[91] However, the percentage of survey respondents who fall into each visitor segment may differ from true segment shares, if visitors in different segments have different likelihoods of being chosen to participate in the survey, or if different segments have different response rates. These issues can be addressed by weighting responses based on other available data.[92]

5.4 Developing Spending Profiles

In the questionnaire, visitors should be asked to report their spending in the protected area and the local area, with total expenditures split into a set of spending categories. There are two purposes for asking for spending by spending categories:

1. Categories can help to prompt visitors to recall what they have spent money on during their trip to the local area.

2. Spending categories are necessary to allocate spending to different economic sectors (which is important for estimating total economic effects: see Chapter 6).

Spending categories should reflect the types of goods and services that visitors may purchase while visiting the region. Typically spending categories will include spending on accommodation (e.g. hotels, camping), food and drink (e.g. restaurants and bars, groceries), tours, activities and entertainment, souvenirs, transportation (e.g. taxis, buses, bike hire), and other context-specific spending categories.[93] For example, Brazil uses spending categories of accommodation, meals, gas and oil, local transportation, activities and guided tours, retail stores and other expenses.[94] Some studies exclude durable goods, such as purchases of equipment, boats, and vehicles from trip expenditures because these expenditures represent goods

that are used for more than a single visit to a protected area. Travel costs incurred outside of the local area (such as airfares and fuel costs) are typically excluded too, as they do not contribute to the local area economy.

> **Note:** See example expenditure questions, such as question 25 in the Wind Cave National Park survey, question 13 in the Urho Kekkonen survey, and question 12 in the Swabian Alb Biosphere Reserve survey.

Spending profiles describe the average spending for each visitor segment by spending category. Visitor spending distributions typically follow a positively skewed distribution, where the majority of visitors have relatively low or moderate spending, and a small number of visitors have very high spending. The high spenders can have a substantial effect on spending averages, pulling the spending average well above median expenditures.[95] Although average spending profiles do not represent what the majority of visitors are spending, average spending is the most appropriate figure to use to estimate total visitor spending. Total protected area visitor spending is estimated by multiplying the average visitor spending profiles by segmented visitor count data, to calculate total spending by spending category.

5.5 Making Visitor Count Data and Visitor Spending Profiles Compatible

Visitor spending questionnaires need to collect trip characteristic data required to convert visitor count estimates and visitor spending profiles into compatible units of measure. Data on party size and time spent in the local area may be needed to convert visitation and spending profiles into compatible units of measure.

Most studies sample travel parties (i.e. personal travel groups) and measure spending by all members of the travel party.[96] It is common to ask for the value of total party spending because it is typically easiest for couples and families to report their shared expenditures. If respondents report total party expenditures, then it is important also to ask for the total number of people who were covered by these expenditures. This information enables party spending to be converted to a spending per person, or for visitor counts to be converted into an estimate of visitor party numbers.

Furthermore, spending data are often collected on a per trip basis, but spending profiles are traditionally measured in

terms of spending per party per day (or per night), or in terms of spending per person per day (or per night). To convert spending to a per day (or per night) basis, estimates of within-segment average length of stay in the local area are required. To avoid biased estimates, the correct approach for estimating spending per day (or per night) is first to calculate the average within-segment spending and average within-segment length of stay, and then divide these two figures.[97] If spending profiles are described in terms of spending per party per day, visit count data can be converted into number of party days by visitor segment; or, if spending profiles are in terms of spending per person per day, visit count data can be converted into number of person days by visitor segment.[98]

> **Note:** See questions 21 and 26 in the Wind Cave National Park Survey, questions 3 and 6 in the UrhoKekkonen National Park Survey, and question 12 in the Swabian Alb Biosphere Reserve survey.

5.6   Attributing Visitor Spending to the Protected Area

Visitors may come to a local area to visit a protected area and to do other things as well (e.g. for a business trip, to visit friends or relatives or to enjoy other local attractions). These are called multi-purpose trips. For **both economic contribution and impact analyses**, only spending associated with the protected area visit should be included as protected area visitor spending. To address multi-purpose trips and to estimate the portion of visitor spending associated with the protected area visit, many studies ask visitors about the role of the protected area in drawing them to the local area (e.g. whether the protected area was the primary reason that they visited the local area or were they in the local area for multiple purposes).

> **Note:** See for example question 20 in the Wind Cave National Park survey, and question 12 in the Urho Kekkonen National Park survey, and question 7 in the Swabian Alb Biosphere Reserve survey.

Based on trip-purpose responses, there are several methods that can be used to attribute visitor spending to the protected area. One method is to report upper and lower bound spending estimates, where the upper bound is based on spending by all visitors and the lower bound is based only on spending made by visitors who answer that the protected area is the primary purpose for their visit to the local area.[99] Another approach is to allocate only the portion of trip expenditures associated with time spent visiting the park (instead of using spending associated with the full time in the local area).[100] To use this second approach, the survey questionnaire needs to also include a question that asks about the length of time spent within the park.

> **Note:** See for example question 5 in the Wind Cave National Park survey.

As described in Chapter 3, **economic impact** analyses assess the impact of a protected area designation, and consider only the share of visitors and spending that is brought into the region as a consequence of the protected area designation. Only the portion of respondents stating that the protected area designation influenced their decision to come to the local area (i.e. visitors with "high protected area affinity") are included in the economic impact analysis.

For example, the national park designation in Germany is relatively young, and there is interest in understanding how important the designation is in attracting visitors to an area. Economic impact analyses were conducted at 14 German national parks and used surveys to estimate the proportion of visitors with "high national park affinity" (i.e. visitors who came to the local area because of the National Park designation).[101] Following this, the economic impacts of the national park designation could be separated from the economic contributions.

5.7   Ground Truthing Spending Estimates

It is important to ground-truth segment spending profiles and total visitor spending estimates to ensure that they seem reasonable and appropriate. This step can help to identify errors and adjust assumptions to improve estimates. Analysts can ground truth spending profiles by considering if spending category averages make sense for each segment, specifically looking to see if average nightly camping and hotel rates are in line with actual rates for the area and looking to see if there are any unexpected patterns (such as day visitors having lodging or camping expenditures).

There are several ways to ground-truth total protected area spending estimates. One of the most important considerations is to compare spending estimates to total output to the local economy. This can be used to check if the estimated share of output from protected area visitation seems reasonable compared to total output in the area.[102] Sometimes total spending estimates for specific spending categories can be compared to other data sources that collect information on that spending category (e.g. entry fee or accommodation like camping fees).

5.8   Choice of Survey Mode

Protected area visitor surveys collect information specifically about users of protected areas, and therefore survey samples must be drawn from the visitor population.

Typically, this is done by intercepting visitors while they are inside the protected area. Once a visitor has been intercepted, there are several options for how the survey

can be administered. The first set of survey mode options involves completing the survey on site during the intercept. The second set involves having respondents complete the survey on their own after their visit.

For on-site survey approaches, data can be collected through:

- Interviews, where survey staff ask and record responses (on-site interview-administered technique), or
- Guided surveys, where survey staff give visitors either a paper questionnaire to complete and return directly to survey staff (on-site guided survey technique – paper), or a tablet-based questionnaire (on-site guided survey technique – tablet).

Methods for collecting data through self-administered surveys returned after the visit include:

- Collecting mailing addresses and providing intercepted visitors with a paper questionnaire to complete and mail-back after their trip (self-administered mail-back technique), or
- Collecting email addresses and requesting that visitors complete an internet survey after their trip (self-administered internet technique).

Both on-site and return methods are common for protected area visitor surveys, and there are advantages and disadvantages of each of these modes for protected area visitor surveys (see Table 3). On-site survey techniques typically have higher response rates than other modes[103], and response rates for mail-back surveys are also high (as high as 70%[104]). For self-administered techniques, it is possible to offer respondents an option based on their preference to complete the questionnaire via mail or via the internet. However, researchers have found that response rates are typically lower when web and mail alternatives are offered simultaneously[105]. Mixed modes of contact (e.g. sending a postcard through the mail asking respondents to complete a survey online or sending an email to remind respondents to complete the paper survey they were mailed) may help to remove barriers to completing the survey and can have positive effects on response rates.[106] For self-administered return techniques, it is recommended to send multiple contacts to potential survey respondents as an effective way to increase response rates.[107]

Visitor spending analyses are focused on providing information about how protected area tourism affects local economies surrounding protected areas. It is therefore important that the questionnaire collects information that can be used to estimate total expenditures made in the local area for the full duration of visitors' trips to the local area. This requirement introduces some complications with visitor intercept surveys because visitors may be intercepted in the middle of their trip to the local area. There are several strategies for collecting full spending from intercept surveys, each with advantages and disadvantages. A common approach is to use mail-back surveys; these surveys enable visitors to report full expenditures because the survey is completed and returned after the trip. A disadvantage of mail-back surveys is that they introduce potential non-response and recall bias.[108] Another common strategy is to ask visitors to project anticipated expenditures for the remainder of their trip. This strategy enables collection of survey data on site but may miss unanticipated purchases that visitors may make at the end of their trip.[109]

A third option is to ask respondents to report spending for the previous 24 hours or spending up until the point of intercept; combined with a question about intended length of stay in the local area, these data can be used to make estimates of total area spending.

Table 3: *Advantages and disadvantages of visitor survey modes[110]*

Survey Mode	Advantages	Disadvantages
On-site interview-administered technique	▪ The interviewer can assist respondents with challenging questions and can answer clarifying questions ▪ Personal contact may increase responsiveness and reduce the number of unanswered questions	▪ The interviewer controls the pace of the survey, giving respondents less time to consider the questions ▪ There is a risk for social norms to affect replies. Respondents may want to make a good impression (social desirability) ▪ The interviewer's manner and behavior can affect respondents
On-site guided survey technique – paper	▪ Interviewer effects will be minimized ▪ Survey staff are available to answer clarifying questions	▪ Respondents have more control over the pace of the survey ▪ More unanswered questions occur than in an interview
On-site guided survey technique – tablet	▪ Questions can be customized based on responses to previous questions (conditional questions) ▪ Lists can be randomized to limit effects related to the order of items ▪ Reduces data entry costs	▪ Can be difficult to implement due to issues such as a lack of power and network availability in the field and weather conditions that may make it necessary to use water resistant gear ▪ High investment costs for tablets ▪ Expertise in the use of tablets required
Self-administered mail-back technique	▪ Questionnaires can be longer, allowing for more detailed questions ▪ Respondents can fill in the form at their own pace, when it is most convenient for them ▪ No interviewer effects	▪ Lower response rates compared to onsite modes ▪ Recall bias may be an issue ▪ There is less control over who replies to the questionnaire ▪ Multiple mailings can be expensive
Self-administered internet technique	▪ Helps to reduce errors in skip patterns and allows for more complex skip patterns ▪ Questions can be customized based on responses to previous questions ▪ Lists can be randomized to limited effects related to the order of items ▪ Reduces data entry costs ▪ Reduces print and mail costs	▪ Lower response rates compared to onsite modes ▪ Recall bias may be an issue ▪ There is less control over who replies to the questionnaire ▪ Some respondents do not have home access to internet ▪ Some respondents will have low internet skills

See the Urho Kekkonen National Park survey and the Swabian Alb Biosphere Reserve survey for examples of on-site surveys that ask visitors to project total spending and trip characteristics for their full trip to the local area. See the survey for Wind Cave National Park for an example mail-back survey.

5.9   Sample Design

Visitor spending analyses are usually based on data collected from a sample of visitors, as it is typically not possible to survey all visitors. Sampling is a procedure to choose (1) how many visitors to survey, and (2) which visitors to survey among all visitors in a protected area. If surveys are conducted on site, (2) basically means where and when to conduct the surveys in order to obtain the desired survey sample. This assumes that all respondents are intercepted, and then are either interviewed, or are asked to return the questionnaire later.

The overall goal of a proper sampling procedure is to obtain the most accurate estimate of the overall average spending of all visitors, given a certain number of surveys or to obtain a required minimum accuracy of the estimated overall average spending of all visitors with a minimum number of surveys. It is crucial that the surveyed visitors and segments are representative of the overall visitors to obtain an accurate overall spending estimate. Non-representative samples can result from disproportionate sampling of visitors from different visitor segments[111]. For example, samples often do not include visitor segments with specific spending patterns (e.g. very high or low spending) because members of these groups might be rare. Non-representative samples can also result from non-response error, which occurs when the characteristics of people who chose to respond to the survey differ from the characteristics of people who do not respond to the survey.[112] For example, several studies on visitor expenditures have found lower response rates for solo travelers, day visitors, and visitors with zero or low expenditures.[113] Response bias can be tested for by comparing relevant socioeconomic characteristics of respondents (such as income, age, race, and domestic residence) using short non-response surveys, and weights can be used to correct spending averages.[114]

Segmenting visitor groups is a good strategy to reduce non-response bias and to target sufficient surveys of each visitor segment. However, this means that two parallel surveys are required: one concentrating on visitor structure (i.e. the portion of visitors in different visitor segments such as overnight guests vs. day visitors), and one focusing on spending behavior of each visitor segment.[115] A visitor structure survey is required to produce reliable data on the percentage of visitors who fall into each visitor segment. This survey should be short and may follow a sampling strategy that is distinct from the spending behavior survey. For example, questions could ask whether the interviewee

is an overnight guest or a day visitor, and if an overnight guest, which category of accommodation was chosen. The very quick survey ensures a high response rate and very large sample sizes. Information gained through the structural survey can be used to inform the sampling strategy for the spending behavior survey. Then a minimum number of respondents from each visitor segment (i.e. a quota sample) can be targeted.[116] However, surveying specific visitor segments may be difficult if visitors belonging to certain segments cannot be identified (e.g. by accommodation, activity, location or transport mode).

Consequently, the survey locations are to be chosen to avoid over- and under-representation of different types of visitor groups and to obtain the desired sample size for each visitor segment. Especially in survey settings with different geographic properties and different visitor activities, a sound selection of survey locations is necessary. Knowledge of visitor flows is helpful during location selection. This knowledge can often be obtained through consultation with local protected area managers and rangers. In addition to the geographic distribution of sample sites, it is also important to consider possible variation in visitation that may occur across time. It may be important to sample across weekends and weekdays, across seasons and weather conditions to capture a representative sample of visitors to an area.

The total number of surveys to be done depends on the desired accuracy of the average visitor spending estimate, the available resources, the total number of visitors, the number of visitor segments and the variance of the visitor spending in each visitor segment. However, there is no standard rule for determining the minimum sample size to develop an accurate and representative spending profile. While large sample sizes tend to produce more accurate mean spending estimates, higher variances in the visitor spending tend to reduce the accuracy of such estimates. If visitors are segmented well into more homogeneous subgroups relatively few surveys are required to obtain reasonable estimates of the mean spending. However, using a preliminary sample (or past years results) to estimate the optimal number of visitor segments and surveys per segments for a desired degree of accuracy (sample size calculation) requires some statistical knowledge (given that the true variance and the distribution of the overall visitor spending pattern is unknown).

Some studies suggest that for visitor segments with relatively uniform visitor spending, samples of 50-100 interviews per segment may produce errors of 10% or less, though even fewer observations may be sufficient if there is little variation between observations.[117] For increasing the overall accuracy, more surveys should be conducted for visitor segments with high spending, because a relative error in the estimated spending for visitor segments with high spending has a greater effect on the overall accuracy of the estimated mean spending.[118]

Box 9: Sampling scenario

If a visitor spending survey is conducted, the survey results can be used to estimate a margin of error for a chosen confidence level. For example, survey results may estimate that there is 95% chance that average spending by visitors is between USD 70 and 90 (error range). If the size of this error range is considered too large, more visitor surveys will be needed to increase the sample size to get a smaller error range. Sample size calculation allows us to estimate how many extra surveys are needed to obtain a certain error range. For example, if visitor spending surveys are conducted at three different protected areas and 2000 surveys per protected area are considered, a preliminary assessment could be done after a number of these (e.g. 1000 surveys per protected area). Spending patterns may be different between the protected areas (with different variances in the visitor spending) and while there may be quite accurate results for protected area 1 (because of very uniform spending pattern), protected area 2 may have very heterogeneous spending patterns (large variance), and so preliminary results are less accurate. These preliminary findings could be used to shift survey efforts from protected area 1 to protected area 2. Sample size estimation would give an indication of how many additional surveys are needed to take to achieve an error range of a certain size. Assuming that spending patterns remain similar, sample sizes required for past years' surveys can be used to optimize survey efforts for the up-coming years, or maybe even for a different, but similar protected area.

