DER ÖFFENTLICHE SEKTOR

FORSCHUNGS-MEMORANDEN

Economic and Cultural Values Related to Protected Areas

Part 1: Valuation of Ecosystem Services in Tatra (PL) and Slovensky Raj (SK) national parks

Part 2: Promotion of regional development and payment for ecosystem services schemes in the regions of Tatra (PL) and Slovensky Raj (SK) national parks, and Maramures Natural Park (RO)

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Vorwort

Wolfgang Blaas

Die vorliegende Doppelnummer präsentiert das Ergebnis einer im Auftrag des Danube Carpathian Programme (DCP) des World Wildlife Funds for Nature (WWF) durchgeführten Studie zu Fragen der wirtschaftlichen Bewertung geschützter Natur und ihrer regionalwirtschaftlichen Bedeutung.

Dabei handelt es sich genau genommen um zwei aufeinanderfolgende Forschungsprojekte, von denen das erste im Jahre 2009 abgeschlossen wurde, und das zweite, aufbauend auf den Erkenntnissen des ersten, im Jahre 2010. Dementsprechend gliedert sich das vorliegende Heft in zwei Teile.

Im ersten Teil wird anhand von zwei Fallstudien, nämlich des Tatra Nationalparks (Polen) sowie des Slovensky Raj Nationalparks (Slowakei), die lokale, regionale und volkswirtschaftliche Bedeutung ökologischer Güter analysiert. In diesem Kontext wird die Summe der „Umwelt-Dienstleistungen" (ecosystem services) erfasst und monetarisiert. Es ergeben sich dabei durchaus beachtliche Summen für die jährlichen wirtschaftlichen Vorteile, wobei ein Großteil dieser Vorteile aus den Möglichkeiten zur Erholung und Regeneration in den Nationalparks resultiert.

Im zweiten Teil des vorliegenden Heftes werden die regionalwirtschaftlichen Impulse geschützter Naturbereiche thematisiert. Solche Impulse setzen ein effizientes, auf eine langfristige Erhaltung der geschützten Natur ausgerichtetes Management voraus, das nicht nur über enge Kontakte mit den zuständigen Behörden verfügt sondern auch über die erforderlichen Möglichkeiten der Gestaltung der Flächennutzung innerhalb des Gebietes. Dies wird anhand von drei Fallbeispielen, und zwar den zwei oben genannten Nationalparks in Polen und der Slowakei sowie des Maramures Mountains Natural Park in Rumänien diskutiert. Und es wird gezeigt, dass nur in einem der drei Fälle diese wesentliche Voraussetzung gegeben ist.

Wolfgang Blaas

Wien, August 2010

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Economic and Cultural Values Related to Protected Areas
Part 1: Valuation of Ecosystem Services in Tatra (PL) and Slovensky Raj (SK) national parks

Abstract

The valuation of ecosystem services by the examples of Tatra national park (Poland) and Slovensky Raj national park (Slovakia) shows that ecosystem services are of eminent importance to the local, regional and national economies.

In total, Tatra national park (PL) provides ecosystem services annually worth EUR 742m (potential range from EUR 593m to 888m), while Slovensky Raj national park (PL) pro-vides around EUR 232m of ecosystem benefits (range from EUR 155m to 342m per year). The differences are due to the different ecosystem services provided, but also to the different size of the relevant economies and stakeholder groups.

For both national parks, recreation benefits are most significant. The national parks con-sidered in this study can be labeled "national natural heritage" in terms of the perception of the national societies, and are therefore visited by hundreds of thousands of tourists every year. About two thirds of benefits stem from recreation benefits.

Biodiversity conservation is the second most important ecosystem service. The non-use values in terms of existence, option and bequest values account for about one third of benefits.

Other ecosystem services are especially significant to the local communities. The national parks provide water, erosion control, and a number of other forest ecosystem benefits.

Taking the values together, the establishment of the national parks is clearly efficient from an economic point of view. The costs of establishing and managing the parks are insignificant compared to the benefits provided, especially regarding those benefits that are specific to national parks. Further improvements, for instance, according to interna-tional IUCN and EU standards, and visitor management, are advisable to conserve biodi-versity while still securing the societal benefits in the long term.

1. Introduction, problem setting and methodological approach

1.1 Introduction

Protected areas – "Land and/or sea especially dedicated to the protection and mainten-ance of biological diversity, and of natural and associated cultural resources, and ma-naged through legal or other effective means" (IUCN, 1994) – play a major role in con-serving biodiversity in terms of genetic, species, ecosystem (habitat) and landscape di-versity. Currently, about 25% of European Union's territorial area is protected under the FFH- (Flora-Fauna-Habitat) or Birds-Directive. At the same time, WWF's (2008) living planet index exhibits a dramatic decrease from 1970 to 2008 in terms of conservation of species and ecosystems.

Conserving biodiversity is a major inter- and transdisciplinary task. It involves not only conservation from the viewpoint of ecology, but includes the notion that conservation efforts are important goals of the whole society. Therefore, economic as well as social issues have especially to be dealt with in the management of protected areas. The Con-vention on Biological Diversity (1992) emphasizes a number of issues that include

- benefit sharing of biodiversity conservation,
- integration of environmental and equity issues,
- participation of stakeholders and in particular empowerment of marginal social groups, and

- in general, sustainable development integrating ecological, economic, and social dimensions.

The conservation of biodiversity, in general as well as in situ in protected areas, is based on the perception of ecological, economic and social goals and problems, and therefore on a range of societal values influencing and originating from individual values. For in-stance, the willingness of a society to set aside major parts of its land to conserve biodi-versity is an expression of such values.

In times of scarce resources (scarce public and private funds), it is especially important for biodiversity conservation to highlight the values associated with conserving biodiver-sity in protected areas. Such valuation has to include, in principle, all dimensions (bene-fits, costs) of establishing and managing ecosystem services. This is of particular impor-tance regarding the long-term commitment of a society. Biodiversity conservation is a long-term objective, and the benefits as well become apparent only in a long-term pers-pective.

However, protected areas are in constant need to justify their existence, and to prove the benefits to society in order to receive sufficient funds for the management of the area. The different categories of protected areas need, of course, different amounts of resources in order to be managed appropriately. Landscape conservation areas, for in-stance, often are equipped with fewer financial resources than other categories such as national parks, biosphere reserves or nature parks.

National parks according to category II of IUCN's classification system in particular in-volve four different objectives:

- Conservation of biodiversity, especially in terms of allowing natural processes;
- Education and and information for visitors and the general public;
- Recreation of visitors; and
- Scientific research.

In order to fulfill such broad range of objectives, national parks at least have to be im-plemented according to national law, managed by a specialized national park adminis-tration, and acknowledged and monitored by international bodies. Such fulfillment of obligations consumes substantial funds (costs).

The current study explores the benefits of biodiversity conservation in two national parks in Central Europe, the Slovensky Raj national park in Slovakia, and the Tatra national park in Poland. The main goal of the study is to assess and value the benefits of biodi-versity conservation in terms of the ecosystem services provided by the national parks, and to draw conclusions on a PES (payment for ecosystem services) scheme harmonizing conservation and economic issues.

The study has therefore the following objectives:

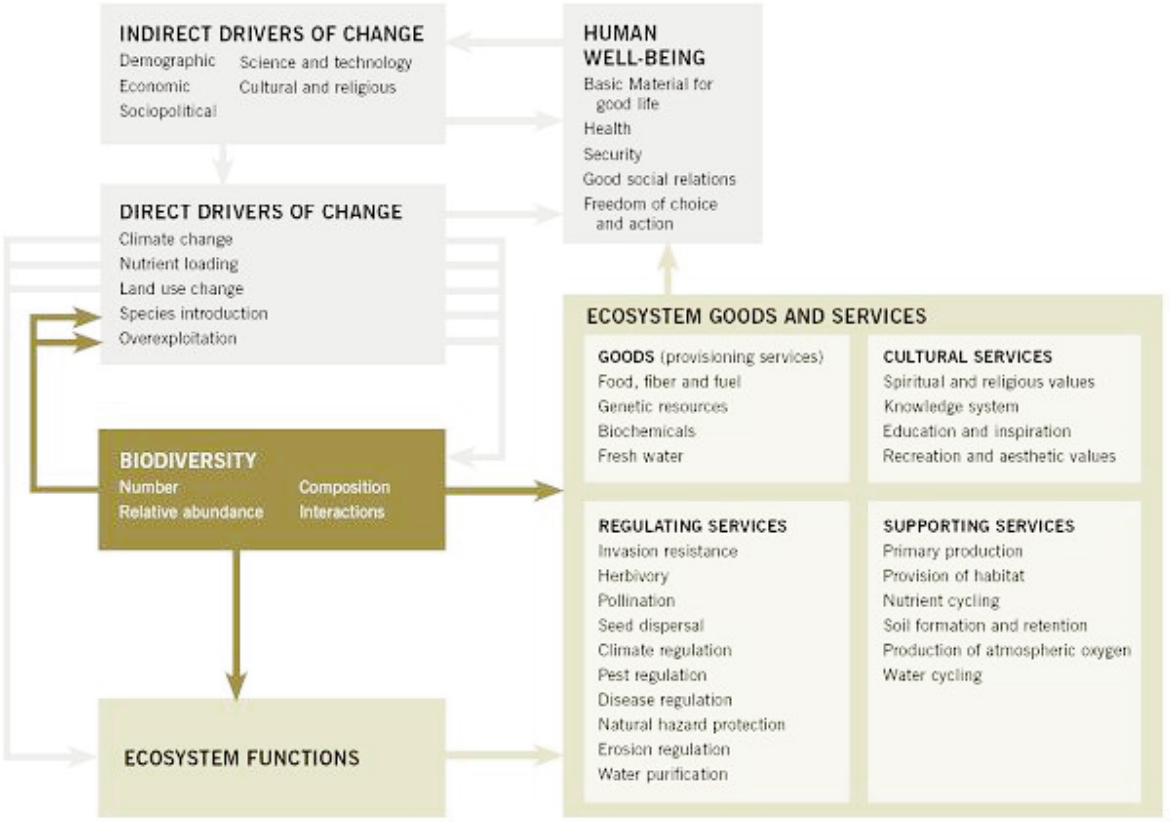
1. Indication of the Total Economic Value (TEV) associated with the economic and cultural services that the protected areas provide to the PA and the surrounding region.
2. Composition of a proposal containing two or more scenarios on Payments for Ecosystem Services (PES) which will serve as a base for follow-up activities (entry into discussions with stakeholders, and identification of a PES concept).

In addition to the national parks of Slovensky Raj and Tatra, a PES scheme for the Maramures national park (Romania), for which a valuation of ecosystem services already exists, will be drafted.

The basic notion of the current study is the acknowledgement of the importance of eco-system services for development, and v.v. the drivers of ecosystem services based on development. Figure 1 presents this basic conception of the linkages between biodiversity, ecosystem functions, and the drivers for change.

Based on this concept, the next section provides an overview of the method, the work flow and the activities of the study.

Figure 1: Biodiversity, ecosystem functioning, ecosystem services, and drivers of change



Biodiversity is affected by drivers of change and also is a factor modifying ecosystem function. It contributes directly and indirectly to the provision of ecosystem goods and services. These are divided into four main categories by the Millennium Ecosystem Assessment: goods (provisioning services) are the products obtained from ecosystems; and cultural services represent non-material benefits delivered by ecosystems. Both of these are directly related to human well-being. Regulating services are the benefits obtained from regulating ecosystem processes. Supporting services are those necessary for the production of all other ecosystem services.

Source: CBD (2006, 14).

1.2 Working steps and methodology

The first step of the current project consists of a collection and interpretation of the re-levant ecological data on ecosystem services of the two national parks, and on a geo-graphical assignment of the relevant national park region.

In order to collect the relevant data, a data information sheet, several personal commu-nications and two workshops were held to specify the available data, and to collect and interpret information from the two natio-nal parks. In a first approach, the data was col-lected based on information already available.

For the two national parks, not all data was available in sufficient detail. Table 1 presents the first-best outli-ne of information requirements; in the respective subsequent chapters, the available and relevant data is discussed more thoroughly. The selected ecosystem services are assumed to mirror the most important ones,

while some of the ecosystem functions presented above in Figure 1 (CBD, 2006) are not included for the current case studies.

Table 1: Overview of ecosystem services and information requirements

		Description of ecosystem services *in situ*	Quantity		Prices**
1.	**Ecosystem services**		before*	after*	EUR/unit
1.1	*Forest products*				
1.1.1	Timber				
1.1.2	Non-timber products				
1.1.3	Water provision, supply				
1.1.4	Water retention / flood protection				
1.1.5	Carbon sink, climate regulation, CO2 sequestration				
1.1.6	Erosion control				
1.1.7	Medicinal resources				
1.2	*Agricultural products*				
1.2.1	Cattle, grazing				
1.2.2	Grains, food production				
1.3	*Fishing*				
1.4	*Hunting*				
1.5	*Recreation*				
1.5.1	Tourists for a day / no., expenditure, origin, motive to stay				
1.5.2	Overnight stays / no., expenditure, origin, motive to stay				
1.6	*Recreation opportunities (national park policies)*				
1.6.1	Education, information				
1.6.2	Hiking				
1.6.3	Climbing				
1.6.4	Others (e.g. rafting, mountain biking)				
1.7	*Biodiversity conservation values*				
1.7.1	Habitats, ecosystems, species, landscapes				
1.7.2	Existence values				
1.7.3	Option / quasi-option values				
1.7.4	Bequest values				
1.8	*Cultural values*				
1.8.1	Traditions, traditional landscapes				
1.8.2	Culture, artistic benefits				
2.	**Other information**				
2.1	Land cover / land use				
2.2	Economic structure of the region				
2.3	Development concepts / strategies				
2.4	PA management plan				
2.5	PA Management strategies / frameworks				
2.6	PA budget, decision autonomy (including all transactions)				
2.7	PA Networks with the region				
2.8	Stakeholder(s) (involvement)				
2.9	Socio-economic development of the region:				
2.9.1	Municipalities, residents, age/education, jobs, unemployment				

Source: own draft.

The table lists all relevant ecosystem services provided by the national parks, and in-cludes empty cells for providing more detailed information (description of regional/local specifics of ecosystem services), quantification of ecosystem services provision before and after the establishment of the national park, and a first indication of potential eco-nomic values attributable to these services.

It turned out that some of the ecosystem services are not relevant for the national parks; on the other hand, much data is not readily available. Regarding existence, option and bequest values, no reliable study exists in Poland nor Slovakia on which a valuation could be based on.

After collection of the available data, the second step consists of linking the quantitative information to prices.[1)] As no primary research – except for visitors' values based on a survey – will be done in the current study, prices will be derived from the relevant inter-national (context-specific scientific) literature and from environmental values databases such as EVRI (Environmental Valuation Reference Inventory), taking into account differ-ences in price levels and income between the original study site and the policy sites in the two national parks:

1 Benefits transfer

Based on existing valuation studies and data bases on values for ecosystem ser-vices, the values and benefits in money terms will be adapted to local/national circumstances (income, GDP, other information regar-

ding preferences or socio-demographics if necessary and feasible). These adapted values will be applied to the existing ecological data; the result will be a valuation of ecosystem services based on values of other studies; the valuation will be presented within a range of possible results, taking into account scenarios and sensitivity of results.

2 Primary data collection

In each of the national parks, a visitor survey will collect data on individual's wil-lingness-to-pay for specific ecosystem services. In particular, the recreation value and non-use values (existence values) of the park's services (species & habitat conservation) will be addressed. The results will show the potential range of values of the park for visitors and the general public.

Finally, the individual values will be aggregated, e.g. by means of the annual number of visitors to the national park, to derive a broad indication of the potential value of eco-system services provided by the national park.

The third work package includes a draft of PES (Payment for ecosystem services) schemes in three national parks, based on the valuation study. Taking the economic valuation of ecosystem services, the last working package of the project will include a discussion of potential payments for ecosystem services by the beneficiaries of these services. Stakeholder involvement in the form of discussion groups and workshops will ensure that a reasonable proposal for payments will be drafted. For instance, visitors (tourist) benefit from the services in terms of habitat and species conservation. The question arises to what extent tourists contribute to the parks' budgets.

The current report only includes the valuation of ecosystem services in the Tatra national park (Poland) and the Slovensky Raj national park (Slovakia). The Maramures Nature Park, as well as the implications for payments of ecosystem services (PES) schemes and the local/regional economy, will be dealt with in a separate report (see Part 2 in this volume).