Similarly, preliminary or past results can be used to optimize survey efforts across different visitor segments. Imagine for example that preliminary results after 1000 surveys indicate that the visitor segment of day visitors with low protected area affinity has relatively uniform spending patterns, and the sample size for this visitor segment is already fairly big.

Consequently, a relatively accurate estimate of the mean spending for this visitor segment has been established. On the other hand, overnight visitors with high protected area affinity may have very diverse spending patterns, and so preliminary estimates of the mean spending for this visitor segment have still a large error margin. Therefore, it may be advisable to target a higher sample size for this visitor segment to obtain a more accurate estimate of its average spending.

Targeting certain visitor segments may be difficult if visitors belonging to certain segments cannot be identified up-front. However, if segmentation is based on recreational activities, lodging type, place of origin etc. it may be relatively easy. Overnight visitors may be encountered easier at their accommodations. Visitors with Protected area affinity may visit more remote areas or areas allowing for wildlife viewing etc.

Box 10: Case Study example on Visitor Surveys in Germany[119]

For reasons of efficiency, interviews are always conducted together with the counting (i.e. they are always carried out on the same survey days and at the same survey points). Due to the lack of information on the visitor structures in a protected area (day visitors vs. overnight guests), this approach is regarded as the best option.

The number of survey days primarily focuses on a reliable basis for calculating the number of visitor days. For this reason, there are no concrete specifications for the number of interviews. Even in small protected areas with six counting points only, the number of long interviews in Germany reaches usually around 1000, while in larger protected areas about 2000 interviews or more are conducted.

Based on the survey results four visitor segments were defined: visitors with (a) high and (b) low protected area affinity, (c) day visitors and (d) overnight guests. As no information about the segments' proportions were available from a presurvey, so the sample size for each of the four visitor segments could be determined only after the survey has been conducted. Taking about 3000 interviews at a certain park and where 20% of visitors report a high protected area affinity, the segment sample size was 600. With the share of day visitors of about 10% within this segment, the sample size for the segment of day visitors with high protected area affinity was 60.

5.10 Implementation in the Field

Visitor intercepts and on-site data collection can be done by protected area staff, hired survey staff, or volunteers. It may be desirable for the interviewers to wear distinctive clothing that clarifies their official purpose (e.g. t-shirts saying 'visitor survey'), and to carry an official survey authorization letter. However, interviewers also should never wear official logos or buttons indicating their protected area's name, because then asking whether respondents know about the protected area is completely flawed. Interviewers need to be trained to be able to conduct the interviews in a professional and consistent way. Such training includes a review of the sample design and intercept rules, a review of all relevant questions, strategies for handling difficult interviewing situations, aspects like proper appearance and friendliness, as well as safety and security protocols. All surveys should also be checked through quickly after their completion, to ensure each part has been correctly filled in.

Visitor intercepts should closely follow the planned sample design. During the field study, unexpected circumstances such as unpredictable weather conditions or a lower-than-expected number of visitors can lead to necessary revisions. Factors that affect data collection should be recorded in a survey diary – weather conditions, duration of the collection, number of visitors at the collection site, number and reasons for refusal, and number of questionnaires distributed or collected.[120]

5.11 Case Study: Visitor Counting and Visitor Surveys in Finland

Metsähallitus Parks & Wildlife Finland (P&WF) established a national visitor monitoring system of parks and protected areas in the late 1990s.[121] There are 61 protected areas in the monitoring system across Finland. This includes 40 national parks, five national hiking areas, eight historical sites and eight other recreationally important nature protection areas.

Visitor monitoring activities include visitor counting and visitor surveys. With visitor counting one obtains estimates on the amount of use, whereas with visitor surveys one can obtain more descriptive information (e.g. on the types of visitors, their recreational behavior, motives, needs, opinions, expenditures, and perceived health benefits). By combining these two types of information, one can draw a much more diverse picture of protected area visitation than with either type of information alone.

For **visitor counting**, P&WF mostly uses electronic people counters located at main entry points. In some areas where roads capture the visitor flows well, electronic traffic counters are used. Each area is counted with several electronic counters permanently located at main entrance points. Electronic counters provide continuous hourly counting data all year round. Summer and winter counter locations vary, depending on trails in use. The point specific visitation counts obtained by electronic counters are extrapolated into area level visitation numbers by area coverage percentage.[122]

Visitor surveys are implemented by P&WF using standardized on-site guided surveys.[123] The sampling aims to be as close to a random sample as possible yet taking into account the limitations brought by resources and demanding circumstances out in the field. Visitors are asked to fill the questionnaire towards the end of their visit, ideally when they are exiting the site. The respondents mostly answer the questionnaire on a weather-proof tablet, with a questionnaire available in Finnish and several other languages. A paper questionnaire is also available as a back-up and for those people who prefer not to use modern technology. The interviewer is available at the interview site to answer visitors' queries and provide further information, but typically respondents fill out the questionnaire independently. Each protected area with significant recreational use is surveyed on average every five to ten years, which means close to ten surveys to be administered across Finland annually.

Galápagos Islands, Ecuador ©npavlov/Shutterstock.com*

6

Economic Analysis

6.1   Measuring the Effects of Visitor Spending

Economic contribution (this Chapter) = Visitor numbers (see Chapter 4) x Average visitor spending (See Chapter 5) x Economic multipliers (this Chapter)

Protected area agencies are accustomed to financial reporting that typically deals with direct income (e.g. from gate fees, concessions and resource royalties), costs (e.g. salaries of protected area staff and purchase of input goods) and visitor numbers. Often these reports do not consider the wider economic effects of protected areas, which are mainly achieved through tourism in the related region. These may include their contribution to employment, taxes and incomes as well as their total contribution to GDP[124], even though these wider economic effects can be substantial. Consequently, reports tend to underreport the economic significance of protected areas for local and national economies.

This chapter describes methods and considerations for estimating the wider economic effects associated with visitor spending. First, we take a closer look at economic multipliers and ratios (section 6.2). As introduced in Chapter 3, multipliers are required to calculate the overall economic effects (either economic contribution or impact) including direct economic effects and the indirect and induced economic effects. Economic ratios allow researchers to translate economic effects into other relevant measurement units such as employment, income, value-added or taxes. Guidance is provided on how to obtain both multipliers and economic ratios, and these concepts are illustrated using a case study from Brazil.

Note: Although economic analyses can also account for non-market benefits such as e.g. option value or existence value, and concepts that relate to economic welfare (consumer surplus), this chapter is limited to economic impacts and contributions which measure jobs and business activity associated with the circulation of visitor spending within a regional economy.

6.2   Economic Ratios and Multipliers

Money that people spend during a visit to a protected area has multiple economic effects, such as generating employment, taxes, value-added and income. Economic ratios are used to translate visitor spending into these different effects. These effects occur within the tourism sector itself (i.e. direct effects, see Figure 2 in Chapter 3), but also in other sectors that supply goods and services to the tourism sector or sectors that benefit from salaries re-spent in the local economy. For example, households that receive salaries from tourism companies can spend those salaries on household goods, and shops buy products that visitors want to purchase[125] (see Figure 3 and Figure 4 in Chapter 3). So, the original visitor spending flows into different rounds of re-spending. This causes a multiplier process (also called ripple, or spillover effect) through the economy influencing multiple levels and sectors.[126] **Multipliers** are coefficients used to convert direct economic effects into the total economic effects (i.e. direct + indirect + induced economic effects). The size of the multipliers depends on leakage (i.e. the amount of money that leaks out of a region due to imported goods) and the capture rate of the tourism sector (i.e. the share of money that is re-spent in the region). Multipliers can be expressed in various ways to assess different types of indirect and induced economic effects such as value-added, employment, taxes or income (see Box 11). Such multipliers are then called income multiplier or employment multiplier. They are estimated by applying economic ratios to the overall economic multipliers.

Box 11: Types of Economic Effects

- Direct output is the sum of gross sales and change in inventory value (i.e. stocks value) in hotels, restaurants etc.

- Value added equals company profits, paid salaries, indirect business taxes and change in stock.

- Tax is the amount of taxes generated by the total economic effects.

- Labor income refers to a proprietor's income, salary income and wages.

- Employment means the number of jobs supported by visitor spending, including full-time, part-time and seasonal jobs.

- Household income refers to the income, salary income and wages generated by a complete household.

- Income equivalent means the number of (households) persons supported by visitor spending (including all non-employed persons and other household members who have to be provided for).[127]

6.2.1 Economic Ratios

While economic multipliers capture the secondary effects (i.e. indirect and induced effects) of different economic activities, economic ratios explain the direct economic effects. They are used to find out how much direct employment, income, taxes and value added are generated by visitor spending. Economic ratios show conversions between different types of measurement of economic activity (e.g. number of jobs / visitor spending). Using the example of jobs, ratios can be calculated by dividing the total jobs in the tourism sector by the direct output of tourism spending (i.e. the remaining sales by the tourism sector after using the capture rate; see Box 12). The so-called jobs-to-direct output ratio can be applied to the remaining spending of protected area visitors to estimate the jobs generated by visitor spending (see below).

$$\frac{\text{Jobs}}{\text{Direct output}} = \text{Jobs / Direct output ratio}$$

$$\text{Jobs / sales ratio} \times \text{Visitor spending} = \text{Direct jobs}$$
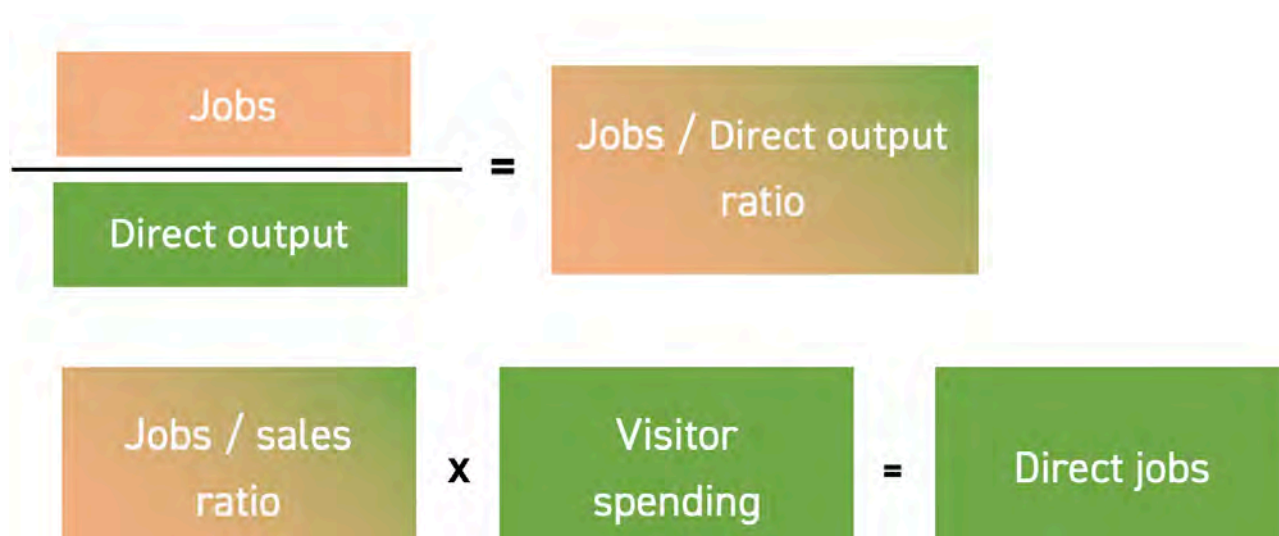
Box 12: Economic Ratios

Even though economic ratios can be calculated using different denominators, in tourism economic impact assessments they are typically based on the direct output (also called direct sales). In the simplified example on page 54, we use total sales in the tourism sector as the denominator to apply it to total visitor spending. However, direct output is used to account for first round leakage effects. The direct output (also called direct sales) is the total sales (equaling the visitor spending) multiplied by the capture rate. For simplicity, the capture rate of 100% is often assumed for the service sector, as service sectors typically rely on few input goods. However, when applied to the retail sector, a capture rate less than 100% is used, as imported goods purchased for resale are not included as supporting local business activity and are therefore not included in direct output estimates.

Visitor spending **X** Capture rate **=** Direct output
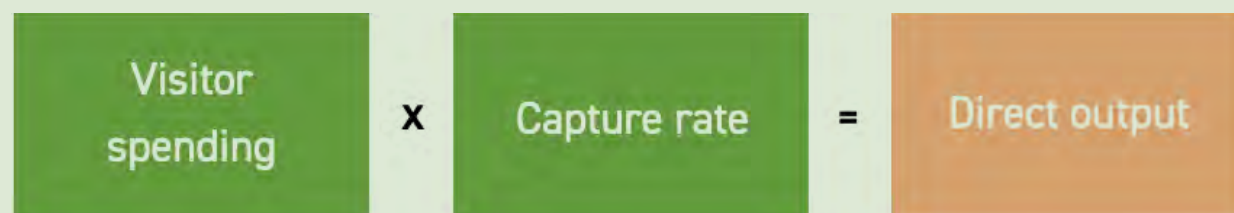
For example, take a group of visitors spending USD 100 on souvenirs in the region of a protected area. Perhaps 50% of this spending leaks out of the area, if the retailer purchases souvenirs produced in another region. In this case, only the retail margin (i.e. the sales price minus the wholesale price, often about 40-50%) is considered as the direct output, or the direct sales effect.

6.2.2 Leakage and Capture Rate

The size of the multipliers used to estimate indirect and induced effects depends on leakage or the capture rate. Money spent by visitors that is not retained locally is called a **leakage**.[128] At the national level, only the leakages to foreign countries are of interest while on a regional or local level of protected areas the share leaking out of the area is crucial. Leakages can be caused by payments made for imported goods (e.g. imported souvenirs, food and drink), or for money that is transferred out of the region for government taxes, or profits that are transferred to companies based outside the region. Lower leakages mean that a greater proportion of tourism income is retained in the region.

By contrast, the term **capture rate** is the opposite of the leakage. It refers to the money that is captured, or retained, within the local economy when it is re-spent locally. The capture rate is the proportion of the total money spent in the region that stays in the region. Consequently, the capture rate and the leakage add up to one.

The size of capture rates, leakage and multiplier effects are influenced by four factors:[129]

1. **The economic sector assessed:** The capture rate varies between economic sectors based on the ratio of goods and services purchased within and outside the region. Therefore, different capture rates are applied for assessing indirect effects (which depend on the specific structure of the input goods purchased by the tourism sector) and for the induced effects (which depend on the general demand of the population in the region).

2. **The size of the area that the multiplier refers to:** Generally speaking, the larger the area, the larger the capture rate and the lower the leakages. This is because it is generally more likely that tourism products and services are purchased from a larger region.

3. **The level of economic development and diversity of a region:** The more products and services that are produced locally, the smaller the leakage will be, and the larger the multiplier will be.

4. **The expenditure structure:** If there is a higher proportion of locally produced products and services, than those purchased from outside the region, there will be higher direct and indirect effects.