2 Valuation of ecosystem services in Tatra national park (Poland)

2.1 Short description of the study site

The Tatra national park (Tatrzanski Park Narodowy) was founded in 1954, and is located in the Southern part of Poland along the border to Slovakia (on the Slovakian side, a national park was also established), about 100 km south of Cracow (all data and information compiled from presentations of the Tatra national park administration, 2009). Early efforts for conservation date back to the late 19th century with joint formal com-mitments of Poland and Slovakia to conserve the area as a protected area in 1925. In 1993, the national park was also designated as a UNESCO world heritage site, and as a biosphere reserve. With Poland's (and Slovakia's) accession to the European Union, the area was also designated as a Natura 2000 site according to the Habitats and Birds Di-rectives.

The national park is established on an area of 21,164 hectares of which 82% are publicly owned land. Forest ecosystems account for 72% of the area of which about 58% are natural or semi-natural forests. The core zone of the park is maintained on about 60% of the total land, the other parts include a buffer and a transition zone. While 92% of the forest area now consists of spruce, silver fur and beech are expected to increase their share of land to 20% and 13%, respectively, pushing back spruce areas, according to forest management plans. Many prominent (charismatic, "flagship") animal species po-pulate the national park such as chamois, marmot, brown bear, lynx, wolf, otter, eagle, and falcon. Parts of the area are alpine areas, with many meadows and traditional forms of pasture. The national park is an important tourist attraction; currently, the national park annually counts about 2m visitors who have to purchase tickets for access to the park. The national park administration implements and monitors a rather strict regime regarding visitor management. Access to the park is restricted to certain areas and routes with temporal and spatial bans, including rules for hiking, climbing, mountain biking, skiing, and accessing the many caves in the area. Sports competitions and pa-ragliding are prohibited.

2.2 Ecosystem services and money values

2.2.1 Forest products and ecosystem services

In the following, the different forest products and ecosystem services will be briefly de-scribed, and – where possible – valued in money units. In addition, the sections include a discussion of uncertainties, and the possible range of money values.

Timber

Starting with timber as one of the main services in many ecosystems (1.1.1, timber, see Table 1, page 5), the Tatra national park was formerly known as a major source of tim-ber, in particular used as an input to the mining industry in the 18th and 19th century. However, according to the Tatra national park administration (2009), there is nowadays no commercial use and harvesting (logging) of timber. Under the control of the national park administration, and only based on ecological necessities, selective logging takes place in the event of windfall, spreading of bark beetle, or avalanches outside the core zone. At some occasions, the selective logging is done together with the aim to change the composition of tree species according to the ecological forest management plan. However, such logging is only a minor national park policy; mainly, the change of species composition is left to natural processes. Logging only takes place in the buffer zones of the park; no measures are done in the core zone. As the forests do not provide any substantial timber for commercial use, the ecosystem service of providing timber is neg-ligible.[2)]

Non-timber forest products

Non-timber forest products (1.1.2), such as berries and mushrooms, are collected in some few areas of the park only for private purposes (no commercial use), and only in the landscape conservation zone (picking non-timber forest products is prohibited in the core zone). There are currently no statistics available on such non-timber forest prod-ucts; however, it is assumed that such harvesting is of very limited importance. A few hundreds of tree seeds are harvested annually by the national park administration and sold to locals. Taking all together, non-timber forest products do not play a significant role in valuing ecosystem services of the Tatra national park.

Water provision, water supply

The Tatra national park is rich in water sources, both regarding run-off as well as many springs (1.1.3). Within the national park boundaries, 52 springs are located. On average, they provide annually about 7m cubic meters (m^3) of fresh water, of which 5.5m m^3 are used for the local water supply of the town of Zakopane and other adjacent communities (while the town of Zakopane has less than 30,000 residents, resident numbers can go up to 2-300,000 during the tourist season with peaks close to 500,000 tourists). The water sources of the national park therefore provide crucial "inputs" to the population of the town, as well as to the tourism industry. The price of one m^3 of drinking water ranges in Poland from PLN 1.95 to 3.99 for households (EUR 0.47 to 0.96), with a mean of PLN 2.81 (EUR 0.68) (all figures in 2005 prices; Bartczak et al., 2007). Valued by actual water tariffs (prices), the value of fresh water actually used comes up to EUR 3.7m per year; if we assume that the springs would fully be used for drinking water purposes, the value of water provision of the Tatra national park ecosystems would amount to EUR 4.76m per year. Given the current water use of 5.5m m^3 per year, the lower bound amounts to EUR 2.585m (water price EUR 0.47 per m^3), the upper bound would be EUR 5.28m (water price of EUR 0.96 per m^3).

Additional to water supply, water is used in four small hydro-electric power plants inside the national park. Actual production figures are currently not available, but production is very limited and only for local purposes.

Water retention, flood protection

The ecosystems of Tatra national park are important for retaining water runoff from the area (1.1.4). Regular annual floods occur while no flood protection infrastructure is cur-rent in place. Since there is no primary data on the value of water retention and flood protection available, the current study has to rely on valuation studies concentrating on public expenditure for flood protection that can be saved by a functioning forest ecosys-tem (abatement costs saved). Other possible methods include

- the quantitative calculation of water retained by the functioning forest ecosystem in comparison to a landscape with non-functioning forest ecosystems, or even no forest cover. This amount of water retained then may be valued with water pric-es.

- hedonic pricing for property values that would be changed if water is not retained in the ecosystem, and floods are more frequent.

As far as the Tatra national park is concerned, there are no primary studies neither on the potential water retention (measured in m^3) nor on property values for the hypotheti-cal scenario that forests would be decreased and therefore would not provide water retention and flood protection any more.

Values for forest ecosystems' function to water retention and flood protection in several international studies range from EUR 45 to 150 per hectare (Croitoru, 2008; cf. also IUCN/World Bank, 2004). Chiabai et al. (2009) estimate the marginal value of all provi-sioning services of forest ecosystems (type of biome: temperate mixed) to amount to EUR 107 per hectare (this value also includes erosion control). Krieger (2001) estimates the value of water regulation and erosion control to be around EUR 90 per hectare (cur-rent prices). Pearce (2001) assesses the value of flood control to amount to about EUR 45 per hectare.

As the forests of Tatra national park are fully functional regarding water retention and flood protection, it can be assumed that the value of EUR 90 per hectare is a reasonable approximate. Given that this amount is based on average EU income, and accounting for the income differential between the EU27 and the Polish economy (100:53), the value per hectare can be transferred to the policy site by approximating it by EUR 48 per hectare. The Tatra national park includes an area of 15,122 hectares of forest ecosystems. Valued by EUR 48 per hectare, the economic value of water retention, flood control and erosion control of the Tatra national park forest ecosystems may amount to EUR 725,856 per year. The lower bound, taking into account EUR 45 per hectare at EU27 price levels (transferred to Polish income levels, this would amount to EUR 24 per hectare), the value of water retention services (including erosion control) amounts to EUR 362,928 per year. The upper bound, assuming EUR 107 per hectare (transferred value of EUR 57), the annual value comes up to EUR 861,954.

Carbon sink, carbon sequestration

Regarding carbon sequestration (1.1.5), the valuation of forest ecosystems in the Tatra national park poses methodological problems in terms of the choice of the relevant base-line. It is straight forward to assume a carbon sequestration effect of a newly planted (or naturally succeeded) forest of a formerly deforested area. However, the Tatra national park includes forest areas which might change in composition. The area (hectares) itself is not going to be changed in the future.

Nevertheless, the literature provides several value estimates regarding carbon seques-tration (in EUR per hectare), in some studies depending on whether sustainable harvest-ing takes place. A simple but intriguing valuation approach in the current context consists of valuing the costs of forestation, and then connecting these costs to the carbon sequestered in the new forest. If – as in the current case – a forest already exists, meeting a carbon reduction goal can be more easily achieved. The saving of the costs of carbon sequestration in a newly planted forest is therefore one possible approach to valuing this ecosystem service. Other approaches include the attempts to value the costs of climate change, then computing damage costs per ton of carbon, and linking these costs to carbon potentially sequestered in an existing or newly planted forest. For the latter approach, it is particularly important to consider the time perspective (life cycle) and the discount rates assumed to mirror time preferences for carbon emissions and climate change. In the current case of the Tatra national park, with a forest already existing, we can assume that the additional carbon bound in the forest is limited. The forest will grow since commercial forestry was stopped five years ago, and the changing composition of the forest might add some more potential for a carbon sink. However, when the forest has reached its long-term equilibrium, no more carbon will be stored. The small effect of carbon sequestration is therefore limited.

Regarding the valuation of carbon sequestration, there is a broad range of values avail-able in the relevant literature. For instance, Stavins and Richard (2005) calculate the net present value per area unit, depending on the discount rate and the sequestration rates of a forest (e.g. newly planted vs. existing; periodic harvesting vs. sustainable/no har-vesting). The forests in the Tatra national park are assumed not to be harvested in the future, only the composition of the tree species can be assumed to slowly approach the natural composition. Taking the lower bound of the discount rate (2.5%), no periodic harvesting of a mixed stand forest, the present value amounts to 227 EUR per hectare; per year, the equivalent value of carbon sequestration of the study by Stavins and Rich-ard (2005) is EUR 5.7 per hectare. Van Kooten et al. (2004) calculate the value of carbon sequestra-

tion to amount to a range of EUR 90 to 596 per hectare (present value, dis-count rate between 3.5 and 5%), with an equivalent value per year of EUR 4 to 30 per hectare. Brainard et al. (2009) calculate with a "reasonable value" between EUR 200 and 250 per hectare (present value, discount rate 3.5-5%). This value translates to an annual value of EUR 7-12.5 per hectare. Chiabai et al. (2009) come up with a value of EUR 240-382 per hectare at a discount rate of 3%, equivalent to a value of EUR 7-12 per hectare and year.

For the Tatra national park, the marginal value of carbon sequestration is problematic since the forest already exists, and the mode of managing the forest has not been changed during recent years (and is not expected to be changed in the future). However, as mentioned above, it is reasonable to assume that the forest will slowly grow, will not be harvested and will therefore build some additional carbon storage (sink) in order to contribute to carbon emission reductions. Taking the middle range of values discussed above, at about EUR 12 per year and hectare, and assuming an income differential for Poland of 53% of the EU27 average, a valuation of the ecosystem service of storing car-bon may end up with a value per hectare and year of EUR 6. Combined with the total forest area of the park (15,122 hectares), the carbon sequestration of the forests in Ta-tra national park can be valued annually at EUR 90,732. The lower bound of EUR 7 per hectare (transferred value: EUR 3.7 per hectare and year) leads to an annual value of EUR 56,102. The upper bound may lay at EUR 240,440 (taking the value of EUR 30 per hectare, transferred to EUR 16 per hectare for the Polish economy). The economic value of carbon sequestration is, as mentioned above, limited and will end when the forest will have reached its long-term equilibrium.

Erosion control

Erosion control (1.1.6) was included in the valuation of water retention and flood control above (ecosystem service 1.1.4).

Medicinal resources

According to the Tatra national park regulations it is strictly prohibited to pick and collect plants in the national park. While the ecosystems of the park may be considered as a reservoir for potentially useful drugs, there is lack of data on such potential drugs, and there is also no current use of such herbs or similar plants. Due to these circumstances, plants for medicinal use may exist, but cannot be valued in the current study.

2.2.2 Agriculture and ecosystem services

Cattle, grazing

In general, there is no agricultural use of the areas inside the national park boundaries, but the national park administration allows for extensive sheep grazing for the meadows to keep these areas open from trees and bushes (ecosystem service 1.2.1). This grazing is basically done under the regulations of the national park administration and mainly for ecological management purposes. The sheep, however, produce milk which is used for some traditional cheese production. This cheese production is marginal since the tradi-tional cheese is also produced (in significantly larger quantities) outside the park areas. There are some minor revenues of the cheese production included in the national park budget. And separate valuation – also due to lack of data – of ecosystem service provi-sion is therefore not necessary.

Grains, food production

There is no food production (grains) allowed within the national park (1.2.2).

2.2.3 Fishing

There is no fishing (ecosystem service 1.3) allowed in the national park.

2.2.4 Hunting

There is no hunting (ecosystem service 1.4) allowed in the national park. Formerly, about 5 years ago, the national park administration stopped all hunting which was, anyway, done solely for the purpose of regulating game (all hunting rights are held by the national park). Nowadays, natural enemies such as wolf and lynx hunt game. Outside the national park, private land owners are fully compensated if predators hunt their animals (e.g. sheep).

2.3 Recreation and existence values of visitors

2.3.1 Introduction

The valuation of the ecosystem services referring to recreation and national park policies (1.5) as well as biodiversity values (e.g. existence value, 1.7) took place by means of a questionnaire addressed to visitors of the park. Therefore, primary data on these eco-system values were elicited and aggregated.

Annually, about 2m tourists visit the national park every year. Every visitor has to pur-chase a ticket (for a day or a week) at 16 entry points. Ticket prices vary according to season, regular tickets in the high season are sold for PLN 4.40, students and children pay less (PLN 2.20). Off-season tickets are sold for PLN 3.20 and 1.60, respectively. The national park earns about PLN 10m per year (ticket sales, other fees such as parking, cave visits, licenses, and other services) which are used for national park management.

Regarding cultural values, there are some ancient shepherd's cottages in the park, as well as three old monasteries which can be visited. Within the national park boundaries, there are one cable car and two ski lifts with two downhill slopes. These infrastructures were built prior to the establishment of the national park (IUCN category II). Cross-country skiing is allowed on signed tracks. The national park management pursues a "Zero tolerance policy" against visitors infringing national park regulations (such as skiing off track or ignoring temporal/spatial access bans).

2.3.2 General questions regarding environmental values and the national park visit

The questionnaire distributed during July and August 2009 in the Tatra national park – reprinted in the Appendix beginning at page 48 – first dealt with a block of questions regarding visitors' engagement and information on biodiversity in general, and national park aims and policies in particular. In total, 289 questionnaires were collected, of which 287 (99%) are from Poland.

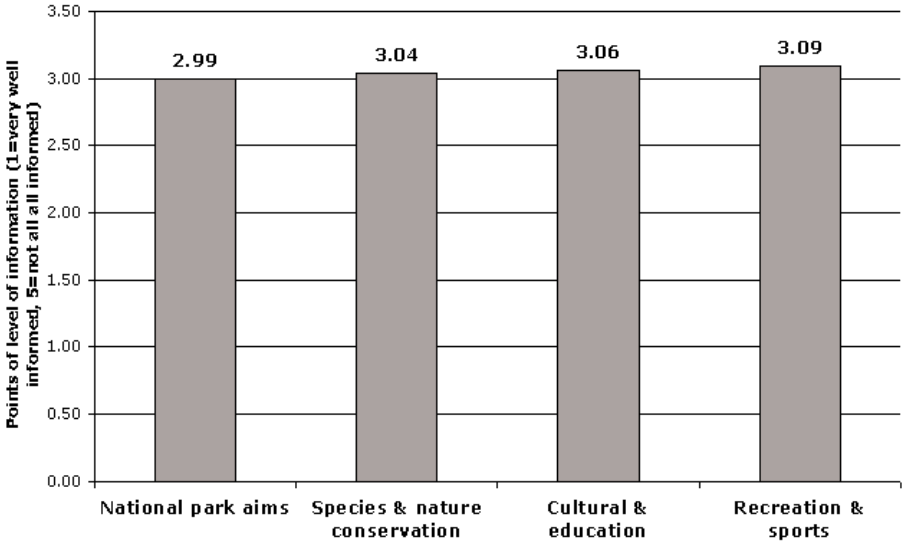
93% (268) of the respondents stated that they are not members of conservation or en-vironmental organizations. 7% (20) are regularly donating to such organizations with a mean of about EUR 62 per year (standard deviation EUR 103; only 12 respondents indi-cated their annual donations to environmental organizations). Regarding the information level, 19% of respondents (55 questionnaires) have heard of the biodiversity definition of the United Nations ("diversity of genes, species (animals, plants), ecosystems and landscapes") in detail before, while 55% have heard the definition but do not have de-tailed knowledge. For some 25% of respondents, the presented definition is new.

Respondents feel medium informed about different aspects of the national park. On av-erage, respondents assess their information level about the national park aims with 2.99 points, about species and nature conservation programs at 3.02 points, recreation ac-tivities and possibilities at 3.06, and cultural and education offers of the national park at 3.09 points (Figure 2). This assessment of information level is a first hint towards envi-ronmental values, and suggests that information should be improved especially in the latter three fields. The differences, though, are not significant; overall, the information level does not seem to be very high. On average, respondents' information level is in the middle between "informed" and "not informed". National park aims are at least known to 45% of respondents. Otherwise, about 40 to 45% of respondents indicated that they are "not well" or "not at all" informed.

When valuing national park ecosystem services such as the conservation of biodiversity (e.g. existence and recreation values), it is of crucial importance that respondents have some basic knowledge about national park aims and objectives. Out of 12 items, res-pondents were asked to choose four items which they would consider to be the most im-portant national park aims. According to IUCN category II criteria, the conservation of biodiversity and natural dynamics (processes), information and education, recreation, and scientific research, should gain the highest attention. Testing visitors also reveals whether the national park provides sufficient information, or whether the information is received and understood adequately by visitors. As Figure 3 suggests, some of the items considered to be most important are not specified in the IUCN national park aims. How-ever, the four main aims of the national park are also named by respondents as the most important aims. Interestingly, some visitors would wish that the national park should concentrate on the construction of roads and sustainable forestry – aims that are fundamentally contradictory to these "official" aims. This result suggests that information policies of the national park could be sharpened in this respect. Nevertheless, it seems that visitors have a

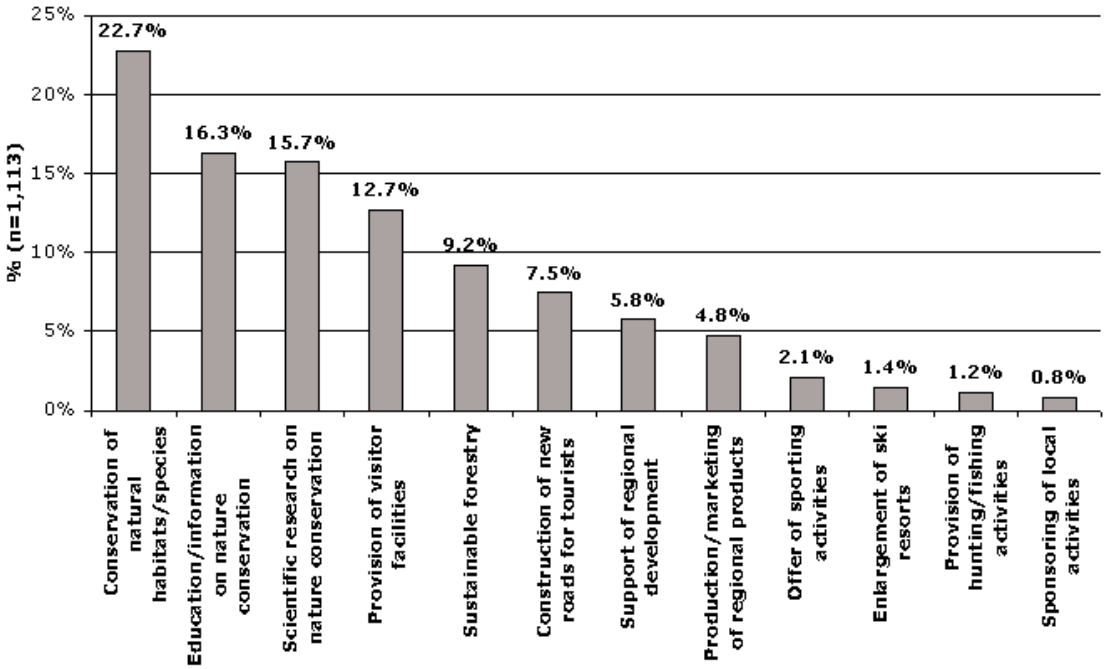
rather clear picture of national park aims. Their self-assessment mirrored above (see Figure 2) seems to be too pessimistic in terms of visitors' information level.

Figure 2: Self-assessed information level of respondents regarding national park policies and offers



Source: Visitors' survey in Tatra national park; own calculations.

Figure 3: National park aims considered most important

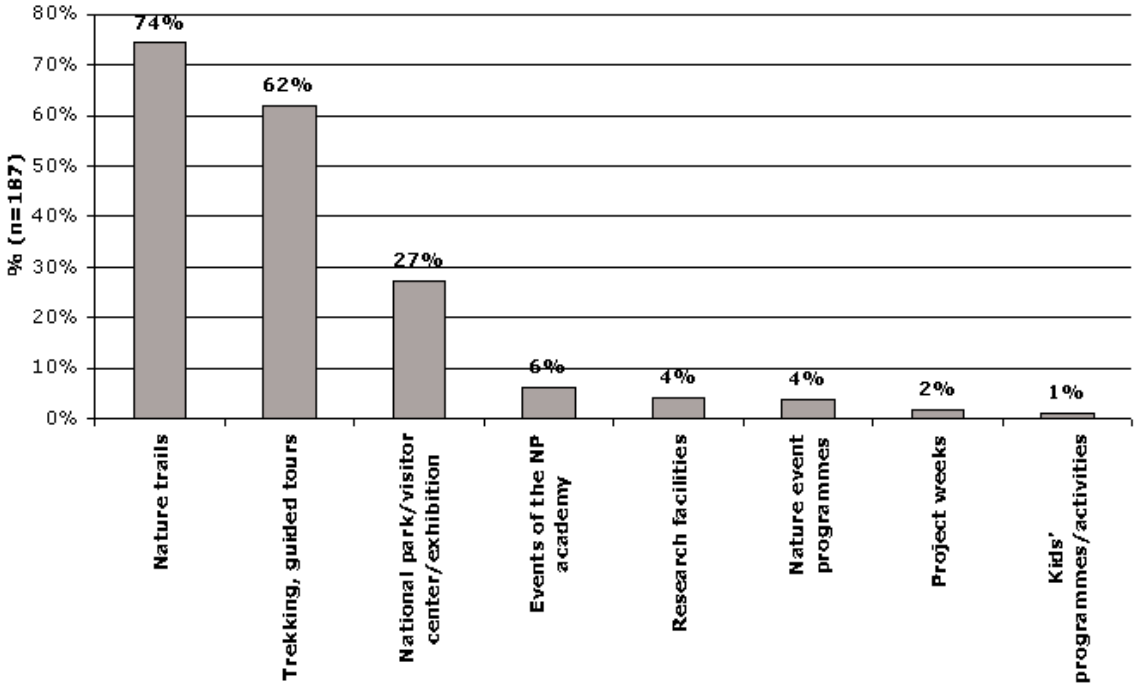


Source: Visitors' survey in Tatra national park; own calculations.

Regarding the actual (current) visit to the national park, the majority of visitors said that they have visited the national park more than four times (61%). Only a minority (6%) stated that the current visit would be the first one. The duration of the current stay is on average about 7.86 days (standard deviation 4.8 days).

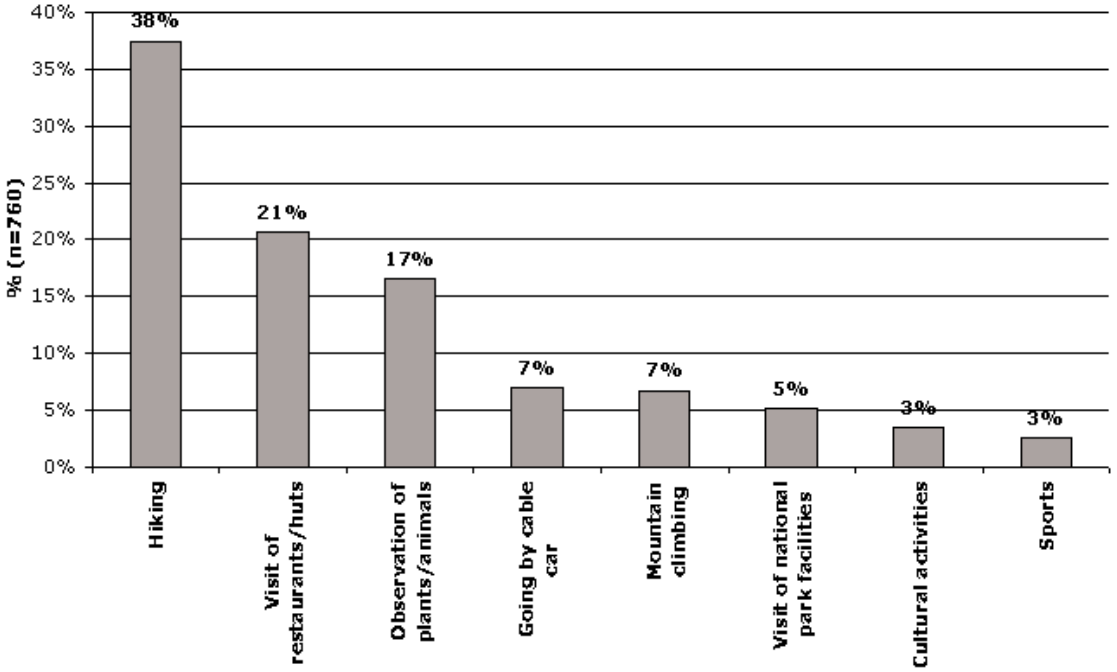
The national park offers a range of facilities for visitors. Most popular are nature trails and guided tours, while kids' activities are not experienced by many visitors (Figure 4). The main activities in the national park are certainly "typical" activities of visitors in na-tional parks (hiking, mountain climbing, observation of plants/animals). However, some of these activities can also be done at other places and do not necessarily take place in protected areas (see Figure 5), for instance, for parts of hiking, using the cable car, and going to restaurants, there are certainly substitutes in other areas available.

Figure 4: National park facilities used by visitors



Source: Visitors' survey in Tatra national park; own calculations.

Figure 5: Main activities of visitors in the national park



Source: Visitors' survey in Tatra national park; own calculations.

2.3.3 Motives for visiting the national park and travel costs of visitors

For valuing the recreation value of visitors in a protected area, it is of crucial importance to differentiate between visitors who solely come to visit the national park, and those who had other motives of visiting the region and then just dropped by. In the first case, the journey to the region is closely connected to the national park's existence, while the latter includes motives other than the facilities and offers of the national park. Regarding recreation values, measuring travel costs is usually considered to be a reliable tool when the motive of visiting the area is closely connected to the national park. Otherwise, travel costs borne by the visitor are also founded in other motives, and therefore are only partially attributable to the recreation value of the national park.

Respondents in the current survey exhibited visiting motives that are rather closely con-nected to the establishment of the national park. 73% stated that they came solely for the purpose to see the national park, while another 11% came by based on other motives (e.g. visit of friends, family) and took the chance to visit the park. Other motives to visit the regions were stated by 14%.

5.2% of visitors are travelling alone, while 32% are travelling with partners, family (33%) or friends (26%). Organized tours have only minor importance (4%). Groups include on average about 4 persons (standard deviation 9.6 persons). The most important transport mode is the private car (54%), compared to Western European national parks, a high percentage (33%) travelled by train, followed by bus (13%). On average, the journey to the national park took 7.89 hours (standard deviation 4.9 hours); the park is on average about 471 kilometers (standard deviation about 722 km) away from the home of the respondents.

Measuring travel costs was done in the questionnaire by asking visitors regarding their expenses per day for certain expenditure categories. In total, visitors spend on average about EUR 45.4 per day and person during their visit of the national park (standard dev-iation EUR 74.7, median value EUR 20.9). The 90% confidence interval lies between EUR 38.1

and EUR 52.6. Table 2 presents the details of expenditure categories suggesting that most money is spent on accommodation, sporting activities, and meals. Taking only transport costs, entry fees and museums costs into account – expenditure which is di-rectly connected to a national park visit, while other costs can be assumed to accrue in one way or the other during "normal" life or in other tourist destinations –, visitor spending amounts to EUR 10.5 per day and visitor (standard deviation EUR 16.1; 90% confidence interval EUR 8.8 to EUR 12.2).

Table 2: Travel cost (expenditure categories) of visitors per day (in EUR)

Expenditure category	Mean	standard deviation
Accomodation	13.6	27.3
Sports	8.3	13.3
Others	5.5	6.9
Meals	5.3	8.0
Transport	4.7	10.0
Museums	3.7	3.9
Shopping	2.1	3.1
Entrance fee	2.0	2.2
Total	45.4	74.7

Source: Visitors' survey in Tatra Raj national park; own calculations.

Total spending per visit and per person is computed based on mean travel costs (EUR 45.4 with a lower and upper bound according to the confidence interval; resp. EUR 10.5, see above), assuming that only those visitors who solely come for the purpose of visiting the national park, and staying on average 7.86 days in the region. Therefore, we can estimate total expenditure of an average amount of EUR 259.4 per person and stay (with a lower bound of EUR 217.4 and an upper bound of EUR 300.8).

For assessing the potential economic significance of the park for the region, a further question asked where visitors stay overnight. While only 5% of visitors only stayed for the day, the rest used accommodation close to the national park, in particular in the communities of Zakopane (48%), Koscielisko (9%), Kiry (6%) and Bukowina Tatrazanska (2%).

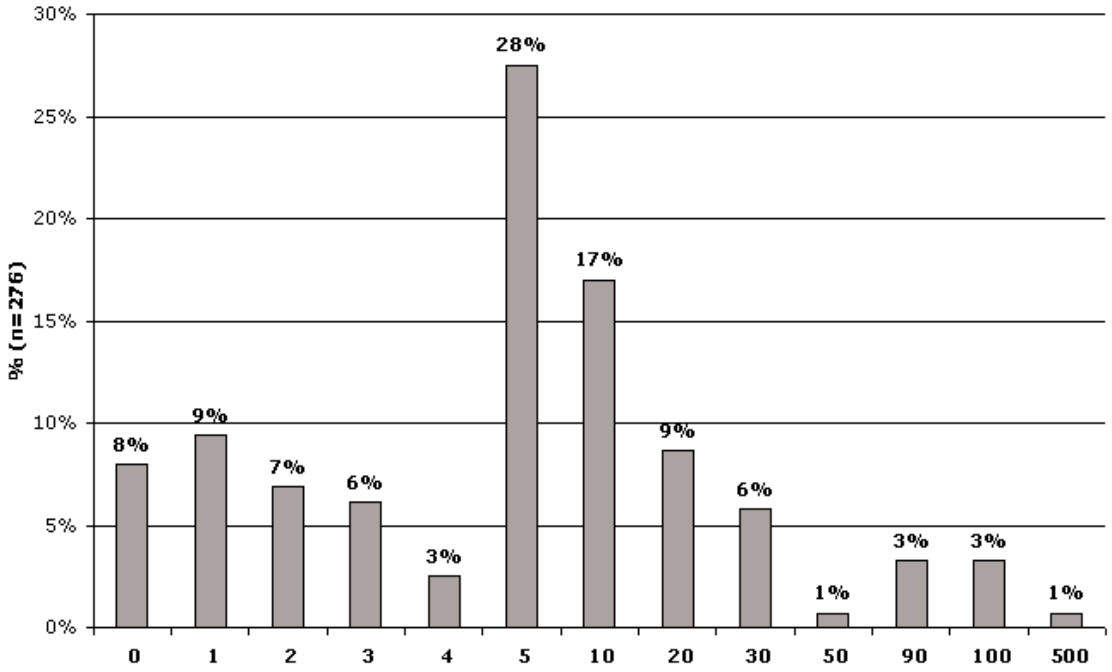
Aggregating the travel costs elicited in the survey to the total number of visitors (about 2.0m per year) to the national park per year, given the daily expenditure, and the aver-age number of days in the national park region, we end up with an estimate of total travel costs of about EUR 519m per year. This figure has to be considered as a rough esti-mate at the upper bound since visitors would bear a large part of these costs also in other holiday resorts, and would have spent money otherwise. Taking the lower and up-per bound of the 90% confidence interval leads to range of possible recreation values of annually EUR 435m and EUR 601m. Taking the lower bound of only transport costs and fees, total recreation value amounts to EUR 21m per year (possible range between EUR 18m and EUR 24m).

2.3.4 Willingness-to-pay for national park policies and environmental values

In order to derive an indication of potential values in terms of existence, (quasi-) option and bequest values of biodiversity conservation, and to facilitate the comparison between Tatra and Slovensky Raj national parks, the willingness-to-pay (WTP) question was formulated as concretely as possible while still being general enough to facilitate the comparison between the two national parks (Tatra/Slovensky Raj national parks). The policy offered consisted of a sustaining of the species conservation programs of the park by an annual ear-marked payment elicited by a payment card. The question also ex-plained that the funds provided by the government are unsecure, and that citizens had to pay directly for national park policies. Respondents were also warned that their stated WTP bids were on top of their expenses during the visit.

On average, respondents were willing to pay EUR 13.8 (standard deviation EUR 39.9) for securing the financing of national park programs, with a median value of EUR 4.4. The 90% confidence interval of the mean lies between EUR 9.8 and 17.6. Figure 6 shows the distribution of WTP bids elicited by the payment card with a range from "Nothing" to "EUR 500".

Figure 6: Distribution of WTP bids of respondents



Source: Visitors' survey in Tatra national park; own calculations.

Regarding the motives for payments, and the financing of conservation activities in par-ticular, the questionnaire included a range of statements which the respondent was asked to value on a 5-point scale (1="agree fully" to 5="reject completely").