Take an example where a tourist spends USD 100 to buy a souvenir. The capture rate from this purchase is the proportion of the money spent that is retained in the study area. Here, the price mark-up by the local retailer is USD 40, and the retail store bought the souvenir for USD 60 from an artisan living outside the area. In this case, the value captured in the local area is the USD 40 mark-up (or 40%), while there was a leakage of USD 60 (or 60%). However, if the artisan had been local, then the capture rate would

be 100%, and leakage would have been 0%. Therefore, it is often recommended for visitors to buy local products, so that a larger proportion of the money stays in the local community.

6.2.3 Type I and II Economic Multipliers

Different economic multipliers are used to estimate indirect and induced economic effects:

- **Indirect economic effects** are calculated by applying **Type I multipliers** to the direct economic effects.

These multipliers measure indirect effects of tourist expenditure (e.g. labor income, jobs). Type I multipliers are the ratio of the sum of direct and indirect effects and direct effects.

- **Induced economic effects** are calculated by applying **Type II multipliers** to the direct economic effects. These multipliers measure induced effects, or re-spending of money by tourism employees or companies). Type II multipliers are the ratio of the sum of direct, indirect and induced effects and direct effects (see figure below).

$$\text{Type I income multiplier} = \frac{\text{Direct income} + \text{Indirect income}}{\text{Direct income}}$$

$$\text{Type II income multiplier} = \frac{\text{Direct income} + \text{Indirect income} + \text{Induced income}}{\text{Direct income}}$$
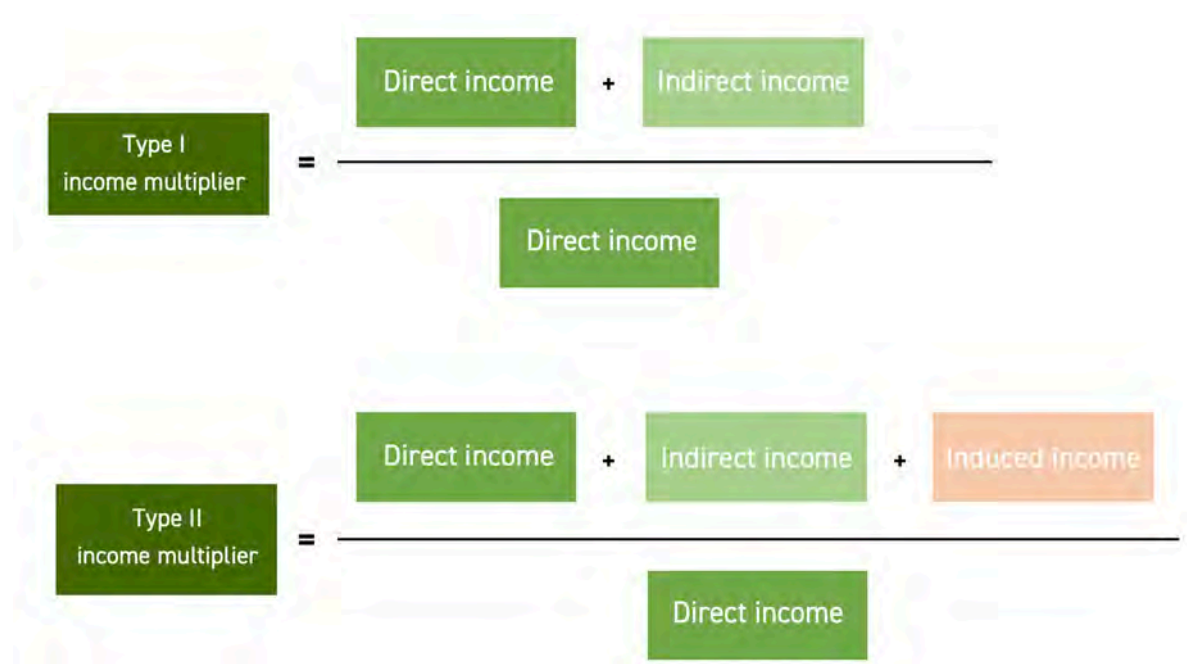
For example, imagine a protected area that has a Type I income multiplier of 1.4 and a Type II income of 1.9. For each USD 1 of sales to visitors (visitor spending), there is USD 0.40 in indirect income and USD 0.50 in induced income. So, USD 100 in visitor spending results in USD 190 of income (USD 100 x 1.9 = USD 190: see below).

$$\underset{1.9}{\text{Total income}} = \underset{1.0}{\text{Direct income}} + \underset{0.9}{\text{Multiplier effects}} = \underset{1.0}{\text{Direct income}} + \underset{0.4}{\text{Indirect income}} + \underset{0.5}{\text{Induced income}}$$
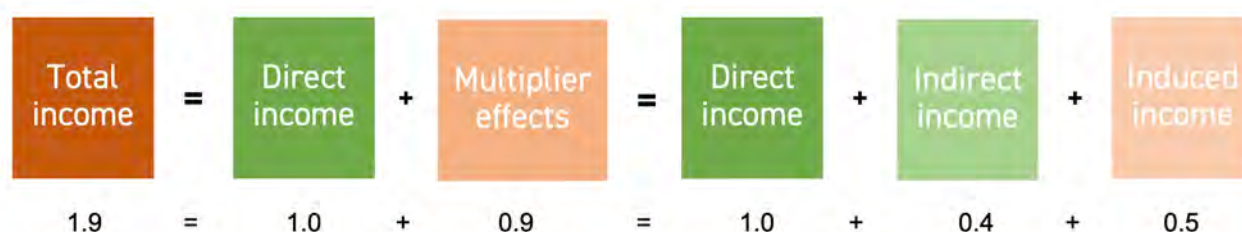
> **Box 13: Multipliers Applied to different Economic Measures**
> Important aspects to consider when estimating multipliers and economic effects, is the selection of relevant economic measures. For example, multipliers are often applied to the direct output (direct sales), but not to the total sales value (i.e. total visitor spending). This is done to account for first round leakage that occurs when visitors spend money in the region. Therefore, be cautious before applying a multiplier to the total sales value.

6.3   Obtaining Economic Ratios and Multipliers

There are different ways of finding multipliers and ratios to use in economic analysis. The option used will depend on the level of existing information, budget, time, and capacity constraints. This section describes some options.

6.3.1 Multipliers and Ratios Based on Input-Output-Models

Multipliers are most commonly established from Input-Output (I-O) models.[130] These models are typically constructed by national statistical agencies for national accounting. Several countries also have regional I-O models. For example, in Germany multipliers are derived from official statistics at the national level, as well as non-official tourism statistics at regional level.[131] Eurostat publishes I-O tables with multipliers for Europe,[132] and the World Input Output Database has multipliers for various countries of the world.[133] I-O models may include ready to use multipliers for measuring the economic effects of protected area tourism.

> Before embarking on an economic analysis, speak to your national institution responsible for statistics, to establish whether an I-O model is available.

I-O models are matrices or tables that describe the interdependencies and flows of money between different sectors within a certain economy. They describe how much a sector (such as the tourism sector) demands from all other economic sectors (e.g. manufacturing, agriculture etc.) in terms of intermediate input goods, and what shares of these input goods are imported or bought domestically. So, I-O tables include information on sector specific leakage and capture rates.

The I-O models also present information for each economic sector on the proportion of sales that are used to pay salaries, benefits, proprietors' income and taxes, as well as the number of employees and the value added. Consequently, I-O tables describe how many people are employed, how many salaries and how many taxes are paid per unit of sales in the tourism sector. For example, to estimate the total direct jobs created in the tourism sector due to the protected area designation, simply multiply the generated sales in the tourism sector with an employment coefficient from the I-O table.

However, I-O models are often not available at the local or regional scale, and they may not differentiate sufficiently by individual sectors. I-O models may be available only for the overall national-level economy, or just include a generic service sector rather than the tourism sector specifically. Multipliers of the overall economy are based on the overall leakage and capture rate of the economy. Even though they do not account for the specific economic interrelations of the tourism sector, they can be used as approximation.[134] However, if no multipliers and no I-O models are available fitting the purpose of a given economic impact analysis, other options are available to estimate economic multipliers and ratios (see Annex 10.4).

6.3.2 Multipliers and Ratios Based on Surveys

It is possible to develop regional I-O models based on representative surveys of regional economies. However, this may be a very time consuming procedure. Such surveys must cover all relevant economic sectors that interact with the tourism sector of the region and obtain all information covered by I-O models (see section 6.4). Nevertheless, simplified I-O models that cover only part of the standard information of I-O tables (valued added, taxes etc.) and do not distinguish between all economic sectors can be generated.

6.3.3 Generic Ratios and Multipliers

An alternative option is to use generic multipliers and ratios identified in the literature that have been calculated for similar regions and adapt them to local conditions using expert opinion. Population density tends to correlate strongly with the size of a multiplier, and therefore it can be used to adapt multipliers locally.[135] If no other source of data is available, researchers can use a generic multiplier of 1.2 for small rural areas, 1.4 for larger rural areas, 1.5 for moderate size communities, and 1.7 for state or metro area analyses[136] (with certain assumptions in relation to the structure and size of the local economy). Where it is simply not possible to identify suitable multipliers, it may be advisable to calculate only the direct impacts of visitor spending at the local level (e.g. through value chain analysis, see Annex 10.4). If multipliers are only available at the national scale, it may also be possible to combine local estimates of the direct economic effects with estimates of

the total economic effects (including indirect and induced effects) at the national scale.

> **Box 14: Obtaining economic multipliers and ratios**
> Statistics Finland produces state-level I-O tables annually, with a few years delay. Previously regional (provincial) tables were produced in an irregular time span. In the Finnish case, it was decided to create the local tables from regional tables by applying cross-location quotients where local, regional and national statistical data are combined. However, due to the limited resources it was not reasonable to construct the local tables for each protected area. Instead, it was decided to classify the areas into four classes based on population density in the surrounding area, and to calculate average multipliers from derived local I-O tables for these classes.[137] The multipliers were first created in 2010 and they have been updated every each five years (2014, 2019).[138]
>
> A list of things to check before starting an economic impact analysis includes:

- Do studies exist that estimate economic impacts of protected areas in the country? How were the economic multipliers and ratios obtained?
- Are regional sector specific multipliers and/or I-O models available for the given country?
- Can multipliers and ratios be used that have been estimated for similar regions? Can such multipliers be adapted to better represent the circumstances at the given protected area (e.g. larger regions with diversified economies tend to have larger multipliers than small regions that need to import goods for many sectors)?
- Can an expert estimate the multipliers and ratios based on economic interrelations of the regions?
- Does the project have the resources (knowledge and time) to carry out a survey to generate required I-O models?
- Is it sufficient to estimate only direct economic effects at the local level?

6.4   Case Study: Calculating Economic Contribution and Total Effects

This case study from Brazil illustrates the calculation of the economic contribution of visitation in a protected area to the entire economy of Brazil (national scale).[139] The Chico Mendes Institute for Biodiversity Conservation (ICMBio) is the federal agency responsible for the management of the Federal Protected Areas in Brazil. ICMBio manages a system of 334 federal protected areas comprising 170 million hectares. The federal protected areas of Brazil were assessed using an economic analysis tool called the Tourism Economic Model for Protected Areas (TEMPA).[140] TEMPA requires three inputs: number of visitors, visitor expenditures, and economic multipliers. In Brazil, each of these inputs was collected from different sources.

| Economic contribution | = | Visitor numbers | x | Average visitor spending | x | Economic multipliers |

Visitor numbers: Visit numbers from 120 protected areas managed by ICMBio were calculated using different direct, indirect and automatic counting methods. A total of 12.4 million visits were reported in 2018.

Visitor spending: All protected areas were grouped into three classes of recreational use (extensive, intensive and highly intensive, see Box 15).[141] Due to resource constraints, only one protected area in each group was selected to collect visitor spending data. These were Canastra National Park, Chapada dos Guimarães National Park and Tijuca National

Park. Data was collected from 2016 to 2018 through on-site interviews and e-mails. The results were used to estimate visitor spending for all protected areas for the three different groups. To improve the accuracy of the spending estimates, additional protected areas are currently being surveyed by ICMBio.

Box 15: Groups of Brazilian protected areas by recreational use intensity

▪ **Extensive use (10,001 to 100,000 visits) regional tourist destinations.** Management focuses on conservation, but also on recreation opportunities. Basic infrastructure is offered at designated sites, including rustic visitor centers, campgrounds, restrooms, etc. Average spending is between USD 21.11 and USD 59.84.

▪ **Intensive use (100,001 to 1,000,000 visits) national destinations or nearby a large city.** Recreation is an important mission of the protected areas, and more attention is given to the quality of the experience, safety of visitors and management of sensitive areas. A good variety of activities and services are offered. Average spending is between USD 17.88 and USD 60.95.

▪ **High intensive use (> 1,000,000 visits) region is a consolidated international destination,** usually located in the most developed and high-density areas of the country. Recreation is a management priority with more attention to the quality of the experience, safety of visitors and management of sensitive areas. A good variety of activities and services are offered. Average spending is between USD 10.49 and USD 60.61.

Economic multipliers: Ratios and multipliers were developed for the Brazilian economy from the national I-O matrix of 68 sectors (see Table 4 for disaggregated multipliers at national scale and Table 5 for aggregated multipliers). These were formulated from national accounts using the methodologies described in Annex 10.3.5.[142] Capture rates from the Brazilian economy were applied and impacts and contributions were calculated to local, state and national level. Results of the study at national scale are shown in Table 4, where the first row shows the results for the accommodation sector. It shows that every USD million of direct output generates 60 direct jobs within the Brazilian economy. And, every USD of direct output generates USD 0.45 of direct personal income (wages and salaries in accommodation and proprietor's income) and USD 0.58 of direct value added (personal income plus rents and profits, plus indirect business taxes). Looking at the total economic effects (including the indirect and induced effects), the data shows that every USD of direct output generates USD 4.5 of total output (USD 1 direct output plus USD 0.6 indirect output [based on the Type I Output Multiplier] plus USD 2.9 induced output [based on the Type II Output Multiplier]). There are 142 total jobs generated by each USD million dollars of output in the accommodation sector (i.e. 60 direct jobs and about 82 secondary jobs through indirect and induced effects).

Table 4: *National multipliers and ratios developed from the Input-Output (I-O) table for Brazil (2013) – 68 sectors*

Sector	Direct effects (ratios)			Indirect effects		Total effects (indirect + induced)		
	Jobs/ $MM d. output	Income /d. out-put	Value added /d. output	Output I	Output II	Jobs II/ $MM d. output	Income II/ d. output	Value added II/d. output
Accommodation	59.94	0.45	0.58	1.62	4.50	141.86	1.21	1.70
Eating and drinking	74.75	0.41	0.50	1.79	4.63	161.16	1.20	1.64
Creative, arts and entertainment activities	91.80	0.50	0.57	1.59	4.71	174.05	1.31	1.78
Terrestrial Transport	39.09	0.35	0.45	1.97	4.58	114.00	1.10	1.52
Wholesale trade and retail trade, except motor vehicles	59.12	0.46	0.64	1.53	4.36	134.76	1.20	1.71

Economic contributions: Protected areas in Brazil receive 12.4 million visits per year, which spend USD 50 ($BRL 205)[143] on average. Multiplying the total annual visitor numbers with the average visitor spending gives a total visitor spending (also called total sales) of USD 620 ($BRL 2,500) million. Applying a capture rate of 96.3% at national level to account for first round leakage, gives a figure for direct output (also called direct sales) of USD 600 ($BRL 2,400) million.

Ratios from Table 4 are used **to convert the direct output into direct value-added, direct jobs and direct income.** For example, the direct output for the accommodation sector is USD 182 ($BRL 741) million. To calculate direct income of the accommodation sector, the direct output is multiplied by the Income/direct output ratio of the accommodation sector (0.45), which results in USD 82 ($BRL 333) million direct income. Similarly, the direct value added of the accommodation sector is calculated by multiplying direct output with the Value added/direct output ratio of 0.58

resulting in USD 105 ($BRL 430) million. To obtain the direct jobs we multiply the direct output with Direct Jobs/ direct output ratio of 60 Jobs/$MM, which results in 10,882 direct jobs in the accommodation sector.

Multipliers from Table 4 are used to **calculate the total economic effects resulting from the accommodation sector** (including indirect and induced effects). For example, the total income generated through spending in the accommodation sector is calculated by multiplying the direct output of the accommodation sector with the Income II/ direct output multiplier (USD 182 [$BRL 741] million x 1.21 = USD 220 [$BRL 897] million).

Adding together the results of these calculations for all different sectors affected by visitor spending provides the total economic income effect of the visitor spending (see Table 5). The same calculation is then repeated for all other economic effects (i.e. value added, jobs etc.) using the corresponding multipliers.

Table 5: *Direct and total effects of visitor spending at national scale in Brazil (2018)*

Spending Category	Output (USD million)	Jobs	Personal Income (USD million)	Value Added (USD million)
Accommodation	181.5	10,882	81.7	105.3
Meals	130.3	11,967	53.5	65.2
Gas and oil	62.2	4,041	2.5	3.8
Local transportation	52.5	3,411	18.4	23.6
Activities and Guided Tours	101.9	6,615	50.9	58.1
Other expenses	10.9	652	4.3	5.3
Retail sector	44.6	2,707	19.3	26.3
Wholesale sector	13.1	774	6	8.4
Direct Effects	597	41,049	237	296
Secondary Effects	1,965.2	48,182	429.5	639.2
Total Effects	2,562	89,231	666	935

Alternatively, aggregated multipliers can be applied to calculate the total economic effect of visitor spending (see Table 6). The aggregated multipliers are not sector-specific, but they represent the weighted average of all sector-specific multipliers in Table 4. The aggregated multipliers translate a certain unit of direct economic effects (e.g.

direct income) into the total economic effects of the same unit (total income) by multiplying the direct economic effects with the corresponding multiplier. Table 6 presents aggregated multipliers for different standardized types of study areas used for Brazil. These multipliers can be used for economic impact assessments within similar study areas if no I-O matrices or multipliers are available. The generic study areas were developed based on population density around protected areas, since population density correlates with the size of multipliers, and therefore it can be used to adapt multipliers locally (see Annex 10.3.6).

Table 6: *Aggregated multipliers for different standardized study areas used by TEMPA for Brazil*

	Rural	**Small Metro**	**Larger Metro**	**State**	**National**
Capture Rate	52.8%	62.9%	72.3%	84.3%	**96.3%**
Total Output Multiplier	1.14	1.52	1.98	3.52	**4.13**
Total Income	1.35	1.54	1.79	2.31	**2.82**
Total Value Added	1.75	1.87	2.11	2.62	**3.16**
Total Jobs	1.13	1.27	1.42	1.77	**2.17**

The total economic effects are calculated by multiplying the direct effects in Table 5 with the corresponding aggregated national multipliers in Table 6. The direct output of USD 597 million generated by all visitor spending of Brazil is multiplied with the national total output multiplier of 4.13, which results in USD 2.6 billion total output (including indirect and induced economic effects). Likewise, the 41,049 entrepreneurs and people employed directly in the protected area tourism that earn USD 237 million result in 89,231 total jobs and USD 666 million total income, after applying the corresponding aggregated multipliers of 2.82 and 2.17. The total protected area visitation contributes USD 296 million to direct value-added, and USD 935 million to total value-added, to the GDP of Brazil.

To calculate the economic effects at local scale (e.g. for a rural area) the direct output is calculated by applying the rural capture rate (52.8%, see Table 6). The different direct economic effects (i.e. direct income etc.) are then calculated by applying rural ratios (see Annex 10.3.7), and the total economic effects are calculated by applying the rural aggregated multipliers in Table 6.

Figure 10 illustrates the data and shows that Brazil's protected areas operate at a financial loss with direct income of USD 19 million compared to a budget of USD 166 million. However, from a broader economic perspective Brazil's parks operate profitably, by generating a direct economic impact of USD 593 million and total economic effects of USD 2.56 billion. **This means that each USD 1 invested in park management generates USD 15 for the economy, even before the value of biodiversity conservation and ecosystem services are considered.** Moreover, many protected areas are located in remote areas, with few employment possibilities in the industry and service sector. Therefore, tourism generates economic benefits for local communities that have a higher household dependency on the surrounding natural resources. Overall, these results highlight the importance of tourism in protected areas and the adjacent regions for the Brazilian economy and provide a persuasive argument to increase the budget allocation for parks to stimulate the local and national economy.

Figure 10: *Economic assessment of visitor spending in protected areas of Brazil (USD million)*

Note: Similar assessments of broader economic effects of protected area tourism are also conducted in other countries including Austria[144], Canada[145], Finland[146], Germany[147], Namibia[148], South Africa[149], Switzerland[150] and the USA[151].

6.5   Minimum Standards, Errors and Assumptions

Economic effects analysis (i.e. incorporating both contribution and impact analyses) of protected area tourism is not rocket science, but it requires a high level of accuracy, and experience in both social science research methods and economic analyses. This section describes levels of rigor, assumptions and errors, and the importance of specifying measures clearly.

6.5.1   Levels of Rigor

To get the most accurate current information during an economic effects analysis, it is recommended to collect data on visitors, their trips and their spending directly from them. This can be done through surveys and interviews in and around the protected area (see Chapter 5). Sometimes these surveys can be very costly, and so it is acceptable to use reliable data from secondary sources (for example,

using official protected area figures for the number of visitors to the area, and departure survey data on visitor expenditure conducted by national statistical or immigration offices). The Table 7 below illustrates how four levels of rigor can be applied to each of the variables we need to measure the economic effects of tourism.

It is recommended that researchers focus their attention on the variables that will most affect the accuracy of results. In order of importance these are:[152]

1.   Visitor numbers,

2.   Visitor spending, and

3.   The value of economic multipliers.

If there is limited confidence in the local applicability of multipliers, researchers can choose to emphasize direct effects instead of the total effects.

Table 7: *Levels of rigor for economic variables[153]*

Level	Visitor numbers	Visitor spending	Economic multipliers
Level 1 (Weakest, to be avoided)	Estimation based on expert judgment	Estimation based on judgment	Estimation of multipliers based on expert judgment
Level 2	Existing visitor counts or estimates from similar protected areas	Secondary data from similar area or market (total or segmented)	Use of aggregate multipliers from similar area
Level 3	Total visitor counts by segments or also estimates by segments	Secondary data from similar area or market disaggregated per segment and spending categories	Use of multipliers specific for each spending sector from published sources
Level 4 (Strongest)	Survey to estimate visitors per segments or a demand model	Visitor survey with spending by segment and category	Multipliers generated from an I-O matrix of the local economy

6.5.2 Assumptions and Sources of Error

Assumptions need to be made when gathering the inputs, and errors can occur if the assumptions are violated. When defining the objective of an economic effects' analysis, it is important to examine the level of error that the study can tolerate. Reducing errors normally adds to the costs and time of data collection and should be evaluated pragmatically in relation to improved accuracy.

General principles for improving the accuracy and credibility of analysis (and relevant to visitor counting and surveys in Chapters 4 and 5), include:

- Using trained interviewers, who are not identifiable as protected area staff (i.e. without park uniforms, or badges).
- Using an adequate survey region where data is available (e.g. municipalities or counties).
- Addressing seasonality (i.e. during different months of the year, on weekends and weekdays, holidays) and for a range of weather conditions.
- Covering the spatial scope of the protected area. For example, counting and interviews should take place on the most important protected area gates/trails to cover the major visitor flows, and minor frequented locations where possible.

- Counting should be done consequently in only one direction (e.g. in or out of the protected area, but not both). If used, automatic counting machines should be calibrated and tested for reliability using different methods at the same location (i.e. comparing them with manual counting).
- Providing questionnaires in languages of the most important visitor groups.
- Ensuring visitor surveys are representative for the visitors who go there, or else let their responses be weighted based on representative visitor samples. The sample size for each segment (e.g. day-visitors vs. overnight visitors) should ideally be from at least 50-100 visitors.

6.5.3 Specify Measures Clearly

It is important to define the measures clearly before calculating economic effects. Some institutions use different definitions, and for example, sometimes 'gross sales' and 'output' cause confusion.[154] So, to clarify, whilst the sales multiplier considers only the level of sales which result from the direct and secondary effects of tourist spending, the output multiplier accounts for both the level of sales and any real changes which take place in the level of inventories (or stocks) held in the economy.[155]

Another common mistake is to confuse 'sales multipliers' and 'income multipliers'. Sales multipliers (or output multipliers) tend to be very large and should not be used to calculate economic effects. This is because sectors showing the greatest increases in sales, are not necessarily those that generate the highest income and employment effects. It is more informative to present 'income' and 'value added' as economic impacts.

Also remember that ratio multipliers divide sales by sales, income by income, or employment by employment. The type of units in the numerator and denominator is the same. By contrast, Keynesian-type multipliers divide income (or other economic parameters) by sales. It is essential to understand the difference as it is mathematically and theoretically incorrect to multiply tourist expenditures by a ratio multiplier as a measure of total economic impact.

Los Glaciares National Park, Argentina ©Larissa Chilanti/Shutterstock.com*

7

Case Studies vs. Monitoring

7.1   Case Studies and Long-Term Monitoring

Case studies of visitor numbers to protected areas and their economic impacts can provide very useful information. They can be used to provide in-depth information, detailed studies of visitors, for one or more locations at a particular time (see Box 16).

Box 16: Example of a once-off case study analysis: iSimangaliso Wetland Park World Heritage Site, South Africa[156]

Nearly 600 visitor interviews were undertaken at the iSimangaliso Wetland Park World Heritage Site in January 2017 to test a new economic impact assessment tool. This study distinguished between visitors whose trips were motivated by visiting the protected area, and those who had other reasons for visiting the area. The study was used to establish differences in expenditure between different types of visitors. As the study was only undertaken once, and surveys were only conducted during one short period of time, it is not possible to establish any trends in expenditure, but only a snapshot in time for this group of visitors.

By contrast, long-term monitoring efforts repeat use of the same survey and analysis over time, in order to identify and measure changes and trends in visitation, and visitor spending. The information gathered on the changes can be used to evaluate protected area management strategies and to improve protected area visitor management. This may help protected area authorities to improve the quality of visitor experience, reduce negative effects of tourism on sensitive habitats, and also enhance their beneficial impacts on local communities.

As best practices show, good long-term monitoring is based on two key factors: (1) continuous visitor counting and periodic repetition of visitor surveys; and (2) a consistent methodology. Furthermore, effective monitoring programs need good design, careful selection of indicators and measurements, and a long-term commitment to financing the human resources, equipment and infrastructure required.[157]

7.2   Requirements for a Long-Term Economic Monitoring Program

The first and most basic requirement is a **standardized definition of key terms**. A consistent and precise use of terms such as visit, visitor and visitor day is essential for a transparent methodology and comprehensive results in the long run (see the glossary of key terms at the start of the guideline).

The second requirement is a clear and **harmonized methodology** that meets certain quality standards, which can be repeated using a standard procedure over time. These standards ensure the necessary quality for reliable outcomes, as well as allowing for comparisons to other studies on a national and international level, and over time. These standards can include consistent visitor segmentation and spending categories, as well as using the same counting and sampling technique as well as questionnaires. The questions asked must cover all the information that is absolutely necessary to calculate economic effects. This includes questions about visitation (e.g. length of stay, number of entries, group size etc.), expenditures and demographic information such as age, gender and place of main residence, region and country of origin.

7.2.1   Consistency is the Key

Before implementing a long-term monitoring program, a great deal of thought should go into the initial survey design, interview locations, time interval and choosing the preferred counting methodology. Published academic research needs to be innovative to be published in ranked journals, and therefore researchers may look for methodological alterations or improvements. By contrast, the goal of protected area managers is to keep replications as consistent as possible to receive comparable information, in order to track trends in visitation and visitor spending over time. However, the need for consistency leads to a lack of flexibility, meaning that once selected and used, any modifications to the core elements should be avoided. Therefore, very thorough field testing and pilot studies at different sites are crucial before implementation, to improve and finalize the approach and tools.

Despite this, there is the option to create survey add-ons over time, to comply with specific research interests. For example, a protected area may want to understand visitors' preferred mode of transportation or their experience of

nature from a health perspective. These **add-ons** may be removed or replaced later, as long as the suite of key survey questions remain unchanged. Chapter 5 uses several questionnaires from different countries to illustrate good practices. These relatively intensive preparations, combined with any equipment costs (e.g. electronic visitor counters), will certainly result in higher initial costs than for a once-off case study. However, all following repetitions will benefit greatly from sound preparations, in terms of the usefulness and reliability of information gathered, and also in terms of cost efficiency.

Nevertheless, even a carefully planned long-term visitor monitoring may require some changes to the core methodology at some point in time. For example, funding cuts may require a reduction in the surveys number or counting samples; innovative new cost-effective visitor counting methods may substitute old methods; changes in visitation and spending patterns may require different counting locations or visitor segmentation; and site specific knowledge may build up over time that allows to improve the program by changing the sampling strategy (e.g. counting locations and times, visitor segmentation, accounting for new attractions etc.). Such changes in the methodology may often involve a trade-off between consistency and improving the visitor monitoring program. If changes are considered necessary, their expected impact on the results and their consistency should be carefully considered and reported.

Another issue is the necessary manpower to do the monitoring over a number of years. For example, if visitor counting is not done automatically (e.g. using automated counters), or if interviews are conducted face-to-face, additional support may be required. Suitable options could include using trained students from local universities (especially from thematically related degree programs), protected area staff, and also volunteers (called citizen science). Citizen science can have the added benefit of developing strong partnerships and engagement with communities, particularly when there is appropriate training and oversight.[158] Alternatively, a protected area authority may decide to outsource the monitoring to an external consultancy, so that they do not need to provide internal training to staff, or manage numerous volunteers. Completed surveys need to be checked regularly – even with well-trained and experienced interviewers – as this can identify and eliminate problems or misunderstandings and help maintain the quality of the overall samples over the years.

7.2.2 Frequencies of Data Collection

When deciding on the time-intervals between replications of data collection, it is important to note that different frequencies can be applied to different data.

Visitor numbers, for example, can differ vastly from year to year because of changing weather conditions, new infrastructure or singular events (e.g. anniversary celebrations, natural hazards, health crises), and are prone to influencing factors such as socioeconomic or political stability. Therefore, data on protected area visitor numbers should be collected more regularly (e.g. continuously or annually).

Surveys on visitor spending are typically a more complex and costly aspect of visitor monitoring. Therefore, survey data may be collected only every few years (e.g. every five years). However, financial constraints in many protected areas may only permit survey data collection at greater time intervals (e.g. every five to ten years). The exact frequency will always relate to the budget available and reporting obligations (e.g. UNESCO Biosphere Reserves are evaluated every ten years). Whichever frequency is chosen, protected area managements should at least compile annual reports of visitor numbers and use these to make new calculations for that year's economic effects.

7.2.3 External and Internal Reporting

The issue of consistency is also valid for reporting. Over time it is possible that preferences for the types of information reported may change, depending on the protected area authority's policy priorities. However, to allow for comparisons over time and for general understanding, **every publication should contain the same set of standard reporting variables.** To help with this, some types of protected areas provide reporting guidelines and describe the key variables that need to be strictly followed. Of course, protected area managers are free to convert these variables to match changing reporting needs, but these conversions should always be in addition to the original variables. For further transparency reasons, the date of each data set used should be clear each time. Further information on minimal reporting requirements can be found in Chapter 8.

> **Box 17: Reporting guideline examples**
>
> UNESCO demands periodic reviews for Biosphere Reserves every ten years following a standard procedure and Periodic Review Forms for national and transboundary Biosphere Reserves.