The first debriefing question dealt with respondents who stated that they have no WTP for conservation policies, in order to find out whether the answer of Zero WTP involved preferences or was due to protest bids. Table 3 summarizes two questions of the ques-tionnaire eliciting such preferences or perceptions.

The results presented in Table 3 highlight that most of respondents exhibit reasonable preferences regarding payments and financing, the rate of protest bids – respondents that reject the payments right away without deeper reasoning – is rather low. Mainly, respondents stated that their income would be too small to afford additional expenses, or that they would already pay too much tax.

Besides questions of financing, general preferences toward species conservation are very strong. For instance, strong agreement was indicated by respondents to the statement that nature and species conservation is important regardless the cost; however, respondents are generally not very familiar with valuation of environmental services.

When eliciting WTP from respondents, it is also important whether respondents thought of substitutes for their visit. If they perceive other areas to be adequate substitutes to Tatra national park, their WTP might be lower even if they hold strong preferences while they would just prefer to donate to nature conservation for other species or ecosystems. In general, respondents accept temporal or spatial restrictions necessary for conservation objectives, and would also visit the national park in the future. Only a minority of respondents would spend their holidays at other locations or even change their activities. Table 4 presents the respondents perception towards restrictions of access to (areas of) the national park necessary for conservation purposes.

Table 3: Statements regarding the payment for nature conservation programs

	Points (mean)
Question 21	
My income is too small for a contribution	2.91
Nature conservation should be financed publicly	3.05
I would like to await others' contributions	3.80
I already pay too much taxes	3.14
I would like to donate to other programs	3.74
Nature conservation is not that much worth to me	3.72
Question 22	
Nature conservation is important regardless the cost	2.14
I have not thought about my willingness-to-pay before	2.23
I would be willing to pay even if a majority would'nt	2.73
I talk much about nature conservation with friends/family	3.11

Source: Visitors' survey in Tatra national park; own calculations.

Table 4: Preferences regarding temporal or spatial restrictions of access to the park, and substitutes for national park activities

	Points (mean)
I would visit the national park	2.75
I accept temporal/spatial restrictions	1.93
I would not visit the national park any more	4.12
I would choose another area for hiking	3.54
I would spend my holidays in another location	3.75
I would spend my holidays abroad	3.87

Source: Visitors' survey in Tatra national park; own calculations.

The main motive for respondents to express a willingness-to-pay (WTP) for the financing of the national park is "the right to exist" (existence motive) with 33% of respondents; in order to conserve nature for their children (bequest motive), 27% of respondents are WTP. The option value (personal benefit in the future) is the main motive of 18% of res-pondents. (For the rest of respondents' answers, no differentiation is available.)

The individual WTP-figures elicited in the visitors' survey have to be aggregated to ac-count for the willingness-to-pay for the existence, option and bequest values (non-use values) of the Tatra national park by the whole population of Poland. However, this is not an easy task since there are many uncertainties involved. In particular, an aggregation has to take into account the following aspects:

- Visiting the national park and/or willing to pay for conservation programs depen-dents on available substitutes. If there are other protected areas in Poland, wil-lingness to pay would be lower than if the Tatra national park is considered to be unique. In the current case of the Tatra national park, it is arguable that the Polish population considers this park as unique (highest mountain in Poland, alpine landscape otherwise non-existing).
- Usually, willingness to pay for non-use decreases with the distance to the park. Residents from areas more close to the park value the protected area higher than those living far away. In the current study, there is no significant correlation between the distance or travel time, and the willingness-to-pay of visitors.
- Average income of respondents in the survey was close to EUR 830 per month. This figure is rather close to the Polish average GDP of roughly EUR 1,030 per month (measured in PPP); in EUR, based on actual exchange rates, per-capita income is about EUR 600. The respondents of the survey therefore may have an income slightly above average. Adapted to the lower income level, WTP per res-pondent, based on the Polish average income, can be assumed to be about EUR 9.9 per person.

Based on these considerations, and given a Polish population (aged 14 or higher) of 21.9m, we may calculate the non-use values of Tatra national park for the Polish econ-omy to amount to about EUR 216,8m per year. Accounting for the deviation around the mean WTP of EUR 9.9 per person and assuming a 90% confidence interval, we can cal-culate a range between EUR 7.1 and EUR 12.8. This estimate gives a range of potential non-use values between EUR 155.3m and EUR 281.1m per year.

Breaking down this number to the motives of visitors willing to pay, we arrive at approx-imately EUR 92.1m per year for the existence value, about EUR 75.8m for the bequest value, and roughly EUR 48.9m for the option value.

2.3.5 Socio-economics of respondents

A final brief section of the questionnaire dealt with socio-economic characteristics of res-pondents. Data collected in this section should, first, show that the survey is close to being representative to the total population; second, for subsequently estimating econometric models and controlling for differences in socio-economic attributes, these data are crucial (this working step is beyond the scope of the current study). However, with-out describing in detail the group of respondents, Table 5 presents summary statistics of these attributes.

Table 5: Socio-economics of respondents (Tatra national park)

Gender	
Female	52%
Male	48%
Age of respondent (mean)	33.86
Number of persons in the household (mean)	3.18
Number of children in the household (mean)	1.05
Education	
Fundamental school	6%
High School	42%
University	52%
Profession	
Student	28%
Housewife/-man	3%
Looking for job	4%
Retired	7%
Manual worker	8%
White-collar worker	41%
Civil servant	2%
Self-employed	7%
Income	
Below 500EUR	23%
500-750EUR	32%
750-1000EUR	13%
1000-1250EUR	14%
1250-1500	5%
Over 1500EUR	13%

Source: Visitors' survey in Tatra national park; own calculations.

3 Valuation of ecosystem services in Slovensky Raj national park (Slovakia)

3.1 Short description of the study site

Slovensky Raj (Slovak Paradise) national park is located near the town of Poprad, in the central part of Slovakia, about 100 km from Kosice and about 340 km from the Slovak capital of Bratislava (all information and data from the Slovensky Raj national park management, 2009). The national park with an elevation above sea level from 500 to 1,700 meters is also rather close to the Tatra national park along the border between Poland and Slovakia. The national park comprises a total area of 19,753 hectares of core zone, and a buffer (conservation) zone of 13,011 hectares.

The area has a rather long history in terms of nature conservation. While named "Slo-vensky Raj" already in 1923, in 1931, forestry was limited on certain areas in the future park. In 1964, the area was conserved as a landscape conservation area, and in 1988, a national park was established. Currently (2009), authorities are discussing the possibilities for IUCN acknowledgment of the park according to category II. The area is also des-ignated partially (with overlaps with the national park and other areas) as a Natura 2000 site (Habitat Directive).

One of the most important landscape elements in the Slovensky raj national parks are gorges and caves. The most significant is the Stratena jaskyna cave system with the longest cave of Slovakia (length of 18.5 kms), the Psie diery and the Dobsinska Ice Caves. In total, the park includes 177 caves. Moreover, many gorges such as Podlesok and Sucha Bela, attract visitors (up to 800,000 per year). The park is exceptionally rich in species (wolf, lynx, bear) and habitat diversity, which led to the inclusion in the Natura 2000 network as a Site of Community Interest.

About 50% of the land is owned by the state, 20% by municipalities/towns, 20% by the church, and the rest by other private land owners.

3.2 Ecosystem services and money values

3.2.1 Forest products and ecosystem services

The Slovensky Raj national park is not only rich in terms of biodiversity, but also provides a broad range of ecosystem services, mainly in terms of forestry, water provision, and recreation to visitors. In the following, the different ecosystem goods and services are discussed and valued accordingly. Basically, the unit money values presented above in section 2.2 for the Tatra national park will also be used in an adapted form to mirror specifics of the Slovensky Raj national park and the Slovak economy.

Timber

The production of timber (1.1.1, timber, see Table 1, page 5) is certainly a major eco-system service of Slovensky Raj national park. While according to IUCN category II, (commercial) forestry (even if sustainable) is allowed only for purposes of ecological management (e.g. change of composition of tree species), the Slovensky Raj national park produces timber for the state-owned forest company on an area of about 8,000 hectares. About 40% of timber extraction is due to windfall or prevention of bark beetle infection, the larger share of timber is commercially logged. The national park manage-ment (administration) does not receive any revenues out of timber production.

There are currently no official statistics about the harvesting of timber in the national park. However, the annual average increase of timber in forests in Central Europe can be assumed to amount to 4.3 up to 7.8 m³ per hectare, depending on the ecosystem, kind of forestry, and tree species. Harvesting is currently about 1.8 to 4.3 m³ per hectare. For Slovakia, these figures are comparable. Total annual harvesting of timber for round-wood production amounts to 5,312m m³ (2003) on a total forest area of 2,177 hectares; timber production therefore is likely around 2.44 m³ per hectare which seems to be a reasonable approximation (all data: World Resources Institute, 2009). Europe-wide, average harvesting is around 0.50 m³ per hectare. More recent data suggests that log-ging increased up to 10,214m m³ (2005), suggesting an average logging of 4.69m³ per hectare and year in Slovakia (Šulek, 2006). The harvesting of timber, of course, depends not only on tree growth, tree species, climate, etc., but also on harvesting costs as well as timber prices for the different wood products.

As an approximation, we can assume that average harvesting amounts to around 2.44 up to 4.69 m³ per hectare also in Slovensky Raj national park, with a mean value of 3.57 m³ per hectare. At the moment, international timber prices are at the minimum EUR 30 per m³, depending on quality and future use of timber, up to EUR 40 per m³ (Šulek, 2006). These figures are certainly conservative estimates since timber prices increased in 2007; on the other hand, these prices also include parts of the harvesting costs. Timber prices net of harvesting costs may amount to EUR 10 per m³ (Vysoky, 2009). However, due to recents thunder storms in Central Europe, and subsequent windfall, timber prices fell in 2008 and 2009.

Combining the forest area of about 8,000 hectares with the average harvest of timber in Slovakia, the annual timber harvest can be approximated by about 28,520 m³ per year. Given a conservative estimate (mean value of timber prices) of EUR 30 per m³, the an-nual revenue of timber production can be estimated to amount to roughly EUR 855,600 (lower bound: EUR 285,200 (EUR 10 per m³); upper bound EUR 1.426m (EUR 50 per m³)).

Non-timber forest products

Regarding non-timber forest products (1.1.2, mushrooms, berries), there are certainly some visitors who take out/collect such products. However, there are no statistical data to derive any order of magnitude how much visitors collect in Slovensky Raj national park. Anyway, personal experience of the national park administration staff suggests that the collection of non-timber forest products by visitors only plays a very minor role in the whole range of ecosystem services.

Water provision, water supply

Water protection and water provision (1.1.3) plays an important role in Slovensky Raj national park. Several large springs support the water supply of adjacent municipalities which, taken all together, include close to 75,000 residents. Specific water consumption per household is estimated at the minimum to amount to 80 liters per day and person (Kriš and Škultétyová, 2009; cf. also Tóthova and Mahríková, 2006). Given the total number of residents and assuming that the majority is – in one way or the other – de-pending on the securing of water supply in the Slovensky Raj national park, we end up with an annual specific water consumption of households in the national park region of 2.19m m³ at the lower bound (actual water consumption of households might be higher; water for agricultural or commercial uses are not counted here due to lack of data). However, water supply for the majority of residents in the area is not provided by Slo-vensky Raj national park, but by sources from Tatra national park (SK). If we therefore reasonably assume, that only 30% of residents are supplied by water from Slovensky Raj national park, the ecosystems of the park annually provide 0.657m m³ of fresh wa-ter. Given a mean consumption of 160 liters per day and person, the park may provide up to 1.314m m³ of fresh water per year.

Combining the annual water supply with actual water prices of EUR 0.95 per m³, the value of the ecosystem service of drinking water supply is – at the lower bound – about EUR 624,000 per year (upper bound EUR 1m given a water price of EUR 1.5 per m³).

The estimation made above can also be compared to a survey by the Slovensky Raj na-tional park authority (2009). According to this survey, the ecosystem provides 1.094m m³ from underground sources (springs) and 0.243m m³ from ground sources (creeks), summing up to an amount that is close to the calculation of total water use given 160 liters per person and day. In 2008 the water price was EUR 1.10 per m³ in Spisska Nova Ves, and increased to EUR 1.129 per m³ in 2009.

All in all, we therefore arrive at a reasonable level of water provision services of Slo-vensky Raj national park of EUR 1.48m per year (assuming a relevant water consumption provided by the park of 1.314m m³ and a price of EUR 1.1 per m³). The lower bound amounts to EUR 0.624m (water provision of 0.657m m³; water price of EUR 0.95 per m³), the upper bound is EUR 1.971m (water provision of 1.314m m³ and a water price of EUR 1.5 per m³).

Water retention, flood protection

The Slovensky Raj national park, though partially used for forestry, is an important area for retaining water runoff (1.1.4). In order to value the function of water retention and flood protection (together with erosion control), there are no primary studies for Slo-vensky Raj national park available that would quantify the amounts of water retained, or increased amounts of water running off if the national park would be managed in another way (such as clear-cutting).

The approach to the valuation of water retention in the national park is equal to the one presented above in section 2.2.1 for the Tatra national park. However, as income levels are different, the unit value (per hectare) of EUR 90 for water retention services has to be adapted. The average GDP for Slovakia is about 64% of EU27 average; taking this relation as a basis for transferring the money value, we can approximate this value by EUR 54 per hectare.

About half of the area of Slovensky Raj is used for forestry, while the other half consti-tutes the core zone of the national park (including the strict conservation zone). It is therefore reasonable to assume that the area of forestry only provides functions of wa-ter retention of 40% of untouched forests (Ceroni, 2007). About 8,000 hectares are va-lued by EUR 22 per hectare, while the rest of approximately 11,700 hectares in the na-tional park can be valued by EUR 54 per hectare. Taking these figures together, the value of water retention (including erosion control) can be calculated to amount to EUR 807,800 per year. Given the lower EU27 value of EUR 45 per hectare (transferred to Slovak GDP levels: EUR 29 per hectare), the value of water retention services amounts to EUR 455,300 per year; the upper bound amounts to EUR 1.068m per year (basic EU27 value of EUR 107 per hectare, transferred to Slovak income levels: EUR 68 per hectare).

Carbon sink, carbon sequestration

Following the valuation approach described in section 2.2.1 for the Tatra national park, it is assumed that the carbon sequestration can also be based on respective values. How-ever, in the case of Slovensky Raj national park, net carbon sequestration may only be relevant on areas where no forestry takes place. The harvesting on major parts of the national park (about 8,000 hectares) is presumably at the upper bound of sustainable forestry which would approach the regenerating capacity.[3)] Therefore, carbon sequestra-tion is considered as an important ecosystem service at the areas of the core and strict conservation zones, totaling 11,700 hectares.

Given the Slovak GDP differential, and again assuming a reasonable valuation of carbon sequestration of EUR 12 for Europe, the equivalent money value for Slovakia amounts to EUR 7.7 per hectare. For the whole area of 11,700 hectares, the value of the ecosystem service of carbon sequestration would come up to about EUR 90,090 per year. The lower bound with a transferred value of EUR 4.48 (EU27 value of EUR 7 per hectare) lies in the range of EUR 52,000 per year. The upper bound amounts to EUR 224,640 per year (EUR 30 per hectare and year, transferred value: EUR 19.2). The value of carbon sequestra-tion would be increased if forestry was stopped completely in the national park.

Erosion control

Erosion control (1.1.6) was again included in the valuation of water retention and flood control above (ecosystem service 1.1.4).

Medicinal resources

The ecosystems in Slovensky Raj national park certainly include many rare species of plants and animals, which led to the declaration of a Natura 2000 site. However, due to the lack of data on medicinal resources (ecosystem service 1.1.7), there might exist some important medicinal resources but they cannot be valued in the current study.

3.2.2 Agriculture and ecosystem services

Cattle, grazing

Due to the large areas of forests with only very few pastures and meadows, there is no cattle grazing (1.2.1) in the national park that is worth noting.

Grains, food production

There is no food production (grains) located within the national park (1.2.2).

3.2.3 Fishing

In Slovensky Raj national park, fishing is based on few licenses that are handed to local fishermen (ecosystem service 1.3). About 150 licenses are issued every year. For fish-ing, fishermen have to become member to a fishing association with an enrolment fee of about EUR 3.30 and an annual fee of up to EUR 10; in addition, an official fishing ticket has to be purchased at a price of EUR 1. Summing up, fishermen pay in total about EUR 15 per fishing license and year (cf. Hensel, no year). While travel costs are unknown for fishermen, the price they pay for their annual license indicates the lower bound of value of recreational fishing; combined with the

number of annual licenses, recreational fishing can be valued at least by the fees paid for these licenses. Recreational fishing therefore can be valued at the minimum at EUR 2,250 per year and therefore plays only a very minor role given the other significant ecosystem benefits.