Detailed documentation relating to each survey or visitor counting exercise is essential to build **institutional memory**. This is highly important in order to ensure a consistent implementation of the monitoring methodology, and so that it is not affected by any changes in management personnel. This documentation should include manuals, research protocols, location coordinates and photographs of all survey and counting sites, as well as the analysis tool used to compute the visitor spending effects, and reporting guidance. For optimal transparency it is advised to keep year-on-year records, either digitally or as hard copies and share them internally.[159]

For quality assurance, it is recommended that there should always be at least two staff members in a protected area authority who understand the methodology and tools. They can then oversee the visitor counting procedures, survey execution and the evaluation, and pass on that knowledge to their successors.

Box 18: Long-term monitoring in Germany[160]

How is consistency ensured across estimates of different years?

Basically, the idea should be to always work with the same counting points and stick to the same method. In concrete terms, this means that a sketch and photographs are made for each counting location with precise indication of the counting point, the counting direction and, if necessary, further details. See the following example for one of the counting locations in the Lower Saxony Wadden Sea National Park, where countings are conducted in combination with short interviews to get better insight in the visitor structures:

©Hubert Job

Only if the situation changes fundamentally (e.g. installation of a new main visitor center, or huge enlargement of a protected area) alterations over the years make sense.

What methodological changes were conducted over time, and how are methodological changes considered for ensuring consistency of results across years?

In principle, there should be no differences over time, but there have been some slight changes in the determination of visitor structures depending on the size and/or category of a protected area: Whereas in the case of the smaller terrestrial national parks usually only results from counting and short interviews for the visitor structure are used to get the necessary figures about visitor structures, for the usually bigger biosphere reserves (as well as for huge national parks) a combination of direct counting, short interviews and official statistics is used due to the structure and normally larger size of the protected area. Nonetheless, the empirical procedure in the field during a survey day is basically the same for both types.

Yellowstone National Park, USA ©f11photo/Shutterstock.com*

8

Reporting and Communication

8.1   Introduction

Reporting and communicating results in a clearly understandable way is important, in order to efficiently and effectively reach the target audiences. Visitor information is important at various levels. It is essential for local protected area managers and for tourism development, as well as for regional, national and international policy, planning, reporting, research and comparisons. High quality visitor information can help in ensuring and developing quality recreation experiences, sustainable tourism, efficient protection of nature and cultural heritage, sufficient financing as well as promotion of public health and well-being. Moreover, visitors themselves are often interested in such information and as citizens they have a right to know about visitation to the areas.

The format of reporting should take into account different target groups. For example, highlevel government decision-makers may prefer short two-page policy briefs, whereas local citizens are more likely to engage with information shared through the media. Academia and institutions internal record keeping may require detailed technical and methodological reporting to support the replicability of the results.[161]

8.2   Reporting

It is beneficial to harmonize reporting across areas and time when feasible, especially when using a uniform methodology. Cooperation between agencies is useful both in monitoring and reporting. This way visitor information from different areas uses the same format, and it makes the comparison of results easier. The results of visitor surveys are typically needed quickly, and standardization can help to speed up the reporting process. Table 8 below provides some general guidelines to help in developing a standardized reporting system for visitor monitoring.

Table 8: *Guidelines for standardized reporting of visitor monitoring*

What to report	Why it is important	Suggested topics	Name and location
Study area and method	Describing study area or areas, as well as data and methods helps the users of the information to understand the representativeness of the results. Moreover, sufficient documentation enables replicability of the study (e.g. providing enough information that someone could repeat the same study in the same way).	Study area	▪ Name and location of the protected area/s ▪ Country it is located within ▪ Size of the area ▪ Area included as the regional economy for economic effects analysis
		Method	▪ When was the data collected ▪ How many questionnaires were collected ▪ What survey technique was used ▪ How sampling was done ▪ The exact questionnaire used (annex this to the report) ▪ Equipment used
Core visitor information from economic impacts perspective	Minimum information that should be reported at any level, in order to allow for comparability across areas and time, and to be able to report economic impacts	Visitor profile	▪ Gender ▪ Age ▪ Group size ▪ Place/country of residence
		The visit to the protected area	▪ Importance of the destination ▪ Duration of the visit
		Visitor spending	▪ Average spending per visit and visitor by visitor segments (day and overnight visitors, local, domestic and international visitors) ▪ Average spending by spending categories
	Economic benefits of visitation	Visitor spending effects	▪ Direct, indirect and total visitor spending effects to local economies in monetary value and jobs, by the following visitor segments: ▪ Day and overnight visitors ▪ Local, domestic and international visitors ▪ Importance of the destination (visitors to whom the protected area is the primary destination of the trip vs. other visitors).

What to report	Why it is important	Suggested topics	Name and location
Other useful visitor information	Other information that can be essential in addition to minimum information above, for area management and reporting purposes	Visitor profile	▪ Education ▪ Type of group, including information on number of children, number of disabled individuals etc.
		The visit to the protected area	▪ Activities ▪ First time visitors vs. repeat visitors and their visitation frequency ▪ Geographical distribution of the visitors ▪ Amount of physical exercise (e.g. distance travelled by foot, paddling, biking etc.)
		Visitors' motives and opinions related to the visit	▪ Purpose of the visit ▪ Visitors' opinions about the area, services and environmental quality ▪ Visitors' expectations ▪ Factors disturbing the visit ▪ Visitor satisfaction
		Health and well-being benefits of the visit	▪ Health and well-being benefits of the visit as perceived by visitors

When developing a standardized reporting system, it is good to make use of a peer review system, either within the organization or more widely. This means that draft reports should be reviewed by a group of experts who have experience in this field of study. Sometimes it is not necessary or feasible to have every report formally peer reviewed, because visitor monitoring reports are not scientific publications (they are often internal reports used by protected area agencies). Nevertheless, it is good to have at least one colleague or a team to double-check the quality and accuracy of the report before publication or dissemination.

8.2.1 Area Specific Reporting

A visitor monitoring report needs to include a short description of the area, a description of material and methodology of the study, results illustrated by tables and graphs, and conclusions. A good picture or graphic is worth more than a thousand words, or a large quantity of mere numbers. Some of the results, particularly with complicated tables, may require the support of clarification in the text.

In order to make the most out of visitor monitoring data and analysis, it is a good idea to produce different kinds of reports for different purposes, both short and detailed (see Box 19).

Box 19: Examples of short and detailed reports

Short summary report example:

Finland 15–20 pages with key information presented in an easily approachable format, including attractive layout to draw the attention of the policy makers and wider public

Urho Kekkonen example link: https://julkaisut.metsa.fi/assets/pdf/lp/Muut/UKpuisto-visitorsurvey-2017-summary.pdf
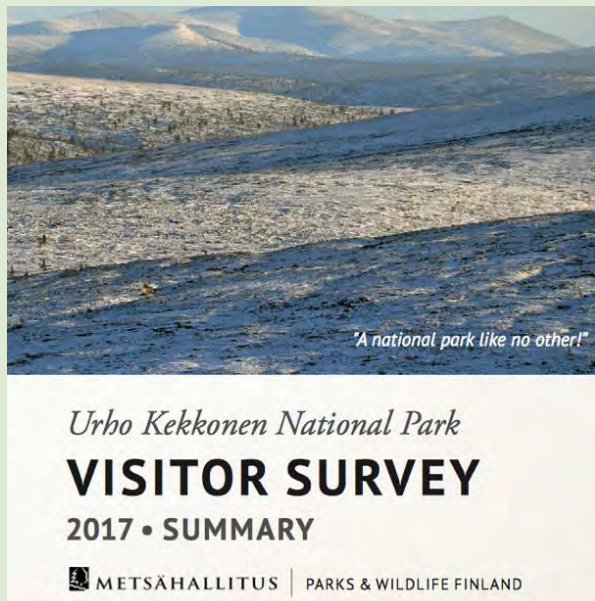
Source: Parks and Wildlife Finland

Detailed report example:

USA 400-page report including tables and/or graphs on all the questions and variables asked for the use of protected managers, partners or anybody needing more detailed information

Yellowstone example link: https://www.nps.gov/yell/getinvolved/upload/RYELL_VUS_FINAL-Report.pdf

Source: U.S. National Park Service

The format of both summary reports and large reports is nowadays usually electronic, typically pdf-format. This allows the users to print the report on demand. In addition, hard copy can be produced if needed for specific purposes. The electronic reports are easy to distribute and communicate online on agency or organization websites, as well as through social media.

Box 20: US National Park Service Interactive Tool

In addition to traditional visitor monitoring reports, interactive data visualization tools can give users the ability to search for and view specific data. For example, results from the US National Park Service's Visitor Spending Effects report series are available online via an interactive tool. Users can view year-by-year trend data and explore current year visitor spending, jobs, labor income, value added, and economic output effects by sector for national, state, and local economies.

Select an economy to get started:

| NATIONAL ECONOMY | STATE ECONOMIES | PARK ECONOMIES | MORE INFORMATION |

Economic Contributions to the National Economy

In 2019, 328 million park visitors spent an estimated $21.0 billion in local gateway regions while visiting National Park Service lands across the country. These expenditures supported a total of 341 thousand jobs, $14.1 billion in labor income, $24.3 billion in value added, and $41.7 billion in economic output in the national economy.

○ Visitor Spending   ○ Jobs   ○ Labor Income   ○ Value Added   ○ Economic Output

$21.0 billion
in Visitor Spending

Directly Affected Sectors
- Camping
- Gas
- Groceries
- Hotels
- Recreation Industries
- Restaurants
- Retail
- Transportation

Total Visitor Spending (All Parks)

$14.7 billion	$14.6 billion	$15.7 billion	$16.9 billion	$18.4 billion	$18.2 billion	$20.2 billion	$21.0 billion
2012	2013	2014	2015	2016	2017	2018	2019

Source: U.S. National Park Service

This interactive tool is available at https://www.nps.gov/subjects/socialscience/vse.htm

8.2.2 Regional, National and International Reporting

If data are gathered in a uniform manner in a larger area (e.g. across a region or a country) it is a good idea to produce various summary reports, ideally on an annual basis. Even if visitor survey data are typically not collected every year, if the number of visits is estimated annually, the contribution estimates can be updated annually. Examples of national economic contribution reports, and contributions at national and local levels can be found on P&WF webpages (see Box 21 below).

Box 21: Economic contribution reports at national and local level in Finland[162]

When P&WF invests one euro of taxpayers' money in the hiking services of national parks, the local economy benefits over €10, on average. For national parks located next to ski resorts, the average input-output ratio is still higher. Close to big cities and the Helsinki Metropolitan Area, the visitation impacts are primarily recreation and health benefits.

The total income and job impacts of all the 40 national parks in 2019 were €219.3 million and about 1,726 jobs (full-time equivalent: FTE) and for all five hiking areas €13.1 million and about 112 FTE jobs. In 2019, the national parks with biggest local economic impacts were Pallas–Yllästunturi National Park with €63.1 million, Urho Kekkonen National Park with €40.5 million, Koli National Park with €19.5 million euros, Oulanka National Park with €18.2 million and Pyhä–Luosto National Park with €15.3 million.

©Joel Erkonnen/Parks and Wildlife Finland

8.3 Communicating the Results

When the report is completed, it can be communicated in various ways. When considering effective communication of the results, one needs to think of the target audiences, and appropriate media and communication methods to reach these audiences. Answering the following questions may help in this work:

- What do you want to communicate and why?
- Who do you want to communicate with?
- What kind of a change do you want to create?
- What information does the target audience really need to know?

Rarely will non-specialists have time to thoroughly read a standard report, so adopting various effective and visually illustrative communication methods may better reach the target audiences thus creating potentially a greater impact. For example, posters, leaflets or animations are worth considering. This type of information can be shared through different communication channels, such as traditional media and social media.

Finally, timing of communicating the results is essential if one wants to affect decision making.

For government-managed protected areas, publishing results of an economic analysis is probably most effective just before budget negotiations take place. Similarly, launching results at specific events can help generate a greater interest in the results.

Wadi Rum Protected Area, Jordan ©Hamdan Yoshida/Shutterstock.com*

9

Policy Implications and Associated Research

This guideline has provided an overview of how to count and survey visitation to protected areas, and how to calculate and report on their economic impacts and contributions. It has also established the value of a long-term monitoring program, and how this is different in style from case studies, where a snapshot of data is compiled at one point in time. This chapter outlines the implications of these approaches for protected area policies and management decisions, the context of nature conservation goals of protected areas and broader socio-political issues, and future outlooks.

9.1 Implications for Policy at National and Protected Area Level

Once protected area managers have a clear understanding of the number of visitors they host, their visitation and economic effects, they are better equipped to make informed decisions on adjustments to their management plans and tourism strategies. This may include investment decisions for enhancing opportunities for visitors to spend (more) money in and around the protected area. For example, they may decide to establish or improve places for people to stay, eat and drink, buy craft and souvenirs, and to make provisions for guides to offer excursions within the protected area. These products and services may, if provided by local employees, entrepreneurs and businesses, improve the local economic impacts of tourism. For example, protected area managers can take policy decisions to give preferential concessions or licenses to local stakeholders (people and organizations), to use goods produced locally, or to outsource services to companies that commit to employing local people and buying local goods and services. Demonstrating a positive impact of protected areas on the local economy can improve the perception of, attitudes towards and behavior towards nature conservation and protected areas within the local population. This may lead to greater buy-in and ownership of conservation practices and places, less poaching and land encroachment, and may also help offset some of the human wildlife conflict where it occurs. Explaining economic contributions and impacts may help to justify opportunity costs of conservation and protected areas.

At a national level, where governments have better information on the value of protected areas to people through visitation – and particularly when it is presented in simple and attractive formats (e.g. see Chapter 8) – it can be easier to justify protected area budget allocations. Governments may provide enabling frameworks for protected areas to attract visitors and to retain money that they bring, particularly if it is re-invested in visitor impact mitigation and conservation practices. However, it should be noted that revenues from many protected areas globally are paid into national coffers, rather than being retained locally (e.g. in Madagascar, Mozambique, South Africa). Despite this, by understanding the magnitude of local and national economic impacts and contributions of tourism, protected areas can better communicate their importance at levels that politicians understand: visitor spending, jobs, labor income, value added, and economic output. In protected areas where these numbers are low, then interventions can be identified to improve the linkages between tourism in protected areas and local economies. Options include establishing concessions and partnerships with tourism operators, diversifying the range of activities and attractions, improving visitor facilities, and improving the range and volume of accommodations available that meet the market demand.[163]

As noted in Chapter 5 visitor surveys are not only used to gather information on visitor spending but can also collect other information important to protected area managers. This includes information on the quality of visitor experience, ratings of visitor facilities, and also impressions of any over-crowding at popular sites of interest. Information on a broader range of visitor management and monitoring issues can be found elsewhere.[164] Furthermore, it is more useful for tourism promotional agencies to focus on increasing the expenditure yield from tourists, rather than the number of visitors per se, to avoid chasing an illusive 'magic number' of tourists, negative crowding experiences or even "overtourism" with their potential detrimental effects on nature.[165]

Box 22: Political and planning importance of visitor monitoring in Finland

When visitor data are gathered in a uniform and systematic manner, they provide possibilities for diverse analyses, reporting and comparisons, both across areas and across time, and at different levels from local to regional, national and international.[166] The experience of P&WF is that this kind of information is essential not only for planning and management, but also for well-informed policy making.[167]

Even though establishing and maintaining a comprehensive visitor monitoring system requires significant investment in both time and resources, P&WF managers think that this investment is not only useful but a necessity for successful management as well as for showcasing the benefits of the protected areas.

9.2   Recognize that Approaches Will Change Over Time

This guideline shares knowledge collated by international experts, academics and practitioners working on visitor counting, surveys and economic effects assessment. These are contributors recognized for their work at the forefront of knowledge in this field. With further innovations, especially relating to technology, methods and recommendations will change. Already – and increasingly – smart phones, social media and drones are being integrated into the catalogue of available tools and approaches informing the human interaction with and within protected areas. We should also recognize that the availability and appropriateness of approaches and equipment varies between areas and organizations, and their use will be based on resources and skills available and data privacy issues. However, the methodological approach on how to deal with visitation data and how to calculate economic contributions and impacts will not change with these technologies.

Furthermore, these approaches are one part of a broader suite of tourism information tools that can be used by protected area management. For example, the online UNESCO World Heritage Sustainable Tourism Toolkit, including 'How To' guides for managing tourism, a Visitor Management Assessment and Strategy Tool (VMAST) as well as this resource, are specifically relevant to managers of World Heritage properties. Developed as an online self-assessment tool, VMAT will help site managers manage tourism for the protection of the Outstanding Universal Values while contributing to sustainable development. The assessment will guide the consideration of tourists and visitors to the site and their estimated financial contribution with reference to the visitor counting methodology.

9.3   Money isn't Everything

Of course, protected area tourism and visitation is not just about generating revenue. Biodiversity conservation objectives should be central to any protected area tourism strategy. Tourism activities should therefore not undermine these overarching aims, nor should it jeopardize other ecosystem services provided to society, such as water quality enhancement or carbon storage and sequestration. For example, tourism and visitation can provide tangible health and wellbeing benefits to visitors, and monitoring health improvements can also provide information of value to managers and policy makers[168] of international and domestic tourists, and also for local visitors (see Box 23). Hence, the total economic value of protected areas is much higher than just the financial impact.[169]

> **Box 23: Health and wellbeing among park visitors in Finland**
>
> According to visitor surveys conducted by P&WF in 2015-2019, 87% of visitors to nature and history sites experienced that the visit had a fairly or very high impact on their health and wellbeing. The average health and well-being effect of the visitors was 4.35 on a scale from 1-5, with 1 meaning totally disagree, and 5 meaning totally agree. Visitors estimated their health and well-being effects to around €100 euros per visit. €100 is the median value of the answers (the middle value). With 3.2 million visits to Finnish national parks in 2019, the total health and well-being value as perceived by visitors is roughly €322 million.[170]

Protected area managers should also be cognizant of the global implications of visitation to protected areas, particularly in relation to the impact of international travel on greenhouse gas emissions and climate change. Also, there is a modest but increasing proportion of travelers who are seeking sustainable travel experiences and may be prepared to pay more if they can be assured that their travel expenditure is benefitting conservation and local economies.[171] Establishing a better understanding among protected area managers of sustainable tourism is a key objective of networks such as the IUCN WCPA TAPAS Group, whose members have compiled this guideline.

In closing, it is important to realize that in order to manage protected areas effectively, financial resources are required, as is the support of local people. Tourism is just one of many mechanisms that can be used, as part of an overarching sustainable financing strategy, to support conservation efforts.

South China Karst, China ©Iryna Hromotska/Shutterstock.com*

Annex

10.1   Tools and Links

Visitor monitoring in nature areas – a manual based on experiences from the Nordic and Baltic countries.[172] A comprehensive manual that provides detailed information on visitor counting (including selection and installation of automated counters), estimating numbers of visits to an area, visitor surveys (including questionnaire design, survey design, collection and analysis), and also reporting and interpreting the results.

10.2   Example Visitor Survey Questionnaires

10.2.1   Wind Cave National Park, USA

Social Science Program
National Park Service
U.S. Department of the Interior

OMB Control Number: 1024-0224
Expiration Date:

Wind Cave National Park

Visitor Study

Source: U.S. National Park Service

2018

PAPERWORK REDUCTION and PRIVACY ACT STATEMENT: The Paperwork Reduction Act requires us to tell you why we are collecting this information, how we will use it, and whether or not you have to respond. We are authorized by the National Park Service Protection Interpretation and research in System (54 USC §100702) to collect this information. The routine uses of this information will be for the benefit of NPS Managers and planning staff of Wind Cave National Park (WICA) in future initiatives related to the visitor use and resource management within the site. The data collected will be summarized to evaluate visitor uses and expectations during their visit at WICA. Your responses are voluntary and anonymous. You can end the process at any time and will not be penalized in any way for choosing to do so. All contact information collected will be for the purpose of the follow-up survey only and will be destroyed at the end of the collection period. This information will not be stored or used for any other purposes. All data from this collection will be aggregated so that no responses will be individually identifiable. A Federal agency may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB Control Number (1024-0224). We estimate that it will take about 20 minutes to complete and return this mail-back questionnaire. You may send comments concerning the burden estimates or any aspect of this information collection to: Social Science Program Chief, National Park Service, 1201 Oakridge Drive, Fort Collins, CO, 80525-5596; nps_nrss_social_science@nps.gov (email); or Phadrea Ponds NPS Information Collection Coordinator at pponds@nps.gov (email).

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, DC 20240

Summer, 2018

Dear Wind Cave National Park Visitor:

Thank you for participating in this study. Our goal is to learn about the expectations, opinions, and interests of visitors to the National Park System. This information will assist us in understanding how visitors experience Wind Cave National Park and the surrounding area, motivations for visiting, to inform planning and management efforts to better serve you.

This questionnaire is only being given to a select number of visitors, so your participation is very important. It should take about 20 minutes to complete <u>after your visit</u>.

When your visit is over, the adult in your group who will have the next birthday should complete this questionnaire. Seal it in the postage-paid envelope provided and drop it in any U.S. Postal Service mailbox.

If you have any questions, please contact William Valliere, consultant at Resource Systems Group, 55 Railroad Row, White River Junction, VT 05001; (802) 295-4999.

We appreciate your help.

Sincerely,

Superintendent

RETURN PROCEDURE

At the end of your visit:

1. Please have the adult in your group (at least 18 years old) who will have the next birthday complete this questionnaire. That will help give us a statistically reliable sample.

2. For questions that use circles (O), please mark your answer by filling in the circle with **black or blue ink**. Please do not use pencil.

Like this: ●   Not like this: ☑ ☒ ⊘ ⊙

3. Seal it in the postage-paid envelope provided.

4. Drop it in a U.S. Postal Service mailbox.

DIRECTIONS

In this questionnaire, your **personal group** is defined as you and anyone with whom you visited Wind Cave National Park on this trip, such as a spouse, family, friends, etc. This does not include the larger group that you might have traveled with, such as a school, church, scout, or tour group.

A **visit** is defined as the day in which you were contacted to complete this questionnaire. A **trip** is defined as the total extent of time away from your personal residence that could include multiple visits to Wind Cave National Park.

TRIP DESCRIPTION

1. Including yourself, how many people were in your personal group during your visit to Wind Cave National Park on the day you were contacted for this survey? (Please include only direct travel companions; do not include people that are part of a larger tour group)

    _____ Number of adults (18 years or older)

    _____ Number of children (under 18 years)

2. What type of group were you with, during your visit to Wind Cave National Park on the day you were contacted for this survey? Please mark (●) **one**.
    - O Alone
    - O Friends
    - O Family
    - O Family and friends
    - O Other (Please specify) _____

3. Please indicate all of the forms of transportation you personally used to travel from your home to Wind Cave National Park, on this trip. Please mark (●) **all that apply**.
    - O Car, truck, or SUV (Number of people in vehicle, including you) _
    - O Recreational vehicle or motorhome
    - O Airplane
    - O Tour bus or tour van
    - O Train or long-distance passenger bus
    - O Bicycle
    - O Walk/hike
    - O Other (Please specify) _____

4. Approximately how many hours and miles from home did you travel one way to get to Wind Cave National Park on this trip?

    _____ Number of hours **AND** _____ Number of miles

5. On this trip, how much total time did you spend within Wind Cave National Park?

    _____ Number of hours, if you only spent 1 day or less at Wind Cave National Park

    _____ Number of days, if you spent multiple days at Wind Cave National Park
    → If you spent multiple days at Wind Cave National Park, on how many different **days** did you pass through the park entrance? _____

6.   On this trip, if you had not chosen to visit Wind Cave National Park, what other recreation site would you have visited instead? _____

   b) How far is this alternative site from your home? _____ miles

TRIP PLANNING AND MOTIVATIONS

7.   Prior to this trip, how did you obtain information about Wind Cave National Park? Please mark (●) **all that apply**.
  O   Did not obtain information prior to this visit
  O   Previous visits
  O   Friends/relatives/word of mouth
  O   Inquiry to park via phone, mail, or email
  O   Wind Cave National Park website (nps.gov/wica)
  O   Other website (Please specify) _____
  O   Local businesses (hotels, motels, restaurants, etc.)
  O   Maps/brochures
  O   Newspaper/magazine articles
  O   Other units of the National Park System (NPS)
  O   School class/program
  O   Social media (such as Facebook, Twitter, etc.)
  O   State welcome center/visitors bureau/chamber of commerce
  O   Television/radio programs/DVDs
  O   Travel guides/tour books (such as AAA, etc.)
  O   Other (Please specify) _____

8.   Did you have the information about Wind Cave National Park you needed on this trip? Please mark (●) **one**.
  O   Yes
  O   No (Please specify information you needed but didn't have on this trip.)

  _____

  _____

9.   When did you and your personal group make the decision to visit Wind Cave National Park? Please mark (●) **one**.

  O   On the same day of the visit
  O   2-7 days before the visit
  O   8-30 days before the visit
  O   1-6 months before the visit
  O   More than 6 months but less than a year before the visit
  O   A year or more before the visit
  O   Don't know/can't recall

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PARK ACTIVITIES, PROGRAMS, AND SERVICES

10. On this trip, in which of the following activities did you (or a member of your personal group) participate within Wind Cave National Park? Please mark (●) **all that apply**.

O Viewing wildlife, natural features, scenery, wildflowers, etc.
O Creative arts (photography/drawing/painting/writing)
O Cave tour
O Shopping
O Driving for pleasure
O Walking/short hike (less than 1 hour)

O Day hiking (1 hour or more)
O Bicycling
O Horseback riding
O Camping in developed sites
O Backcountry camping
O Picnicking

O Other (Please specify) _____
O Other (Please specify) _____
O Other (Please specify) _____

11. Of the activities listed in Question 10, which was your <u>primary activity</u> during your visit to Wind Cave National Park on the day you were contacted for this survey?

_____

    OR

O I did not have a primary activity on this trip to Wind Cave National Park.

12. On this trip, in which of the following programs and services did you or a member of your personal group participate within Wind Cave National Park? Please mark (●) **all that apply**.
O Attending a ranger-led activity, such as a cave tour or talk
   (Please specify) _____
O Talking informally with a ranger
O Visiting the park store in the Visitor Center
O Viewing outdoor exhibits
O Viewing indoor exhibits
O Watching a video in the Visitor Center auditorium
O Reading the park brochure or newspaper
O Going to the Visitor Center
O Participating with a child in your group in the Junior Ranger program
O Obtaining National Park passport stamp
O Other (Please specify) _____

13. On this visit to Wind Cave National Park, did you participate in a cave tour? Please mark (●) **one**.
O Yes (Please specify tour(s) in which you participated.)

_____

O No - ➔ **Go to Question 17.**

14. If you were to visit Wind Cave National Park in the future, would you prefer to have a pre-visit reservation system to obtain tickets for a cave tour? Please mark (●) **one**.

O Yes
O No

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15. Why did you and your personal group choose the cave tour you did?

      _____

      _____

16. Concerning the cave tour you took, please explain the parts of the experience that were especially meaningful to you.

      _____

      _____

17. a) Did anyone in your personal group have a physical condition that made it difficult to access or participate in park activities or services (such as cave tours), during your visit to Wind Cave National Park? Please mark (●) **one**.

    O Yes

    O No ➜ **Go to Question 18.**

    b) If YES, what activities, services, or facilities did the person(s) have difficulty participating in or accessing? Please be specific.

      _____

      _____

      _____

    c) Because of the physical condition, which specified difficulties did the person(s) have? Please mark (●) **all that apply**.

    O Hearing (difficulty hearing ranger programs, bus drivers, audio-visual exhibits or programs, or information desk staff even with hearing aid)

    O Visual (difficulty in seeing exhibits, directional signs, visual aids that are part of programs even with prescribed glasses or due to blindness)

    O Mobility (difficulty in accessing facilities, services, or programs even with walking aid and/or wheelchairs)

    O Other (Please specify) _____

18. If you did not take a cave tour in Wind Cave National Park, what reasons prevented you from taking those tours. Please mark (●) **all that apply**.

    O Had to wait too long

    O Took cave tour on a previous visit

    O Tours were full

    O Fees were too high

    O Physical limitations

    O Did not know about the tours

    O Lack of interest

    O Other (Please specify) _____

    O Not applicable (I was able to take a cave tour)

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EXPENDITURES

Please answer the following questions for your time within Wind Cave National Park _and_ its surrounding local area. The local area includes all communities **within approximately 60 miles of Wind Cave National Park** including Hot Springs, Custer, Edgemont, Keystone, Hill City, and the Rapid City area.

Note: If you are _a permanent or seasonal resident_ of the local area, answer the questions _only for this visit_ to Wind Cave National Park.

19. Do you live within the defined 60-mile local area surrounding Wind Cave National Park? Please mark (●) **one**.
    - O Yes,I reside in the local area (**skip to question 25**)
    - O No, I reside outside of the local area

20. What was the primary reason for this trip to the area? Please mark (●) **one**.
    - O Visiting Wind Cave National Park was the main reason I came to the local area
    - O Visiting Wind Cave National Park was one of several equally important reasons that I came to the local area
    - O I came to the local area (within 60 miles of the park) for other reasons and happened to visit Wind Cave National Park while I was in the area

21. During this trip, how much total time did you spend within Wind Cave National Park _and_ the park's 60 mile local area? Please mark (●) **one**.
    - O I was on a day trip to the area (**skip to question 25**)
    - O I stayed overnight within Wind Cave National Park and/or within the park's local area.

      → How many **total nights** did you spend in the local area? _____

      Include nights spent within Wind Cave National Park _and_ nights spent lodging or camping outside of the park but within the park's 60 mile local area.

22. Name the town/city where you and your personal group stayed the <u>night before</u> your arrival at Wind Cave National Park?

    Town/city _____ State _____

23. In what town/city did you and your personal group stay on the <u>night after</u> your departure from Wind Cave National Park?

    Town/city _____ State _____

24. What type(s) of accommodations did you use during your stay in the local area? (Please mark (●) all that apply)

    - O Paid lodged outside of Wind Cave National Park but within the park's 60 mile local area
    - O Stayed in unpaid lodging within the surrounding 60 mile local area (e.g., stayed in the home of friends or family)
    - O Stayed in my permanent or seasonal residence (owned or rented)
    - O Camped (campgrounds or backcountry) within Wind Cave National Park
    - O Camped (campgrounds or backcountry) outside of Wind Cave National Park but within the park's 60 mile local area
      → Why did you choose to camp outside the park?

      _____

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25.   Please estimate how much shared expenses you and your personal group (e.g., other family members, traveling companions) spent at Wind Cave National Park **_and_** in the local communities surrounding the park. **This includes your time in the park _and_ the** surrounding communities within approximately 60 miles of Wind Cave National Park (e.g., *Hot Springs, Custer, Edgemont, Keystone, Hill City, and the Rapid City area)*.

Local Area Residents (only): If you are a permanent or seasonal resident, please only include expenditures that were directly related to this trip to Wind Cave National Park.

Expenses	Amount spent at Wind Cave National Park and surrounding 60 mile area
Gas and oil (e.g., auto, RV, boat, etc.)	$_____
Rental cars	$_____
Taxis, shuttles, and public transportation	$_____
Restaurants and bars	$_____
Groceries and convenience foods	$_____
Hotels, motels, resorts	$_____
Specialty lodging (e.g., B&Bs, hostels, cabins, vacation rentals)	$_____
Camping fees (tent, RV)	$_____
Cave tour fee	$_____
Guides and other tour fees	$_____
Recreation and entertainment expenses (e.g., movies, bowling, miniature golf, etc.)	$_____
Souvenirs, clothing, supplies, other retail	$_____
Equipment rental	$_____
National Park annual pass	$_____
Other (Please list) _____	$_____

OR
O   Don't know/Not sure
O   I did not spend money at Wind Cave National Park or the surrounding 60 mile area

26.   a) Including yourself, how many people in your personal group were covered by the expenses for this time in the park and the surrounding 60 mile local area?