3.2.4 Hunting

In Slovensky Raj national park, hunting is allowed based on permit (ecosystem service 1.4). About 120 hunters are registered.

No information on the price of hunting licenses, the Slovak hunting tax or the trophy fees could be collected for Slovensky Raj national park. We therefore have to leave out the value of hunting services provided by the national park in the assessment.

3.3 Recreation and existence values of visitors

3.3.1 Introduction

As with the valuation of ecosystem services referring to recreation and national park policies (1.5) as well as biodiversity values (e.g. existence, 1.7) in Tatra national park (Poland), a visitor survey was carried out in Slovensky Raj national park in August 2009.

Annually, about 600,000 to 800,000 tourists visit the area per year (Slovensky Raj na-tional park administration, 2009). In order to hike through the gorges, the land owner (state) provides marked trails, bridges and ladders. About 300,000 visitors use these fa-cilities and pay a user fee that amounts to EUR 1.50 per person (for adults). In the last years, about EUR 250,000 were collected from use fees which are transferred to the lo-cal municipalities (the national park administration is not funded out of these user fees).

The main tourist attractions are Dobsinka Ice Cave, Podlesok and Such Bela gorges, and Cingov. The park has four main entry points (2 in the North, 2 in the South). There are a number of restaurants and accommodation around the park, with two restaurants in the central national park area.

Regarding cultural values, there is not that much to be seen in Slovensky Raj national park, there is one major ruin of an ancient monastery.

The total sample of the visitors' survey included 125 filled-in questionnaires from visitors from Slovakia (99), Poland (17), and other tourists (9).

3.3.2 General questions regarding environmental values and the national park visit

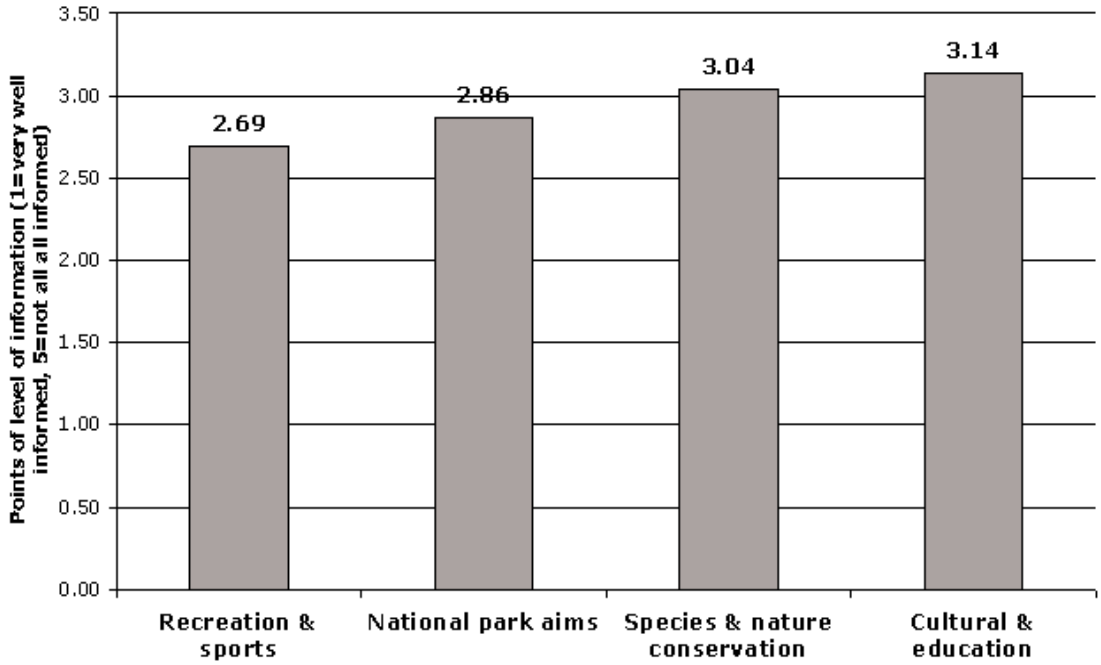
The questionnaire distributed during August 2009 in the Slovensky Raj national park – reprinted in the Appendix beginning at page 50 – first dealt with a block of questions regarding visitors' engagement and information on biodiversity in general, and national park aims and policies in particular, similar to the questionnaire distributed in Tatra na-tional park.

A significant share of the respondents (17%, 21 questionnaires) stated to be members of conservation or environmental organizations. 14% (18) of respondents declared themselves as being regular donators to such organizations with a mean of about EUR 34 per year (standard deviation EUR 30.4; of the sample, 16 respondents answered this question regarding donations to environmental organizations). The information level of respondents regarding the definition of "biodiversity" seems to be comparatively high. 45% of respondents (56 questionnaires) have detailed knowledge about the biodiversity definition of the United Nations ("diversity of genes, species (animals, plants), ecosys-tems and landscapes"), while 30% have heard the definition without detailed knowledge. The presented definition is new to about 24% of respondents.

Furthermore, respondents also state quite high information levels regarding different aspects of the national park. On average, respondents indicate information levels about the national park of 2.86 points, about species and nature conservation programs of 3.04 points, recreation activities and possibilities of 2.69, and cultural and education offers of the national park of 3.14 points (Figure 7). These results indicate a major difference be-tween the perception of the Slovensky Raj national park compared to the one in the Polish Tatra mountains. It seems as if the Slovensky Raj region is perceived as an area for recreation activities and sports to a larger extent; the Tatra national park therefore is considered more of a traditional national park. The assessed level of information suggests that information efforts should be strengthened particularly regarding the aims and functions of a national park, less regarding the potential activities of visitors. National park aims are

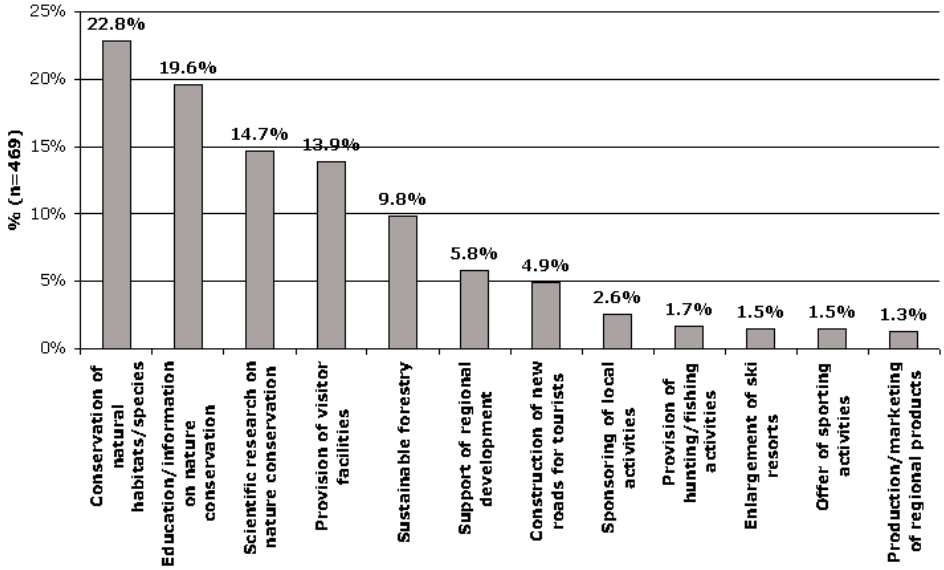
at least known to 40% of respondents. Otherwise, about 35% of respondents indicated that they are “not well” or “not at all” informed.

Figure 7: Self-assessed information level of respondents regarding national park policies and offers



Source: Visitors’ survey in Slovensky Raj national park; own calculations.

Figure 8: National park aims considered most important



Source: Visitors’ survey in Slovensky Raj national park; own calculations.

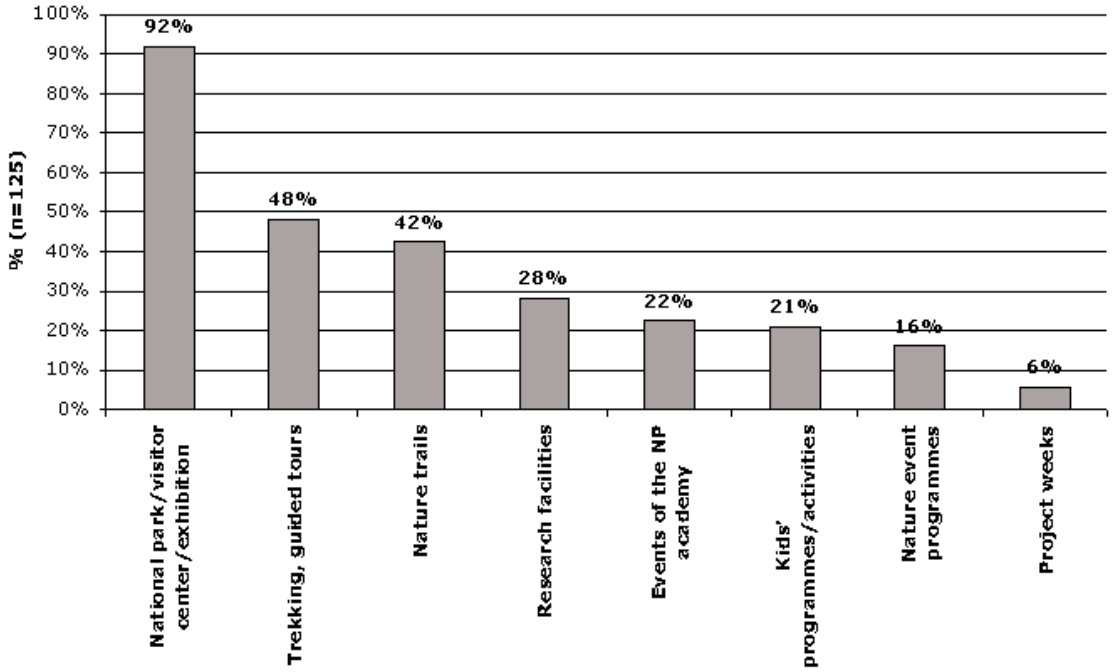
It is of crucial importance for the national park management that tourists (visitors) have some basic knowledge about national park aims and goals.

Respondents were therefore also asked to choose four items out of 12 of which they think that these would be the most important national park aims. As Figure 8 suggests, some of the items considered to be most important are not specified in the IUCN national park aims. However, the four main aims of the national park are also named by res-pondents as the most important aims. Interestingly, some visitors would wish that the national park should concentrate on the construction of roads and sustainable forestry – aims that are fundamentally contradictory to these "official" aims. This result suggests that information policies of the national park could be sharpened in this respect. Never-theless, it seems that visitors have a rather clear picture of national park aims.

Regarding the actual (current) visit to the national park, the majority of visitors said that they have visited the national park more than four times (32%). Only a minority (24%) stated that the current visit would be the first one. The duration of the current stay is on average about 5.51 days (standard deviation 3.5 days).

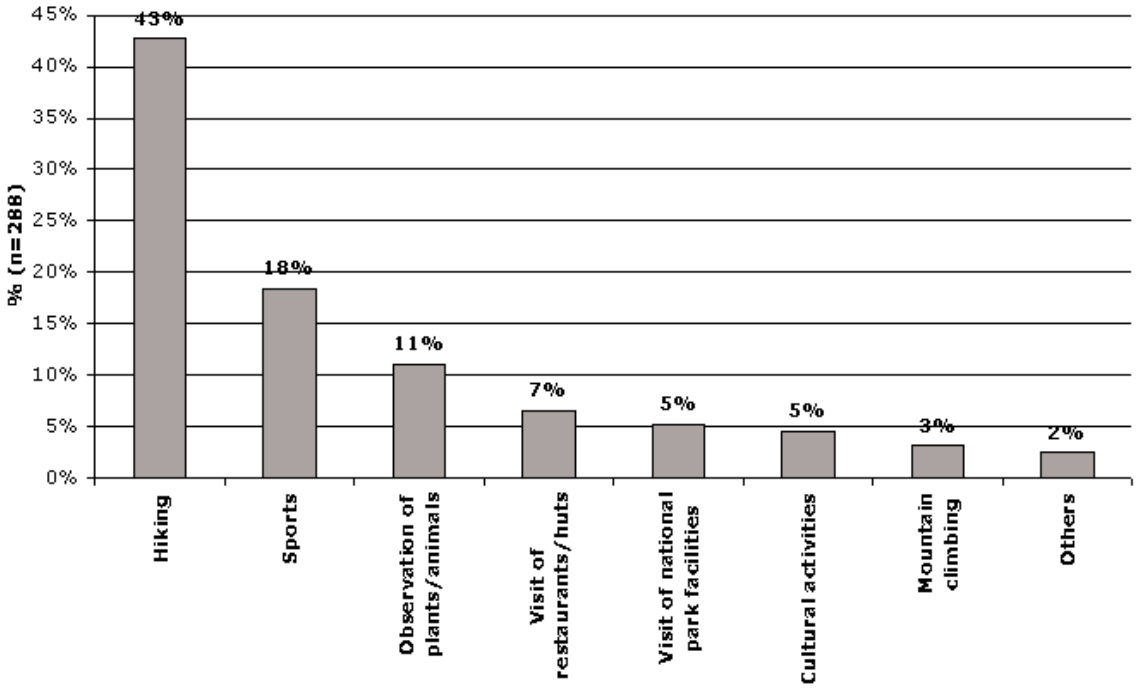
The national park offers a range of facilities for visitors. Most popular are the national park facilities (e.g. center, exhibition), nature trails and guided tours, while nature event programmes are not experienced by many visitors (Figure 9). The main activities in the national park are certainly "typical" activities of visitors in national parks such as hiking and the observation of plants/animals. All kinds of sports are major activities as well. However, some of these activities can also be done at other places and do not necessari-ly take place in protected areas (see Figure 10), for instance, for parts of hiking, and going to restaurants, there are certainly substitutes in other areas available.

Figure 9: National park facilities used by visitors



Source: Visitors' survey in Slovensky Raj national park; own calculations.

Figure 10: Main activities of visitors in the national park



Source: Visitors' survey in Slovensky Raj national park; own calculations.

3.3.3 Motives for visiting the national park and travel costs of visitors

For valuing the recreation value of visitors in a protected area, it is of crucial importance to differentiate between visitors who solely come to visit the national park, and those who had other motives of visiting the region and then just dropped by. In the first case, the journey to the region is closely connected to the national park's existence, while the latter includes motives other than the facilities and offers of the national park. Regarding recreation values, measuring travel costs is usually considered to be a reliable tool when the motive of visiting the area is closely connected to the national park. Otherwise, travel costs borne by the visitor are also founded on other motives, and therefore are only partially attributable to the recreation value of the national park.

Respondents in the current survey exhibited visiting motives that are rather closely connected to the establishment of the national park. 73% stated that they came solely for the purpose to see the national park, while another 11% came by based on other motives (e.g. visit of friends, family) and took the chance to visit the park. Other motives to visit the regions were stated by 16%.

7% of visitors are travelling alone, while 39% are travelling with partners, family (29%) or friends (24%). Organized tours have only minor importance. Groups include on aver-age about 3.8 persons (standard deviation 3.8 persons). The most important transport mode is the private car (87%), 9% travelled by train, followed by bus (1%). On average, the journey to the national park took 5.48 hours (standard deviation 4.1 hours); the park is on average about 370 kilometers (standard deviation about 357 kms) away from the home of the respondents.

Measuring travel costs was done in the questionnaire by asking visitors regarding their expenses per day for certain expenditure categories. In total, visitors spend on average about EUR 54.1 per day and person during their visit of the national park (standard dev-iation EUR 81.6, median value EUR 28). The 90% confidence interval lies between EUR 41.2 and EUR 66.9. Table 6 presents the details of expenditure categories suggesting that most money is spent on accommodation, sporting activities, and meals (see above, section 3.3.2). Taking only transport costs, entry fees and museums costs into account – expenditure which is directly connected to a national park visit, while other costs can be assumed to accrue in one way of the other during "normal" life or in other tourist destinations –, visitor spending amounts to EUR 11 per day and visitor (standard deviation EUR 13; 90% confidence interval EUR 8.4 to EUR 13.6).

Table 6: Travel cost (expenditure categories) of visitors per day (in EUR)

Expenditure category	Mean	standard deviation
Accomodation	11.8	16.2
Sports	11.3	21.6
Others	8.6	11.2
Meals	8.3	12.8
Transport	4.6	6.6
Museums	3.4	2.6
Shopping	3.1	3.2
Entrance fee	3.0	3.7
Total	54.1	81.6

Source: Visitors' survey in Slovensky Raj national park; own calculations.