_____ Number of adults (18 years or over)

_____ Number of children (under 18 years)

b) Including yourself, how many people in your group split these trip expenses?

_____ Number of people

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BACKGROUND

27. For your personal group during your visit to Wind Cave National Park on the day you were contacted for this survey, please provide the following information. (**If you don't know the answer, enter "DK."**)

	Current Age	U.S. ZIP code or name of country other than U.S.	Number of visits to Wind Cave National Park in last 5 years, including this trip	Number of visits to other NPS sites in the last 5 years
Yourself				
Member #2				
Member #3				
Member #4				
Member #5				

28. For your personal group during your visit to Wind Cave National park on the day you were contacted for this survey, what is the gender and ethnicity of each member of your group? Please mark (●) **one for each group member, including yourself, for gender and Hispanic or Latino. (If you don't know the answer, mark (●) "Don't know.")**

			Additional members of your personal group		
	Yourself	#2	#3	#4	#5
Male	O	O	O	O	O
Female	O	O	O	O	O
Hispanic or Latino	O	O	O	O	O
Not Hispanic or Latino	O	O	O	O	O
Don't know	O	O	O	O	O

29. For your personal group during your visit to Wind Cave National Park on the day you were contacted for this survey, what is the race of each member of your group? Please mark (●) **one or more for each group member, including yourself**. (**If you don't know the answer, mark (●) "Don't know."**)

	Yourself	#2	#3	#4	#5
American Indian or Alaska Native	O	O	O	O	O
Asian	O	O	O	O	O
Black or African American	O	O	O	O	O
Native Hawaiian or other Pacific Islander	O	O	O	O	O
White	O	O	O	O	O
Don't know	O	O	O	O	O

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30. For your personal group during your visit to Wind Cave National Park on the day you were contacted for this survey, what is the highest level of formal education completed by each member of your group? Please mark (●) **one for each group member, including yourself**. **(If you don't know the answer, mark (●) "Don't know.")**

	Yourself	#2	#3	#4	#5
Less than high school	O	O	O	O	O
Some high school	O	O	O	O	O
High school graduate or GED	O	O	O	O	O
Some college, business, or trade school	O	O	O	O	O
College, business, or trade school graduate	O	O	O	O	O
Some graduate school	O	O	O	O	O
Master's, doctoral, or professional degree	O	O	O	O	O
Don't know	O	O	O	O	O

31. Which category best represents your (personal) annual household income? Please mark (●) **one**.
    - O Less than $24,999
    - O $25,000-$34,999
    - O $35,000-$49,999
    - O $50,000-$74,999
    - O $75,000-$99,999
    - O $100,000-$149,999
    - O $150,000-$199,999
    - O $200,000 or more
    - O Do not wish to answer

32. Including yourself, how many people contribute to this household income?

    _____ Number of people

33. Employment Status: Are you currently…? Please mark (●) **one**.
    - O Employed for wages
    - O Self-employed
    - O Out of work and looking for work
    - O Out of work but not currently looking for work
    - O A homemaker
    - O A student
    - O Military
    - O Retired
    - O Unable to work

34. Did your household take any unpaid vacation or take unpaid time off from work to come on this trip? Please mark (●) **one**.
    - O Yes
    - O No

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35. Including yourself, how many people are in your household?

      _____ Number of people

36. When visiting an area such as Wind Cave National Park, what language do you personally prefer to use? Please mark (●) **one for speaking and one for reading**.

	Speaking	Reading
English	O	O
Spanish	O	O
Other (Please specify) _____	O	O

37. Is there anything else you would like to tell us about Wind Cave National Park facilities, services, or recreational opportunities?

_____

_____

Thank you for your help!

Please place the questionnaire in the envelope provided and drop it in any U.S. Postal Service mailbox.

10.2.2 Urho Kekkonen National Park, Finland

The person collecting the forms will fill in this field:

numero	paikka	kävijä	haastattelija	posti	nimikirjaimet	pvm	kellonaika

Urho Kekkonen National Park

Visitor Survey 2017

How to fill in this questionnaire:

The information collected by this Visitor Survey will be used in management and planning of the Urho Kekkonen National Park. We hope that you answer to all the questions. Please note the following instructions:

1. Read the questions with care.
2. Answer the questions **personally** by ticking the appropriate circle (○). In multiple choice responses, tick all relevant boxes (❑). In some questions, you will need to write your responses in a space reserved for it.
3. The questions are about **your current visit** to the Urho Kekkonen National Park (map 1) and in some situations in the surrounding counties Inari, Sodankylä or Savukoski (map 2).
4. Please return the filled-in form to the person you got the form from.
5. For more information, please contact Saariselkä Customer Service Kiehinen tel. +358 206 39 7200 (ukpuisto@metsa.fi).

THANK YOU IN ADVANCE!

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1. When did you arrive to the Urho Kekkonen National Park (see map 1)?

date _____ and time of the day _____

2. How long did you stay or are going to stay during this visit…

a. **in the Urho Kekkonen National Park (see map 1)?**

about _____ days *or* _____ hours

b. **Altogether in the Urho Kekkonen National Park or its vicinity; Inari, Sodankylä and Savukoski (see map 2)?**

about _____ days *or* _____ hours

→ **If your answer to the previous question (2b) was more than 1 day**, how many times have you visited or will visit in the Urho Kekkonen National Park during this trip?

_____ times

3. If you stayed or will stay overnight…
(if not applicable, please move on to question 4)

a. …in the Urho Kekkonen National Park (see map 1), how many nights did you spend or will you spend in

❑   an open wilderness hut ____ nights
❑   a reservable wilderness hut ____ nights
❑   your own accommodation (tent etc.) ____ nights
❑   elsewhere, where?_____ ____ nights

b. …in the vicinity of the Urho Kekkonen National Park (see map 2), how many nights did you spend or will you spend in

❑   a hotel ____ nights
❑   a rental cottage ____ nights
❑   your own cottage ____ nights
❑   mobile home or car and trailer ____ nights
❑   your own accommodation (tent etc.) ____ nights
❑   I live in area
❑   elsewhere, where?_____ ____ nights

4. Which part of the Urho Kekkonen National Park (see map 1) did you visit / will you visit this time?
(select more than one alternative if applicable)

❑ Tankavaara
❑ Saariselkä area
❑ Kiilopää area
❑ middle part of the park (e.g. Luirojärvi, Sokosti)
❑ northern part of the park (e.g. Aittajärvi, Raja-Jooseppi)
❑ southern part of the park (e.g. Orponen, Marivaara)
❑ southeastern part of the park (e.g. Kemihaara, Nuortti)
❑ eastern part of the park (e.g. Kiertämä, Anteri, Jauru)
❑ elsewhere, where? _____

5a. Which means of transport did you use to travel from your home to the Urho Kekkonen National Park?
(please, mark all the means of transport you used)

1 ❑ car
2 ❑ car and trailer or mobile home
3 ❑ bus (public transport)
4 ❑ charter coach
5 ❑ train
6 ❑ airplane
7 ❑ motorbike
25 ❑ own power (walking, skiing, snowshoeing, cycling, etc.)

99 ❑ other, please specify? _____

5b. Which of the means of transport mentioned above did you use last?
        Write the number -> _____

6. During this visit to Urho Kekkonen National park, what is your group like?

I am alone ❑ → move on to question 8.

the size of the group? (including yourself)   _____ persons
of which under 15 years of age?   _____ persons

        Please give the years of birth for   _____
        under 15-years-olds.   _____
        (If all are almost the same age, please give   _____
        the most common year of birth.)   _____

physically disabled?   _____ persons

7. During this visit to the Urho Kekkonen National Park, your group mainly consists of…
(please, choose the most appropriate alternative)

○ members of your own family
○ other relatives
○ friends
○ co-workers
○ a school class
○ kindergarten children
○ a student group
○ senior citizens
○ clients of guided tours
○ club, association, etc.
○ others, which?
_____

8. During this visit to the Urho Kekkonen National Park how important to you is or was …?
(please, respond to each alternative)
(5 = very important, 4 = fairly important 3 = neither, 2 = of little importance, 1 = not important at all)

	very important				not at all important
	5	4	3	2	1
experiencing the nature	○	○	○	○	○
scenery	○	○	○	○	○
being on my own	○	○	○	○	○
mental well-being	○	○	○	○	○
getting away from noise and pollution	○	○	○	○	○
relaxation	○	○	○	○	○
meeting new people	○	○	○	○	○
being together with own group	○	○	○	○	○
pleasant old memories	○	○	○	○	○
getting to know the area	○	○	○	○	○
learning about the nature	○	○	○	○	○
improving skills	○	○	○	○	○
exercising	○	○	○	○	○
exiting experiences	○	○	○	○	○
learning about local cultural heritage	○	○	○	○	○

9a. What did you do or will you do in Urho Kekkonen National Park during this visit?
(please, select all which apply)

1 ❑ walking
2 ❑ nordic walking
3 ❑ jogging
4 ❑ hiking
5 ❑ observing nature
6 ❑ picnic
7 ❑ bicycling
8 ❑ fishing
9 ❑ bird watching
10 ❑ picking wild berries

11 ❑ picking mushrooms
12 ❑ studying plants
13 ❑ education
14 ❑ visiting visitor centre
15 ❑ nature photographing
16 ❑ scout outing
17 ❑ school camp
18 ❑ walking with a dog
19 ❑ orienteering
20 ❑ overnight camping outdoors

22 ❑ cross-country skiing
27 ❑ snowshoeing
34 ❑ hiking (staying overnight in nature)
36 ❑ hunting
83 ❑ getting to know nature trail
86 ❑ guided hiking tour
88 ❑ getting to know cultural heritage
121 ❑ geocaching
231 ❑ kite skiing
999 ❑ other, please specify? _____

9b. Which of the alternatives you selected was or is the most important to you during this visit? number → [___]

10a. What do you think about the quality of the services, facilities and environment that you used <u>during this visit</u> in the Urho Kekkonen National Park?

Please respond to all alternatives you used during this visit. If you did not use the service or facility, please tick the alternative "did not use".

(5 = very good, 4 = fairly good, 3 = neither,
2 = fairly poor, 1 = very poor)

	very good 5	4	3	2	very poor 1	did not use
parking places	○	○	○	○	○	○
road network	○	○	○	○	○	○
information boards and crossroadmaps on the routes	○	○	○	○	○	○
trail network	○	○	○	○	○	○
signposts at the trails	○	○	○	○	○	○
campfire sites and lean-to-shelters	○	○	○	○	○	○
firewood at cabins and campfire places	○	○	○	○	○	○
public toilets in the national park	○	○	○	○	○	○
waste disposal (management and instructions)	○	○	○	○	○	○
paying attention to special needs (accessibility of routes, safety, signposts/information boards etc.)	○	○	○	○	○	○
leaflets and guide books	○	○	○	○	○	○
nationalparks.fi and excursionmap.fi websites	○	○	○	○	○	○
availability of information beforehand	○	○	○	○	○	○
open and reservable wilderness huts	○	○	○	○	○	○
services of the national park in social media	○	○	○	○	○	○
services provided by enterprises (e.g. cafes and organized activities)	○	○	○	○	○	○
safety of the routes and structures	○	○	○	○	○	○
general safety	○	○	○	○	○	○
general tidiness	○	○	○	○	○	○
variability of the landscape	○	○	○	○	○	○
services of Tankavaara Visitor Centre	○	○	○	○	○	○
services of Saariselkä Customer Service Kiehinen	○	○	○	○	○	○
services of Korvatunturi Visitor Centre in Savukoski	○	○	○	○	○	○
other, what? _____	○	○	○	○	○	○

10b. How satisfied are you with the quantity of services and facilities in Urho Kekkonen National Park as a whole?
(5= very satisfied, 4=rather satisfied, 3=neither, 2=rather unsatisfied, 1=very unsatisfied)

	5	4	3	2	1	
very satisfied	○	○	○	○	○	very unsatisfied

11. Did this visit to Urho Kekkonen National Park meet your expectations with regard to the following?
(5 = very well, 4 = fairly well, 3 = neither,
2 = fairly poorly, 1 = very poorly)

	very well 5	4	3	2	1	very poorly
natural environment	○	○	○	○	○	
opportunities for outdoor activities	○	○	○	○	○	
routes and facilities	○	○	○	○	○	

12. On this trip, is Urho Kekkonen National Park…

○ your trip's only or the most important destination?

○ one among other intended destinations?
Other destinations are:
_____

○ a non-planned destination along your route?
Main destination(s) is/are: _____
_____

13. Have you spent / Will you spend money on various activities in Urho Kekkonen National Park or its vicinity while on <u>this trip</u> (see map 2)?

○ yes (→ please, answer the following questions)
○ no (→ please, move on to question 14)

Please tick the box that indicates whether you are estimating
○ your personal expenses and your share of your group's joint expenses **OR**
○ the total expenses of your family or group.

○ the visit is arranged by travel agency or other tour operator, the price of trip is _____ €
→Please also inform your <u>other</u> costs in National park and surroundings below

Indicate below (points A–G) your total expenses for this trip **in Urho Kekkonen National Park and its vicinity**.

Write 0 (zero) in the column if you have not spent any money on the activity in question.

A) fuel or other purchases from the service station _____ €

B) costs for local transportation
(e.g. local bus or taxi trips) _____ €

C) food and other retail shopping _____ €

D) café and restaurant purchases _____ €

E) accommodation _____ €

F) organised programme and recreational services
(e.g. guided tours, entry fees and exhibitions) _____ €

G) other expenses
(e.g. equipment hire) _____ €

14. How many times have you visited Urho Kekkonen National Park before this trip?
(please, answer all that apply)

This is my first visit ☐ → move on to question 15

During past five years _____ times
When was your first visit? In _____ (year)
When was your last visit? In _____ (year)

15. Did any of the following disturb you this time during your visit in the Urho Kekkonen National Park?
(please respond to each alternative)

(5 = not at all, 4 = fairly little, 3 = neither, 2 = fairly much, 1 = very much)

	not at all 5	4	3	2	very much 1
erosion of the ground	○	○	○	○	○
littering	○	○	○	○	○
amount of visitors	○	○	○	○	○
behaviour of other visitors	○	○	○	○	○
something else, please specify	○	○	○	○	○

_____

16. How did this visit to Urho Kekkonen National Park influence the state of your health and well-being in the following sectors?
(Please answer each point and choose the alternative, which describes your feelings the best.)

5 = totally agree, 4 = somewhat agree, 3 = no opinion, 2 = somewhat disagree, 1 = totally disagree)

	totally agree 5	4	3	2	totally disagree 1
Increased social welfare (e.g. strengthened social relations, improved working capacity, enjoyed going things alone or together)	○	○	○	○	○
Increased mental welfare (e.g. satisfaction with life, improved mood, recovery from mental stress, learned something new)	○	○	○	○	○
Increased physical welfare (e.g. enjoyed sensing the nature, maintained the fitness, learned new skills, physical well-being)	○	○	○	○	○

17. What kind of monetary value would you give to the influence of visit in Urho Kekkonen National Park?

You can compare with the value of commercial welfare services and products (gym 5 €, visit to spa for 2,5 hours 20 €, massage for one hour 50 €, treat in spa with different kinds of cures 200 €), cultural services (cinema 12 €, concert 100 €) or travelling costs (holiday at one's own country 500 €, holiday abroad 3000 €).