Total spending per visit and per person is computed based on mean travel costs (EUR 54.1 with a lower and upper bound according to the confidence interval; resp. EUR 11, see above), assuming that only those visitors who solely come for the purpose of visiting the national park, and staying on average 5.51 days in the region. Therefore, we can estimate total expenditure of an average amount of EUR 217.6 per person and stay (with a lower bound of EUR 165.2 and an upper bound of EUR 269.1).

For assessing the potential economic significance of the park for the region, a further question asked where visitors stay overnight. While only 13% of visitors only stayed for the day, the rest used accommodation close to the national park, in particular in the com-munities of Podlesok (23%), Hrabusice (18%), Dedinky (4%) and Congov (3%).

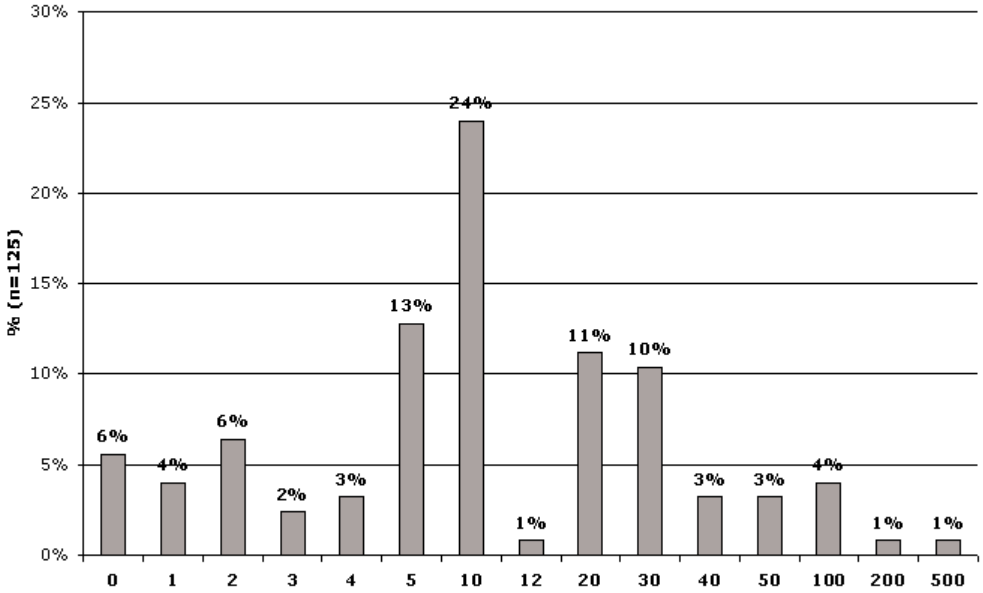
The total number of visitors in Slovensky Raj national park amounts to 600,000 to 800,000 visitors per year. In the following, we assume an average number of visitors per year of 700,000 to simplify the presentation of results, taking the lower and the upper number of visitors to mirror the lower and upper boundaries of recreation values of the national park.

The resulting total annual recreation values therefore amount to EUR 152m as a reason-able mean value, with a lower bound of EUR 99m and an upper bound of EUR 215m. Taking only transport costs, the reasonable mean value amounts to EUR 31m (lower bound: EUR 20m; upper bound: EUR 44m).

3.3.4 Willingness-to-pay for national park policies and environmental values

In order to derive an indication of potential values in terms of existence, (quasi-) option and bequest values of biodiversity conservation, and to facilitate the comparison between Tatra and Slovensky Raj national parks, the willingness-to-pay (WTP) question was for-mulated as concretely as possible. The policy offered consisted of a sustaining of the species conservation programs of the park by an annual ear-marked payment. The question also explained that the funds provided by the government are unsecure, and that citizens had to pay directly for national park policies. Respondents were also warned that their stated WTP bids were on top of their expenses during the visit.

Figure 11: Distribution of WTP bids of respondents



Source: Visitors' survey in Slovensky Raj national park; own calculations.

On average, respondents were willing to pay EUR 23 (standard deviation EUR 52.4, me-dian EUR 10; 95% confidence interval: EUR 13.4 to EUR 32.6) for securing the financing of national park programs. Figure 11 shows the distribution of WTP bids elicited by the payment card (range from "Nothing" to "EUR 500").

Regarding the motives for payments, and the financing of conservation activities in par-ticular, the questionnaire included a range of statements which the respondent was asked to value on a 5-point scale (1="agree fully" to 5="reject completely").

The first debriefing question dealt with respondents who stated that they have no WTP for conservation policies, in order to find out whether the answer of Zero WTP involved preferences or was due to protest bids. Table 7 summarizes two questions of the ques-tionnaire eliciting such preferences or perceptions.

The results presented in Table 7 highlight that most of respondents exhibit reasonable preferences regarding payments and financing, the rate of protest bids – respondents that reject the payments right away without deeper reasoning – is rather low. Mainly, respondents stated that their income would be too small to afford additional expenses, or that they would already pay too much tax. The strongest support was stated for the statement that nature conservation should be financed publicly.

Besides questions of financing, general preferences toward species conservation are very strong. For

instance, strong agreement was indicated by respondents to the statement that nature and species conservation is important regardless the cost; however, respondents are generally not very familiar with valuation of environmental services but that they have thought about how much their willingness-to-pay would be.

Table 7: Statements regarding the payment for nature conservation programs

	Points (mean)
Question 21	
My income is too small for a contribution	3.15
Nature conservation should be financed publicly	2.21
I would like to await others' contributions	4.07
I already pay too much taxes	3.18
I would like to donate to other programs	3.72
Nature conservation is not that much worth to me	4.18
Question 22	
Nature conservation is important regardless the cost	2.26
I have not thought about my willingness-to-pay before	2.41
I would be willing to pay even if a majority would'nt	2.59
I talk much about nature conservation with friends/family	2.49

Source: Visitors' survey in Slovensky Raj national park; own calculations.

Table 8: Preferences regarding temporal or spatial restrictions of access to the park, and substitutes for national park activities

	Points (mean)
I would visit the national park	2.47
I accept temporal/spatial restrictions	1.79
I would not visit the national park any more	4.37
I would choose another area for hiking	3.45
I would spend my holidays in another location	4.24
I would spend my holidays abroad	3.97

Source: Visitors' survey in Slovensky Raj national park; own calculations.

When eliciting WTP from respondents, it is also important whether respondents thought of substitutes for their visit. If they perceive other areas to be adequate substitutes to Slovensky Raj national park, their WTP might be lower even if they hold strong prefe-rences while they would just prefer to donate to nature conservation for other species or ecosystems. In general, respondents accept temporal or spatial restrictions necessary for conservation objectives, and would also visit the national park in the future. Only a mi-nority of respondents would spend their holidays at other locations or even change their activities. Table 8 presents the respondents perception towards restrictions of access to (areas of) the national park necessary for conservation purposes. It is interesting, though, that the acceptance of restriction of access is higher than in Tatra national park (PL), and that visitors perceive recreation in Slovensky Raj national park as being rather unique, without many substitutes of staying in another holiday resort.

A major motive for respondents to express a willingness-to-pay (WTP) for the financing of the national park is "the right to exist" (existence motive) with 18% of respondents; in order to conserve nature for their children (bequest motive), 59% of respondents are WTP and therefore state that the bequest motive is the strongest motive for their wil-lingness-to-pay. The option value (personal benefit in the future) is the main motive of 8% of respondents.

The individual WTP-figures elicited in the visitors' survey have to be aggregated to ac-count for the willingness-to-pay for the existence, option and bequest values (non-use values) of the Slovensky Raj national park by the whole population of Slowakia. However, this is not an easy task since there are many uncertainties involved. In particular, an aggregation has to take into account the following aspects:

* Visiting the national park and/or willing to pay for conservation programs depen-dents on available substitutes. If there are other protected areas in Slovakia, wil-lingness to pay would be lower than if the Slovensky Raj national park is consi-dered to be unique. In the current case of the Slovensky Raj national park, it is arguable that the Slovakian population considers this park as unique (as the name suggests, "Slovak Paradise", the national park is considered to be unique at least in terms of recreation and biodiversity conservation).
* Usually, willingness to pay for non-use decreases with the distance to the park. Residents from areas more close to the park value the protected area higher than those living far away. In the current case, there was no significant correlation between distance and duration of travel, and the visitor's willingness-to-pay.
* Average net income of respondents in the survey was EUR 923 per month. This figure is rather close to the Slovak average GDP per capita of roughly EUR 1,240 per month (measured in PPP); in EUR per-capita income is about EUR 690. The respondents of the survey therefore may have an income slightly above average, in particular taking into account that they stated net income. Adapted to the lower income level, WTP per respondent, based on the Slovak average income, can be assumed to be about EUR 17 per person.

Based on these considerations, and assuming a Slovak population (aged 14 or higher) of 4.5m, the reasonable mean non-use values of the Slovensky Raj national park can be approximated to amount to EUR 76.5m (lower bound: EUR 54m; upper bound: EUR 122m).

Breaking down this number to the motives of visitors willing to pay and taking the rea-sonable mean value, we arrive at approximately EUR 15.9m per year for the existence value, about EUR 53.4m for the bequest value, and roughly EUR 7m for the option value.

3.3.5 Socio-economics of respondents

A final brief section of the questionnaire dealt with socio-economic characteristics of res-pondents. Data collected in this section should, first, show that the survey is close to being representative to the total population; second, for subsequently estimating econometric models and controlling for differences in socio-economic attributes, these data are crucial. However, without describing in detail the group of respondents, Table 9 presents summary statistics of these attributes.

Table 9: Socio-economics of respondents (Slovensky Raj national park)

Gender	
Female	51%
Male	49%
Age of respondent (mean)	36,88
Number of persons in the household (mean)	3,25
Number of children in the household (mean)	0,97
Education	
Fundamental school	4%
High School	36%
University	57%
Profession	
Student	19%
Housewife/-man	1%
Looking for job	2%
Retired	9%
Manual worker	15%
White-collar worker	32%
Civil servant	12%
Self-employed	2%
Income	
Below 500EUR	21%
500-750EUR	17%
750-1000EUR	19%
1000-1250EUR	11%
1250-1500	7%
Over 1500EUR	15%

Source: Visitors' survey in Slovensky Raj national park; own calculations.

4 Summary, conclusions and recommendations: Total Economic Value of Tatra and Slovensky Raj national parks

The economic valuation of ecosystem services (natural and cultural heritage) is based on the conceptual notion that a national park consists of natural capital that provides ser-vices to people. It is an inherently anthropocentric concept – and therefore includes values that are solely based on values attributed to ecosystems services by people (visitors, tax payers). However, in many cases, it turns out that the "pure" anthropocentric valuation of ecosystem services provides a firm foundation for nature conservation as well as for extension of (public and private) funding for protected areas.

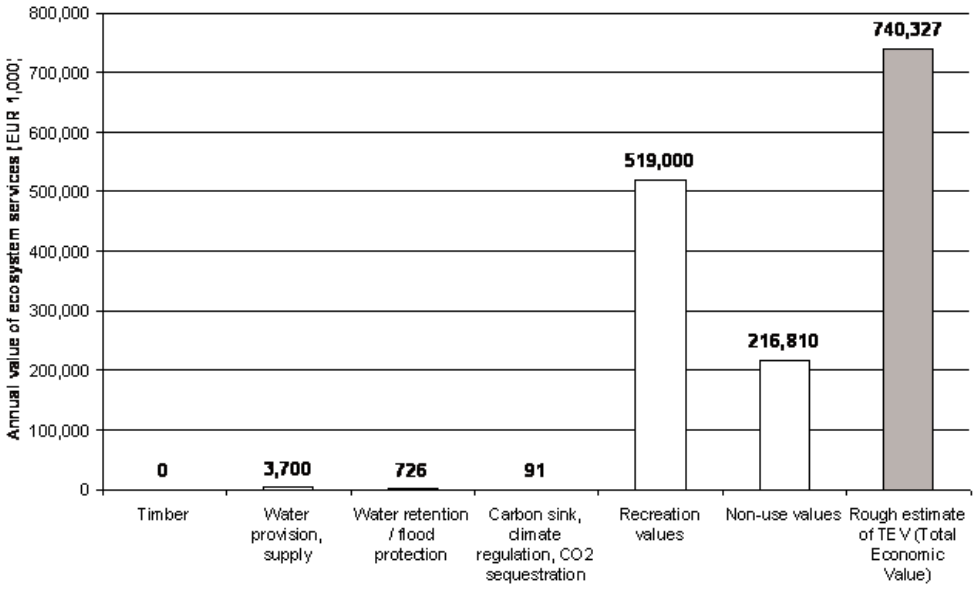
This reasoning is also valid for the two national parks considered in the current study. Both provide important ecosystem services for the national economy, both in terms of use as well as non-use values. Interestingly, ecosystem services in the narrow sense (e.g. timber production, water provision, erosion control) are not important on a national level but, of course, provide important benefits for the local population.

Table 10: Values for ecosystem services provided by Tatra (PL) and Slovensky Raj (SK) national parks

		Tatra national park (Poland)			Slovensky Raj national park (Slovakia)		
		Lower bound of value	Reasonable mean value (in tds. EUR, per year)	Upper bound of value	Lower bound of value	Reasonable mean value (in tds. EUR, per year)	Upper bound of value
1.1	Forest products						
1.1.1	Timber	0	0	0	285	856	1,426
1.1.2	Non-timber products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1.1.3	Water provision, supply	2,585	3,700	5,280	624	1,480	1,971
1.1.4	Water retention / flood protection	363	726	862	455	808	1,068
1.1.5	Carbon sink, climate regulation, CO2 sequestration	56	91	240	52	90	224
1.1.6	Erosion control	*see 1.1.4*					
1.1.7	Medicinal resources	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1.2	Agricultural products						
1.2.1	Cattle, grazing	0	0	0	0	0	0
1.2.2	Grains, food production	0	0	0	0	0	0
1.3	Fishing	0	0	0	2	2	n.a.
1.4	Hunting	0	0	0	n.a.	n.a.	n.a.
1.4	Recreation values	435,000	519,000	601,000	99,431	152,325	215,273
1.5	Recreation (Transport costs, entry fee, museum)	18,000	21,000	24,000	20,272	30,972	43,763
	Rough estimate of use values	**438,004**	**523,517**	**607,382**	**100,849**	**155,561**	**219,962**
1.7	Biodiversity conservation values						
1.7.1	Existence values	65,971	92,100	119,410	11,250	15,938	25,417
1.7.2	Option / quasi-option values	35,027	48,900	63,400	5,000	7,083	11,296
1.7.3	Bequest values	54,302	75,810	98,290	37,750	53,479	85,287
1.8	Cultural values	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Non-use values	**155,300**	**216,810**	**281,100**	**54,000**	**76,500**	**122,000**
	Rough estimate of TEV (Total Economic Value)	**593,304**	**740,327**	**888,482**	**154,849**	**232,061**	**341,962**

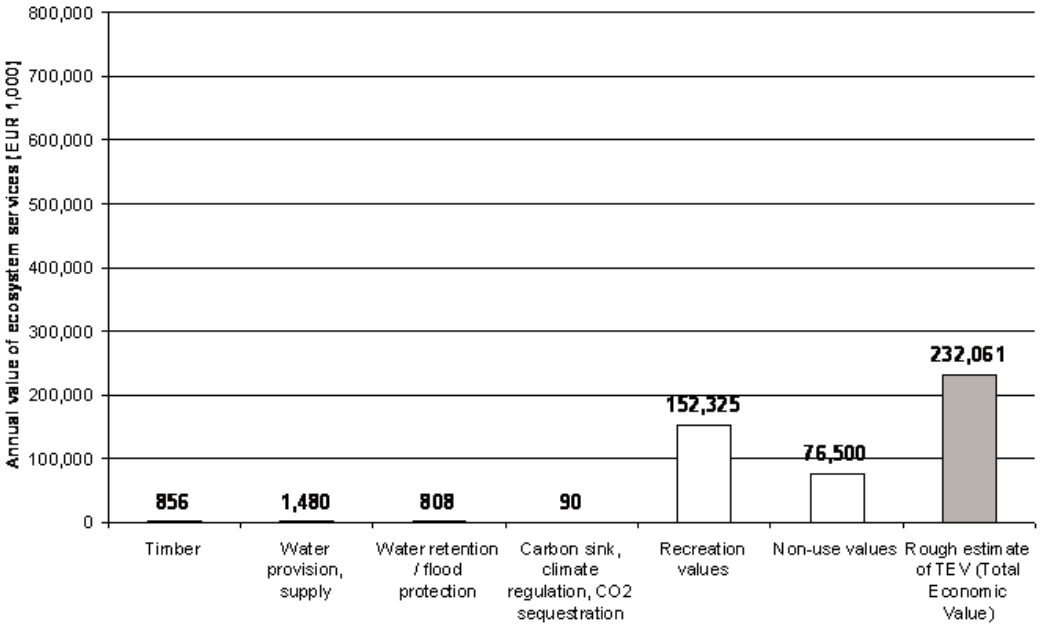
Source: own calculations.

Figure 12: Valuation of ecosystem services of Tatra national park (PL) (EUR 1,000, annual values)



Source: own calculations.

Figure 13: Valuation of ecosystem services of Slovensky Raj national park (SK) (EUR 1,000, annual values)



Source: own calculations.

Tatra national park (PL) provides in total around EUR 742m per year (potential range from EUR 593m to 888m). Most important are recreation benefits by about 2m visitors per year. Due to the long average stay of visitors in the region (over 7 days), visitors spend more than EUR 200 per person and stay. Recreation benefits amount to around EUR 523m (reasonable mean value), while non-use values are comparatively small with EUR 217m. This lower amount stems from the rather moderate willingness-to-pay of visitors of roughly EUR 9 per person an year for sustaining ecosystem benefits of the national park. However, while recreation benefits accrue to 2m visitors per year, non-use values benefit the whole population of Poland of over 26m people. Benefits to local resi-dents are small and have a lower value compared to other aggregated benefits while they are, of course, vital to the adjacent municipalities (e.g. water provision, erosion control). Figure 12 presents a graphical overview of the importance of the different eco-system services in money terms.

Slovensky Raj national park (SK) provides somewhat smaller benefits to the Slovakian economy compared to the ones provided by Tatra national park (PL). The valuation of ecosystem service amounts to around EUR 232m (range from EUR 155m to 342m). This is due to the fact that the ecosystem services are different, but also because fewer people enjoy these benefits. For instance, while expenditure per day of visitors is in the same order of magnitude (around EUR 50), the number of days of stay and the number of visitors per year is significantly smaller. Again, willingness-to-pay ranges again around EUR 10 to 15, but the Slovak population is smaller compared to Poland's. On the other hand, Slovensky Raj provides more ecosystem services in the form of timber production, but less in terms of water provision, carbon retention and erosion control (cf. Figure 13).

All in all, the establishment of both national parks bears an eminent importance to the national economies. The results of the study show that the funds devoted to the admin-istration and management of the parks are fully justified on economic grounds due to the manifold ecosystem services provided by the protected areas and which are specific to national parks.

1) There are numerous studies and paramount literature available regarding the valuation of ecosystem services, from single species to landscapes. It is not the task of the current study to review the literature as reviews are also published. For instance, Ninan (2009) presents a broad overview of valuing ecosystem services in the different contexts (see also, e.g., Markussen et al., 2003; Farber et al., 2002; Nunes et al., 2003).

2) This only refers to the timber products for commercial use. Water retention and purification, carbon sequestration, and the non-use values of providing habitats to important species, are dealt with in the sections below.

3) The net carbon sink of reducing or stopping forestry in the area also depends – at least in a time perspective – on the ways the harvests timber is used. For long-term use such as furniture or construction materials, the carbon emission is extended over a long period of time while using the timber for energy production certainly emits the carbon quickly.

ACKNOWLEDGEMENTS

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DISCLAIMER

This report was written based on good scientific conduct with the latest methodo-logical approaches available. All data sources have been indicated properly. However, the author cannot guarantee flawlessness of all data and results presented in here. Therefore, no claims can be accepted that may stem from the use of the results. The copyright of the report lies with the author, copying or using the report requires written approval by the author.

The conclusions and opinions presented in this report do not necessarily represent those of Klagenfurt University or WWF DCP.

Appendices to Part 1

(Due to software incompatibilities it was not possible to present all questionnaires in an identical layout. Publishers remark)

A1: Visitor questionnaire (English version)

Survey „Species and nature conservation in the Tatra National Park”

WWF (World Fund for Nature) and Tatra National Park are carrying out a survey on measures and programmes for nature conservation in the national park. Please provide us with your personal opinion and your support. All data will be treated strictly confidential and used only for research purposes. Filling out the questionnaire takes only about 10 minutes. THANK YOU!

1 Are you a member of a nature conservation or environmental organisation? ❍ Yes ❍ No

2 Do you make donations for nature conservation on a regular basis? ❍ Yes ❍ No
If yes: How much do you donate per year?
Approx. _____ Zlt. or _____ EUR

3 *Biodiversity means – according to the United Nations definition – the diversity of genes, species (animals, plants), ecosystems and landscapes.*
Have you heard of this definition before?
❍ Yes, I know this definition in detail
❍ Yes, I have heard of such a definition
❍ No, I haven't heard of this concept

4 How well do you feel informed about?
(Please value with 1=very well, 5=not at all)
…Aims of the national park ①②③④⑤
…Species and nature conservation programmes of the national park ①②③④⑤
…Recreation activities and possibilities ①②③④⑤
…Cultural and education offers of the national park ①②③④⑤

5 Which species or nature conservation activities of the Tatra National Park do you know?
_____
_____

6 The Tatra National Park has according to the international definition of national parks a number of aims. Please tick four aims that you consider most important for a national park:
❍ Education and information on nature conservation
❍ Conservation of natural habitats and species (wild plants, wild animals)
❍ Enlargement of ski resorts in the park
❍ Scientific research on nature conservation
❍ Sustainable forestry
❍ Support of regional economic development (tourism)
❍ Construction of new roads for tourists
❍ Provision of visitor facilities (visitor center, hiking trails, information panels)
❍ Production and marketing of regional products
❍ Offer of sporting activities
❍ Provision of hunting and/or fishing activities
❍ Sponsoring of local activities such as musems

7 How often have you visited Tatra National Park (including today)?
❍ 1x ❍ 2x ❍ 3x ❍ 4x ❍ more than 4 times

8 How long do you stay during your current visit in the NP?
_____ Day(s)

9 Which facilities have you used by now, or are going to use/see during your current stay?
❍ National park (visitor) center and/or exhibitions, in _____
❍ Nature trails
❍ Nature event programme
❍ Kids' programmes and activities
❍ Project weeks
❍ Trekking, guided hiking tours
❍ Events of the NP academy
❍ Research facilities
❍ others: _____

10 What are your main activities in the national park? ***(please tick 3 max.)***
❍ Hiking
❍ Observation of plants and animals
❍ Sports, such as mountain biking, jogging
❍ Visit of NP facilities and exhibitions
❍ Cultural activities
❍ Mountain climbing
❍ Going by cable car
❍ Visiting restaurants and huts
❍ others:_____

11 What was your motivation for visiting the region?
❍ I came solely for the purpose to see the national park.
❍ I came by (e.g. during a round trip) and took the chance to visit the park.
❍ I had other motives to visit the region (friends, family, events, professional reasons) and also visited the national park
❍ Other motives: _____

12 Where do you come from?
❍ PL, please indicate your town and postal code: _____,
❍ SK ❍ CZ ❍ AT ❍ DE
❍ Other Country: _____

13 With whom are you travelling?
❍ Alone ❍ With spouse/partner ❍ With family
❍ With friends ❍ With an organized tour

14 How many people are travelling with you (in your group)?
_____ people

15 Which transport modes did you use to travel from home to the national park?
❍ Car ❍ Train ❍ Bicycle ❍ Bus ❍ Air
❍ Motorcycle ❍ Camper/trailer

16 How long did your journey take? _____ hours

17 How many kilometres is the national park away from your home? Approx. _____ km

18 How much money do you spend during your stay per day?

Accommodation:	_____	EUR
Meals:	_____	EUR
Shopping (crafts):	_____	EUR
Entrance fee:	_____	EUR
Museums:	_____	EUR
Transport (e.g. cable car):	_____	EUR
Sports:	_____	EUR
Other expenditure:	_____	EUR

19 In which town do you stay overnight?

❍ Town/village: _____

❍ Only visitor for the day, no overnight stay

The activities of the national park are mainly financed out of the central governments' budget, and out of revenues of entrance fees. However, governments may only provide extended financial support if the population and the visitors wish them to do so. Hence your opinion to the following issues is most important.

20 Assume that the government would reduce its contribution to the financing of the national park. If you could here and now contribute an ear-marked payment for sustaining the national park programmes (nature conservation such as brown bear, wolf, lynx, and chamois), how much would you be willing to pay per year? *Please think of your other expenses during your holidays, so this contribution would in fact be an additional contribution in addition to all expenditure.*

❍ Nothing
❍ 4 Zl (1 EUR) ❍ 2 EUR ❍ 3 EUR ❍ 4 EUR ❍ 5 EUR
❍ 10 EUR ❍ 20 EUR ❍ 30 EUR ❍ 40 EUR ❍ 50 EUR
❍ 60 EUR ❍ 70 EUR ❍ 80 EUR ❍ 90 EUR ❍ 100 EUR
❍ 150 EUR ❍ 200 EUR ❍ 500 EUR ❍ over 500 EUR

21 Please tell us your opinion to the following statements ***(Value with 1= agree fully; 5=reject completely):***

„My income is too small to be able to contribute" ①②③④⑤

„It is a public task to conserve nature, and should not be dependent on individual contributions" ①②③④⑤

„I would like to await others' contributions, and then decide" ①②③④⑤

„I already pay too many taxes" ①②③④⑤

„I would like to donate money for other programmes" ①②③④⑤

„Nature conservation programmes are not that much worth to me that I would be willing to pay " ①②③④⑤

22 Do you agree with the following statements ***(Value with 1=agree fully; 5=reject completely):***

„Nature and species conservation is important regardless the cost" ①②③④⑤

„I have not thought before this survey how much I would be willing to donate" ①②③④⑤

„I would also be willing to donate even if a majority of respondents would not be willing to support the programme " ①②③④⑤

„I talk much about nature conservation with my friends and family" ①②③④⑤

23 Protecting the species and habitats might need temporal or spatial restrictions regarding access to the area. What would you do in such a case?

(Value with 1= agree fully; 5=reject completely)

„I would in any case visit the national park" ①②③④⑤

„I fully accept temporal/spatial restriction on access of habitats in order to conserve nature" ①②③④⑤

„I would not like to visit the national park any more " ①②③④⑤

„I would choose another area for hiking" ①②③④⑤

„I would generally abstain from hiking and would like to spend my holidays at another location in Poland" ①②③④⑤

„I would spend my vacation abroad" ①②③④⑤

24 If you would like to pay for the national park programmes (question 20), which is a major motive for you ***(please tick only one)***:

❍ I donate to the conservation of animals and plants because they have a right to exist.

❍ I would like to conserve animals and plants because I might like to benefit from them in the future.

❍ I would like to hand my children a healthy environment.

Please provide us finally with some short statistical data:

25 Gender: ❍ Female ❍ Male

26 Age: _____

27 How many people life in your household in total? _____
of which: _____ children

28 What is your highest education??

❍ Fundamental school ❍ Professional education (trade)
❍ High school ❍ College/university

29 What profession do you currently have?

❍ Student	❍ Manual worker
❍ Housewife/-man	❍ White-collar employee
❍ Looking for a job	❍ Civil servant
❍ Retired	❍ Self-employed

30 Please tick your class of your monthly household income (net of taxes & social security):

❍ less than 500 €	❍ from 1,000 to 1,250 €
❍ from 500 to 750 €	❍ from 1,250 to 1,500 €
❍ from 750 to 1,000 €	❍ above 1,500 €

All your answers and data are treated completely confidential, and are only used in aggregated and anonymous form!

Thank you very much for the interview, and we wish you all the best for your stay at Tatra National Park

A2: Visitor questionnaire at Slovensky Raj national park (Slovakia)

Prieskum " Ochrana prírody v Národnom parku Slovenský raj"

WWF (World Fund for Nature) a Národný park Slovenský raj robia prieskum ohľadom opatrení a programov pre ochranu prírody v národnom parku. Prosím venujte nám svoj čas a poskytnite nám svoj názor. Všetky údaje budú dôverné a použité iba na účely výskumu. Vyplnenie dotazníka zaberie iba asi 10 minút. ĎAKUJEME!

1 Ste členom organizácie, ktorá sa venuje ochrane prírody? ❍ Áno ❍ Nie

2 Prispievate pravidelne dobrovoľne finančne na ochranu prírody?
❍ Áno ❍ Nie
Ak áno: Koľko do roka?
Približne_____ EUR

3 *Biodiverzita znamená – podľa definície OSN – rôznorodosť génov, druhov (živočíšnych, rastlinných), ekosystémov a krajiny.* Počuli ste o tejto definícií predtým ?
❍ Áno, poznám tu definíciu. ❍ Áno, počul som o niečom takom
❍ Nie, nepočul som o tom.

4 Ako dobre ste informovaný o... ?
(Hodnotenie 1=veľmi dobre, 5=vôbec)
...cieľoch národného parku ①②③④⑤
...druhoch a programoch na ochranu prírody v národnom parku ①②③④⑤
...aktivitách a možnostiach v cestovnom ruchu ①②③④⑤
...kultúrnych a výchovných ponukách NP①②③④⑤

5 Ktoré živočíchy, rastliny alebo aktivity na ochranu prírody v NP Slovenský raj poznáte?
_____
_____

6 NP Slovenský raj má podľa medzinárodnej definície národných parkov veľa cieľov. Prosím označte 4, ktoré považujete za najdôležitejšie.
❍ Vzdelávanie a informovanie o ochrane prírody
❍ Ochrana prirodzených biotopov a druhov (voľne žijúcich živočíchov a rastlín)
❍ Zväčšovanie lyžiarskych stredísk v NP
❍ Vedecký výskum ohľadom ochrany prírody
❍ Udržateľné lesníctvo
❍ Podpora rozvoja miestnej ekonomiky (turizmus)
❍ Budovanie nových ciest a chodníkov pre návštevníkov
❍ Zabezpečenie zariadení pre návštevníkov (informačné centrá, turistické chodníky, informačné panely)
❍ Produkcia a odbyt miestnych produktov
❍ Ponuka športových aktivít
❍ Zabezpečenie poľovníctva a/alebo rybárstva
❍ Podpora miestnych aktivít ako napr. múzeá

7 Koľkokrát ste už boli v NP Slovenskom raji (vrátene dneška)?
❍ 1x ❍ 2x ❍ 3x ❍ 4x ❍ viac než 4 krát

8 Ako dlho ostanete v NP počas terajšej návštevy?
_____ dní

9 Ktoré zariadenia ste už využili alebo plánujete využiť v rámci terajšieho pobytu?
❍ turistické chodníky
❍ návšteva Dobšinskej Ľadovej Jaskyne
❍ sprievodcovské služby
❍ Aqua City Poprad
❍ kúpalisko Vrbov
❍ Spišský Hrad
❍ Betliar, Krásna Hôrka
❍ Levoča
❍ iné: _____

10 Aké sú Vaše hlavné aktivity v NP? ***(prosím označte max 3)***
❍ Turistika
❍ návšteva Dobšinskej Ľadovej Jaskyne

❍ Pozorovanie rastlín a živočíchov
❍ Športy, ako bicyklovanie, beh...
❍ Návšteva zariadení a výstav NP
❍ Kultúrne aktivity
❍ Horolezectvo
❍ Návšteva reštaurácií a chát
❍ iné:_____

11 Prečo ste navštívili tento región?
❍ Prišiel/a som osobitne za účelom návštevy NP.
❍ Šiel/a som okolo (napr. okružný výlet) a tak som využil/a príležitosť vidieť park.
❍ Mal/a som iné dôvody návštevy tohto regiónu (priatelia, rodina, profesionálne dôvody) a tak som tiež navštívil/a NP. ❍ Iné motívy: _____

12 Odkiaľ ste?
❍ SK, prosím napíšte mesto a PSČ: _____,
❍ PL ❍ CZ ❍ AT ❍ DE
❍ Iná krajina: _____

13 S kým cestujete?
❍ Sám ❍ S manželkou/manželom/partnerom ❍ S rodinou ❍ S priateľmi ❍ So zájazdom

14 S koľkými ľuďmi cestujete (vo vašej skupine)?
_____ ľudí

15 Akým dopravným prostriedkom ste prišli do NP?
❍ Auto ❍ Vlak ❍ Bicykel ❍ Autobus ❍ Lietadlo
❍ Motorka ❍ Karavan ❍ Peši

16 Ako dlho trvala cesta? _____ hodín

17 Koľko km je NP vzdialený od Vášho domova? Približne km

18 Koľko miniete denne peňazí počas Vášho pobytu?

Ubytovanie	_____ EUR
Strava	_____ EUR
Nákupy (miestne umel. predmety):	____ EUR
Vstupný poplatok:	_____ EUR
Múzeá:	_____ EUR
Doprava (e.g. cable car):	_____ EUR
Športy:	_____ EUR
Iné výdavky:	_____ EUR

19 Kde ste ubytovaný?
❍ Mesto/dedina: _____
❍ jednodenná návšteva bez nocovania

Aktivity národného parku sú financované hlavne zo štátneho rozpočtu. Vláda môže poskytnúť dodatočné peniaze iba ak si to miestne obyvateľstvo a návštevníci želajú. Preto je Váš názor na nasledujúce otázky veľmi dôležitý.