_____€

THANK YOU FOR ANSWERING THIS QUESTIONNAIRE!
If there is anything else you would like to tell us, please use the space below.

_____
_____
_____
_____
_____
_____
_____
_____
_____

18. How long did you travel or intend to travel by following means of your own power during this visit to Urho Kekkonen National Park?

(please, answer all which apply)

❑ hiking _____ km
❑ cyckling _____ km
❑ skiing _____ km
❑ snowshoeing _____ km
❑ other, please specify?

_____ km

19. Country of recidence?
(If you permanently live in Finland, please specify in which town)
_____

20. Gender?
○ male ○ female

21.Year of birth?
[__ __ __ __]

22. Education? (please indicate your highest level of education)
○ vocational training
○ college-level degree
○ university bachelor's degree
○ university master's degree
○ no vocational/professional qualification

23a. Have you shared / Do you intend to share your experiences during this trip on social media?
○ yes ○ no

23b. Which social media platforms do you use?
(select more than one alternative if applicable)
❑ Facebook ❑ Instagram
❑ Twitter ❑ Flickr
❑ other(s), which?_____

23c. Do you usually mark the location of your post? (choose the most appropriate alternative)
❑ with coordinates (GPS or similar)
❑ with place names
❑ with hashtags
❑ I don't share
❑ I don't know

_____
_____
_____
_____
_____
_____
_____

10.2.3   Swabian Alb Biosphere Reserve, Germany

INSTITUTE OF GEOGRAPHY AND GEOLOGY
JULIUS-MAXIMILIANS-UNIVERSITÄT WÜRZBURG

Julius-Maximilians-
**UNIVERSITÄT
WÜRZBURG**

Dear guests,
we're students from the University of Würzburg. For a research project we're conducting a survey on the economic effects of tourism in the area of the Swabian Alb. Would you be so kind to answer some questions on your visit? This information will be very important for us and it will only take 10 minutes. All of your answers will be absolutely confidential.

Nr.: ....   **Date:** ....   **Time:** ....

Interviewer: ....   **Location:** ....   **Rejection:** ....

Weather: □^{1} cloudless   □^{2} fair   □^{3} cloudy   □^{4} overcast   □^{5} rain

Activity: □^{1} walker   □^{2} hiker   □^{3} cyclist   □^{5} motorcyclist   □^{6} swimmer   □^{7} nature watcher   □^{8} water sports

Remarks: ....

---

1) Where did you sleep last night?
□^{1} hometown   or   □^{2} holiday resort: ....

1a) Where will you stay tonight? (*day-tripper continue with question 2*)
□^{1} hometown   or   □^{2} holiday resort: ....

     1b) How long did you already stay here?
     .... nights

     1c) Total number of overnight stays during the entire trip:
     .... nights

     1d) Please describe the type of your accomodation:
     □^{1} *hotel (garni)*   □^{1} *up to 30€*   □^{2} *up to 50€*   □^{3} *up to 75€*   □^{4} *over 75€*   *per person/night*
     □^{2} inn   □^{5} health clinic   □^{8} friends/relatives
     □^{3} guesthouse   □^{6} youth hostel   □^{9} other: ………………………..
     □^{4} vacation apartment   □^{7} camping   □^{99} not specified

     1e) Are meals included in the price of your accommodation?
     □^{1} no meals   □^{2} breakfast   □^{3} half board   □^{4} full board   □^{99} not specified

     1f) Is your trip to this region...
     □^{1} a package tour   □^{2} a self-organized trip (*continue with question 2*)   □^{3} cure (*continue with question 2*)

     1f)i) For package tours: **1f)ii) Services included in the package?**
     total price: .... €   ....
     for .... persons   ....

---

2) Please name the two most important reasons your visit today:
i)...   ii)..

---

3) Do you know the state of protection of this region? Is it a... (*rotation of items, multiple answer possible*)
□^{1} nature reserve   □^{2} protected landscape   □^{3} biosphere reserve
□^{4} nature park   □^{5} national park   □^{6} I don't know

4a) Why are you in the region now?
□^{1} vacation/leisure time   □^{2} business   □^{3} cure   □^{4} other: ....

4b) What are your main activities in this region?
   ....

---

5) By which means of transport did you come here today?
□^{1} car   □^{2} railway   □^{3} coach   □^{4} bike   □^{5} motorbike   □^{6} other: …...

---

6) Do you know the label „National Natural Landscapes"?
□^{1} yes   If yes, please give two examples of „National Natural Landscapes":   i)...
□^{2} no   ii)...

7a) Are you aware that there is a biosphere reserve in this area?
□^{1} yes   □^{2} no (*continue with question 8*)

7b) In your decision to visit the Swabian Alb area, how important was the fact that this is a biosphere reserve?
□^{1} very important   □^{2} important   □^{3} not important   □^{4} no importance at all

7c) Would you be here today if the biosphere reserve did not exist?
□^{1} yes   □^{2} no   □^{3} maybe

(For overnight guests)
8) Is this your first visit to this region?
□^{1} yes   □^{2} no, 2nd-5th time   □^{3} no, 6th-5th time   □^{4} no, 11 times or more

---

9) Please name two top attractions of this region! Which did you visit / intend to visit?
   .... □^{1} ....
                                                    □^{1}

10) In which areas would you wish further offers in the biosphere reserve *(multiple answer possible)*

□¹ multi-day hikes
□² one-day hikes / trails
□³ suggestions for fay trips by bicycle
□⁴ theme routes for bicycles
□⁵ regional gastronomy

□⁶ shops for regional products
□⁷ recommendations for sites of specific plants
□⁸ recommendations for oberservations points of animals
□⁹ other: …………………………………………

11) What are your expectations when you visit a UNESCO Biosphere Reserve? *(multiple answer possible)*

□¹ special nature experience
□² interesting cultural landscape
□³ sustainable tourism offers
□⁴ good public transport network

□⁵ wide range of regional products
□⁶ variety of cultural offers
□⁷ good information centers
□⁸ offers of health care

12) How much did you spend (or will you spend) for you and your fellow travelers during the trip?

	D.K.	N.F.S.	Ø Average expenses per day per person (0 = Nothing)	sum	num. of days	num. of pers.
a) accommodation *(not for day-trippers)*	□⁻⁹	□⁻⁹⁹	€ ....**per night**			
b) meals/beverages (restaurants)	□⁻⁹	□⁻⁹⁹	€			
c)i) groceries	□⁻⁹	□⁻⁹⁹	€			
c)iii) sum of purchases for items under 50 € (other)	□⁻⁹	□⁻⁹⁹	€			
c)iv) singles purchases over 50 € (separately)	□⁻⁹	□⁻⁹⁹	€ .... € .... €			
d) sports/leisure/entertainment/culture (incl. admissions)	□⁻⁹	□⁻⁹⁹	€			
e) transportation use during the stay - public transport (regular busses, trains) , taxi etc. - excursions bus/boat, cable railway, gondola, ski lift etc. - parking fees	□⁻⁹	□⁻⁹⁹	€ .... € .... €			
f) visitor's tax/guest card	□⁻⁹	□⁻⁹⁹	€			
g) cure (baths/massages etc.)/medical expenses	□⁻⁹	□⁻⁹⁹	€			
h) congress/conference/seminar fees etc.	□⁻⁹	□⁻⁹⁹	€			
i) biosphere reserve specific services	□⁻⁹	□⁻⁹⁹	€			
j) other services	□⁻⁹	□⁻⁹⁹	€			

One of the goals of biosphere reserves is to strengthen regional value creation.

13a) Did you buy regionally produced food during your stay?

□¹ yes   □² no *(continue with question 14)*

13b) How much have you spent on regionally produced food?

Total price: .... €

14a) Did you buy other regionally produced goods during your stay?

□¹ yes   □² no *(continue with question 15)*

14b) How much have you spent on regionally produced goods?

i) .... € ....
ii) .... € ....
iii) .... € ....

Finally, we ask you for a few details for the statistics:

15) Where do you live (main residence):   Postcode: ....   Country: ....

16a) Please specify your age and the age of your fellow travelers!

.... □¹*f* □²*m*   .... □¹f □²m   .... □¹f □²m
.... □¹f □²m   .... □¹f □²m   .... □¹f □²m

16b) How big is your travel group in total?

i) number of persons: ....
ii) of which children: ....

17a) What is your education level?

□¹ still in school   □² no graduation   □³ secondary school qualification   □⁴ secondary school   □⁵ A-levels   □⁹⁹ not specified

17b) Do you have a university degree?

□¹ yes   □² no   □⁹⁹ not specified

17c) Which occupation group do you belong to?

□¹ self-employed   □² senior official/manager   □³ blue-collar worker/craftsman   □⁴ homemaker
□⁵ retiree   □⁶ employee/public official   □⁷ student/trainee/apprentice   □⁸ not employed

17d) Finally, may I ask you for your household income (net)?

□¹ < 2000 €   □² 2000 bis < 3000 €   □³ 3000 bis < 4000 €   □⁴ 4000 bis < 5000 €   □⁵ > 5000 €   □⁹⁹ k. A.

Thank you for your cooperation!

10.3   Calculations for Matrices, Ratios, Effects and Multipliers

10.3.1   Direct and Indirect Effects Matrix

In matrix terms, the inter sectorial flux in a certain economy can be described as:

$$AX + Y = X$$

Where

A is the matrix of direct input technical coefficients with a dimension (n x n)

X and Y are vector columns (n x 1), in which values represent total input and final output for each sector.

Considering the final output as exogenous to the system, it is possible to obtain:

$$X = BY$$

$$B = (I - A)^{-1}$$

Where

B is the matrix of direct and indirect coefficients or Leontief Inverse Matrix with dimension (n x n), where the element b_{ij} should be understood as the total input of sector if necessary to produce one unit of final output for the sector j.

10.3.2   Induced Effects Matrix

In order to calculate the induced effects, it is necessary to include households, making households endogenous to the system. So, instead of using the Matrix A described above, the following one should be used:

$$\bar{A} = \begin{bmatrix} A \\ H_e \\ H_i \end{bmatrix}$$

Where $\bar{A}$ is the new technical coefficient matrix ((n + 1) x (n + 1)) with household income (H_i) and expenditures (H_e).

In the same way, the new vector of total input is X ((n + 1) x 1) and final output Y ((n + 1) x 1), where the new components, household income and expenditures, are endogenous to the matrix:

$$X = BY$$

$$B = (I - A)^{-1}$$

10.3.3   Technical Ratios

For a vector W (n x 1) where the elements w_j are the coefficients of input, job, import, income and value added, that are obtained by dividing these variables for each sector by the total output of the sector, as:

$$w_j = e_j / x_j$$

Where,

w_j is the job ratio for sector j

e_j is the total people employed in sector j

x_j is the total output in sector j

10.3.4   Economic Effects

Using the formula below it is possible to calculate the job effects and all the other economic

effects:

$$E_j = \sum_{i=1}^{n} b_{ij} w_i$$

Where E_j is job effect that estimates the direct, indirect and induced effects of job creation for each monetary unit produced for the final output of the j-sector.

10.3.5   Economic Multipliers

In the same way, the job multipliers can be obtained by dividing the job effect by the job coefficient correspondent. It indicates how much in direct, indirect and induced is generated for job, import, taxes per each unit directly produced. The multiplier for the j-sector would be:

$$ME_j = \sum_{i=1}^{n} E_j / W_j$$

10.3.6   Attributes of Generic Areas

Rural Areas

Rural communities with low population density (below 10,000) where economic development is limited. Production

multipliers are low, but job multipliers are higher than average.

Small Metro Areas

Larger rural areas with population between 10,001 and 50,000. Production multipliers are low to medium and job multipliers are medium to high.

National Multipliers

National Multipliers consider the entire country. Production multipliers are high and job multipliers are low.

Larger Metro Area

Moderate Size Communities with total population between 50,001 and 500,000. Production multipliers are medium to high and job multipliers are medium to low.

State or Province

State or Metro regions with populations of 500,000 and above. Production multipliers are high and job multipliers are low.

10.3.7 Rural Area Multipliers and Ratios Developed from the Input-Output (I-O) Table for Brazil (2013) – 68 Sectors

Sector	Direct effects (ratios)			Indirect effects		Total effects (indirect + induced)		
	Jobs/ $MM d. output	Income/ output	Value added/d. output	Output I	Output II	Jobs II/ $MM d. output	Income II/ d. output	Value added II/d. output
Accommodation	35.23	0.42	0.54	1.16	2.29	48.53	0.60	0.74
Eating and drinking	30.98	0.34	0.41	1.09	2.05	46.00	0.50	0.73
Amusement and Recreation	36.46	0.36	0.41	0.97	2.13	36.73	0.40	0.95
Terrestrial Transport	25.13	0.25	0.33	1.38	2.17	51.61	0.46	0.62
Retail trade	25.80	0.45	0.62	1.11	2.23	40.83	0.64	0.92
Wholesale trade	29.94	0.44	0.62	1.10	2.18	31.07	0.62	0.90
Average	30.59	0.38	0.49	1.14	2.18	42.46	0.54	0.81

10.4   Value Chain Analysis

Where there are lower levels of economic analysis expertise, or challenges in developing multipliers (see Chapter 7), there are simpler tools that can be used to establish the direct economic contributions or impacts of tourism. One example is the Value Chain Analysis.

Value chains are described as, '...a sequence of related business activities from the provision of specific inputs for a particular product to primary production, transformation, marketing and up to the final sale of the particular product to consumers.'[173] Value chain analysis (VCA) is used to map the value chain in order to understand how actors interact

and who captures the value[174], and can help to evaluate direct economic impacts and also indirect impacts on support sectors (e.g. agriculture, transport, maintenance, etc.).[175] For the tourism sector, the value chain is a combination of services (e.g. accommodation, catering, excursions, transport), in which commodities play an important role (e.g. agricultural products, craft etc.), many of which occur at the same time within the tourist destination:[176]

The International Trade Centre's Inclusive Tourism Opportunity Study Guidelines[177] help to guide counterparts and consultants to reveal suitable inclusive tourism project

opportunities, using a value chain approach to identify linkages with tourism stakeholders and to integrate key sectors such as agriculture, crafts, artistic performance and services into the tourism value chain.

Figure 11*: *Use of a value chain to map flows of expenditure and shares reaching the poor in Luang Prabang, Laos 2006[178]*
https://creativecommons.org/licenses/by-nc-nd/4.0/

Value Chain Node and Turnover p.a	Pro-poor Income as % of Turnover and $ p.a.
135,000 tourists in Luang Prabang, spending $27.5m	
Accommodation $8.7m	6%, 0%.55 Hotel workers ($0.29m) Guest house workers ($0.22m)
Food and Drink $7m	45-50%, $3m Meat and Fish producers/vendors (*2.4m) Fresh food producers (up to $0.8m)
Curios and Craft $4.4m	40% $1.8m Weavers ($0.55m) Silver and other suppliers ($0.51m) Silk suppliers ($0.27m) Vendors ($0.20m)
Transport and Excursions $1.8m	33% $0.6m Tuk-tuk drivers ($0.30m) Boat owners ($0.11m) Guides ($0.15m) village hosts ($0.1-0.2m)

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Visitors Count!

Visitors Count! provides a standardized approach to measure economic impacts of tourism in protected areas. Stakeholders and managers can use these guidelines to count visitation and evaluate the economic impacts.

The value of protected areas is often hidden from direct view. Once managers understand the number and behaviour of visitors they host, and the revenues and costs they generate, informed decisions on management plans and tourism strategies can be made. Demonstrating the positive impact of protected areas on the local economy can lead to greater buy-in and ownership of conservation practices and places, less poaching and land encroachment, and may also help offset some of the human-wildlife-conflict where it occurs.

Drawing on case studies from around the world, Visitors Count! aims to build awareness, knowledge and capacity internationally on how to best undertake economic evaluations of tourism in protected areas, and thereby contribute towards a globally acknowledged standard methodology.

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