20 Predpokladajme žeby vláda znížila finančný príspevok na chod NP. Keby ste mohli tu a teraz prispiet' vyčlenenou sumou na udržanie programov národného parku (ochrana prírody –vlk, rys), koľko by ste boli ochotný prispieť ročne? *Prosím myslite aj na Vaše ďalšie náklady počas dovolenky, takže tento príspevok by bol faktícky príspevkom navyše ku všetkým výdavkom.*

❍ Nič
❍ 1 EUR ❍ 2 EUR ❍ 3 EUR ❍ 4 EUR ❍ 5 EUR
❍ 10 EUR ❍ 20 EUR ❍ 30 EUR ❍ 40 EUR ❍ 50 EUR
❍ 60 EUR ❍ 70 EUR ❍ 80 EUR ❍ 90 EUR ❍ 100 EUR
❍ 150 EUR ❍ 200 EUR ❍ 500 EUR ❍ nad 500 EUR

21 Prosíme vyjadrite svoj názor ku nasledujúcim vyjadreniam. ***(Hodnotenie 1=plne súhlasím; 5= totálne odmietam):***

„Môj príjem je príliš nízky aby som mohol/a prispievat" ①②③④⑤
„Ochrana prírody je verejný záujem a nemala by byť závislá na individuálnych príspevkoch. " ①②③④⑤
„Počkal/a by som ako by prispievali ostatní a potom by som sa rozhodol/a" ①②③④⑤
„Už teraz platím príliš vysoké dane." ①②③④⑤
„Venoval/a by som peniaze na iné účely." ①②③④⑤
„Programy na ochranu prírody nemajú pre mňa takú cenu aby som bol/a ochotný/a na to prispievať. " ①②③④⑤

22 Súhlasíte s nasledujúcimi vyjadreniami? ***(Hodnotenie 1=plne súhlasím; 5=totálne odmietam):***

„Ochrana prírody je taká dôležitá, že na cene nezáleží" ①②③④⑤
„Nikdy pred týmto výskum som nerozmýšľal/a koľko by som bol/a ochotný/á venovať" ①②③④⑤
„Bol/a by som ochotný/a prispievať aj keď by väčšina respondentov nebola ochotná podporovať takýto program. " ①②③④⑤
„Veľa sa rozprávame o ochrane prírody s priateľmi a rodinou." ①②③④⑤

23 Ochrana druhov a biotopov si môže vyžadovať časové alebo priestorové obmedzenia čo sa týka prístupu do územia. Čo by ste robili v takom prípade?
(Hodnotenie 1=plne súhlasím; 5=totálne odmietam):

„V každom prípade by som navštívil/a národný park" ①②③④⑤
„Plne by som akceptoval/a časové/priestorové obmedzenia na vstup do biotopov ohľadom ochrany prírody." ①②③④⑤
„Už by som viac nechcel/a navštíviť tento národný park " ①②③④⑤
„Vybral/a by som si na turistiku inú oblasť " ①②③④⑤
„Úplne by som upustil/a od turistiky a vybral/a by som si na dovolenku iné miesto na Slovensku. " ①②③④⑤
„Strávil/a by som dovolenku v zahraničí" ①②③④⑤

24 Ak by ste boli ochotný prispievať na programy národného parku (otázka 20), ktorý je Váš hlavný dôvod ***(prosí označte iba jeden)***:

❍ Prispievam na ochranu rastlín a živočíchov pretože majú právo na existenciu..
❍ Rád by som prispel na ochranu rastlín a živočíchov pretože môžem mať z nich niekedy v budúcnosti osoh.
❍ Chcel by som odovzdať mojím deťom zdravú prírodu.

Prosím poskytnite nám ešte na záver krátke štatistické údaje:

25 Pohlavie: ❍ Žena ❍ Muž

26 Vek: _____

27 Koľko ľudí žije vo Vašej domácnosti? _____
z toho: _____ detí

28 Aké je Vaše najvyššie dosiahnuté vzdelanie?

❍ Základná škola ❍ Učnovská škola
❍ Stredná škola ❍ Vysoká škola

29 Aké máte zamestnanie?

❍ Študent ❍ Robotník
❍ žena/muž v domácnosti ❍ White-collar employee
❍ Nezamestnaný
❍ Dôchodca ❍ podnikateľ/živnostník

30 Prosím označte čistý mesačný príjem Vašej domácnosti?

❍ menej ako 500 € ❍ od 1,000 do1,250 €
❍ od 500 do 750 € ❍ od 1,250 do 1,500 €
❍ od 750 do 1,000 € ❍ nad 1,500 €

Všetky údaje budú dôverné a budú anonymne a súhrne použité iba na účely výskumu

A3: Visitor questionnaire at Tatra national park (Poland)

Ankieta: „Ochrona gatunków i ekosystemów w Tatrzańskim Parku Narodowym"

WWF (Word Fund for Nature) i Tatrzański Park Narodowy przeprowadzają ankietę na temat środków i programów ochrony przyrody na terenie parku narodowego. Zwracamy się z prośbą o wyrażenie osobistej opinii na poruszane tematy. Dane z ankiety będą wykorzystane wyłącznie w celach badawczych. Wypełnienie ankiety zajmuje ok. 10 minut. DZIĘKUJEMY!

1. Czy jesteś członkiem jakiejś organizacji zajmującej się ochroną przyrody?
□tak □nie

2. Czy przekazujesz dotacje na ochronę przyrody?
□tak □ nie
jeżeli tak: to w jakiej wysokości w skali roku?
…….. PLN albo ……EUR

3. ***Bioróżnorodność oznacza – zgodnie z międzynarodowymi definicjami – różnorodność genów, gatunków (zwierząt, roślin), ekosystemów oraz krajobrazów.***
Czy słyszałeś wcześniej o bioróżnorodności?
□ tak, znam tą definicję w szczegółach
□ tak, słyszałem o takim terminie
□ nie, nie słyszałem nigdy o tym terminie

4. Jak dobrze czujesz się poinformowany o?
(Zaznacz w skali od 1=bardzo dobrze do 5=wcale)
-celach Parku Narodowego 1 2 3 4 5
- programach ochrony gatunków i ekosystemów w TPN 1 2 3 4 5
- możliwościach rekreacji na terenie Parku Narodowego 1 2 3 4 5
- wartościach kulturowych i edukacyjnych Parku Narodowego 1 2 3 4 5

5. Jakie działania TPN w zakresie ochrony gatunków i ekosystemów są Ci znane?
……
……

6. Tatrzański Park Narodowy ma szereg celów. Zaznacz cztery z nich, które uważasz za najważniejsze:
□ informacja i edukacja w zakresie ochrony przyrody
□ ochrona naturalnych siedlisk i gatunków (roślin, dzikich zwierząt)
□ powiększanie terenów narciarskich
□ badania naukowe w zakresie ochrony przyrody
□ gospodarka leśna
□ wspieranie rozwoju ekonomicznego regionu (poprzez turystykę)
□ budowa nowych dróg i szlaków turystycznych
□ zapewnienie infrastruktury turystycznej (muzea przyrodnicze, szlaki, tablice informacyjne)
□ promocja produktów regionalnych
□ możliwość uprawiania sportów na terenie parku
□ sponsorowanie lokalnych przedsięwzięć takich jak np. muzea

7. Który raz odwiedzasz Tatrzański Park Narodowy (łącznie z dzisiejszą wizytą)?
□ 1x □ 2x □ 3 x □ 4x □ więcej niż czwarty

8. Na jak długo przyjechałeś w Tatry?
……dni

9. Z czego skorzystałeś lub zamierzasz skorzystać podczas pobytu w TPN?
□ muzeum przyrodniczego TPN
□ ścieżek przyrodniczych
□ programów przyrodniczych
□ programów i zajęć dla dzieci
□ wycieczek pieszych i z przewodnikami
□ imprez organizowanych przez TPN
□ możliwości prowadzenia badań
□ inne

10. Jak głównie zamierzasz spędzić czas w TPN?
(zaznacz max 3 odpowiedzi)
□ wycieczki piesze
□ obserwacja roślin i zwierząt
□ sport, taki jak bieganie, rower
□ zwiedzanie muzeum i wystaw
□ wycieczki kulturoznawcze
□ wspinaczka
□ kolejka linowa
□ odwiedzanie schronisk górskich
□ inne:……...

11. Co było motywem Twojej wizyty w rejonie Tatr?

□ wyłącznie chęć odwiedzenia TPN
□ przejazdem skorzystałem z możliwości odwiedzenia TPN
□ inne powody aby odwiedzić region (przyjaciele, rodzina, sprawy służbowe itp.) i przy okazji zobaczyć TPN
□ inne ……...

12. Skąd przyjechałeś?
□ PL, wpisz miasto i kod pocztowy:
……
□ SK □ CZ □ AT □ DE
□ inny kraj:……

13. Z kim podróżujesz?
□sam □z małżonkiem/partnerem □z rodziną
□z przyjaciółmi □z wycieczką zorganizowaną

14. Ile osób podróżuje z Tobą?
……osób

15. Jakim środkiem lokomocji dostałeś się do TPN?
□samochodem □pociągiem □rowerem □autobusem
□samolotem □motorem □kamperem

16. Jak długo trwała Twoja podróż? ……godz.

17. Jaka jest odległość Twojego miejsca zamieszkania od TPN? OK. ……km.

18.Ile pieniędzy wydajesz podczas swojego pobytu w ciągu jednego dnia?
Zakwaterowanie: .....PLN
Posiłki: .....PLN
Zakupy: .....PLN
Bilety wstępu: .....PLN
Muzea: .....PLN
Transport (np.kolejka linowa): .....PLN
Sport: .....PLN
Inne: .....PLN

19. W jakiej miejscowości nocujesz?
□miasto/wieś .....
□przyjechałem na jeden dzień bez noclegu

Działalność Parku Narodowego jest w głównej mierze finansowana z budżetu centralnego, a także z pieniędzy uzyskanych za bilety wstępu.
20. Załóżmy, że rząd zredukował finansowanie parku narodowego. Jeżeli mógłbyś tu i teraz zapewnić dotację dla utrzymania programów parku (takich jak np. ochrona niedźwiedzia, wilka, rysia czy kozicy), jaką sumę byłbyś w stanie płacić w ciągu roku?
Pomyśl o pozostałych wydatkach jakie ponosisz w czasie swojego wyjazdu w Tatry, taka dotacja była by w zasadzie dodatkowym kosztem.
□nic □4zł □8zł □12zł □16zł □20zł □40zł □80zł □120zł □160zł □200zł □240zł □280zł □320zł □360zł □400zł □600zł □800zł □2000zł □ponad2000zł

21. Wyraź swoją opinię na temat stwierdzeń: *(w skali od 1=całkowicie się zgadzam do 5=kompletnie się nie zgadzam)*
„moje dochody są zbyt małe, abym dotował parki" 1 2 3 4 5
„ochrona przyrody jest zadaniem publicznym i nie powinna opierać się na indywidualnych dotacjach" 1 2 3 4 5
„musiałbym poczekać i zobaczyć czy inni dotują i potem bym zdecydował" 1 2 3 4 5
„już płacę zbyt wiele podatków" 1 2 3 4 5
„wolałbym dotować inne programy" 1 2 3 4 5
„programy ochrony przyrody nie są dla mnie tak ważne, żebym miał na nie płacić" 1 2 3 4 5

22. Czy zgadzasz się ze stwierdzeniami: *(od 1=całkowicie do 5=całkowicie się nie zgadzan)*
„ochrona gatunków i ekosystemów jest ważna niezależnie od kosztów" 1 2 3 4 5
„nie zastanawiałem się wcześniej ile byłbym w stanie płacić na ochronę przyrody" 1 2 3 4 5
„byłbym w stanie płacić nawet gdyby większość respondentów powiedziała, że nie chce płacić" 1 2 3 4 5
„rozmawiam wiele o ochronie przyrody z rodziną i przyjaciółmi" 1 2 3 4 5

23. Ochrona gatunków i siedlisk wymaga stałego lub czasowych ograniczeń wstępu na niektóre tereny. Co byś zrobił w takim przypadku?
(od 1=zgadzam się do 5=całkowicie się nie zgadzam)
„niezależnie od ograniczeń odwiedziłbym park narodowy" 1 2 3 4 5
„całkowicie akceptuję stałe/czasowe ograniczenia wstępu ze względu na ochronę przyrody" 1 2 3 4 5
„nie przyjechałbym już więcej" 1 2 3 4 5
„wybrałbym inny region do turystyki pieszej" 1 2 3 4 5
„zrezygnowałbym z turystyki pieszej i wybrałbym inne miejsce w Polsce do spędzenia urlopu" 1 2 3 4 5
„spędziłbym wakacje za granicą" 1 2 3 4 5

24. Jeżeli byłbyś w stanie płacić na programy parku (pytanie 20), co byłoby głównym motywem dla Ciebie:
□dotacje na ochronę zwierząt i roślin ponieważ mają prawo do istnienia
□chciałbym chronić zwierzęta i rośliny z uwagi na kożyści jakie mogą one dać w przyszłości
□chciałbym zapewnić moim dzieciom zdrowe środowisko

25. Płeć □Mężczyzna □Kobieta

26. Wiek: .....lat

27. Z ilu osób składa się Twoje gospodarstwo domowe? .....z tego .....dzieci

28.Jakie jest Twoje wykształcenie?
□podstawowe □średnie □wyższe

29. Czym się zajmujesz?
□uczeń □pracownik fizyczny
□pani/pan domu □pracownik umysłowy
□szukam pracy □służba cywilna
□emeryt □pracodawca
□inne

30. Zaznacz miesięczny dochód swojego gospodarstwa domowego:
□mniej niż 2000zł □4000 – 5000zł
□2000 – 3000zł □5000 – 6000zł
□3000 – 4000zł □powyżej 6000zł

Wszystkie odpowiedzi są traktowane w sposób poufny i wykorzystywane wyłącznie w sposób statystyczny i anonimowy

Dziękujemy za odpowiedzi, życzymy miłego pobytu w Tatrzańskim Parku Narodowym

Part 2

Promotion of regional development and PES (payment for ecosystem services) schemes in the regions of Tatra (PL) and Slovensky Raj (SK) national parks, and Maramures Natural Park (RO)

Abstract

Protected areas provide crucial ecosystem services to the local, regional, local and global economy. Specifically regarding the regional aspects, protected areas may promote re-gional (economic) development, but may also be affected by development activities.

Given that a effective and sustainably funded park management is institutionalized, pro-tected areas can fulfill their crucial role in regional development. However, the "use" of protected areas as tools for regional development presupposes that there is indeed an effective, efficient and sustainably funded park administration in place, that the park management has the decisive authority over land-use within the park's boundaries, and that the regional development authorities and plans have established close communication and cooperation with the park administration, and vice versa. This includes the acknowledgement of the potentially crucial role of the protected area's ecosystem services as inputs for regional (economic) development in the current development plans. The current report finds that only in Tatra National Park (PL) the main preconditions for a connection between biodiversity conservation and regional development are fulfilled. The other two parks, Slovensky Raj National Park (SK) and Maramures Mountains Natural Park (RO) lack the basic fundamentals, such as sufficient funding and institutional stability and authority, to promote regional development substantially by the respective park's ecological management.

1 Introduction and problem setting

The current report is the second part of the research project "Economic and cultural val-ues related to Protected Areas" commissioned by WWF International (Danube-Carpathian Programme).

The first report (see above, Part 1) presented the results of valuation of ecosystem services in Tatra (PL) and Slovensky Raj (SK) national parks. The valuation of ecosystem services in both national parks shows that ecosystem services may be of great importance.

In total, Tatra national park (PL) provides ecosystem services annually worth EUR 742m (potential range from EUR 593m to 888m), while Slovensky Raj national park (PL) pro-vides around EUR 232m of ecosystem benefits (range from EUR 155m to 342m per year). The differences are due to the different ecosystem services provided, but also to the different size of the relevant economies and stakeholder groups. Table 1 presents a summary of the results.

Table 1: Values for ecosystem services provided by Tatra (PL) and Slovensky Raj (SK) national parks

		Tatra national park (Poland)			Slovensky Raj national park (Slovaki		
		Lower bound of value	Reasonable mean value (in tds. EUR, per year)	Upper bound of value	Lower bound of value	Reasonable mean value (in tds. EUR, per year)	Upper bound value
1.1	Forest products						
1.1.1	Timber	0	0	0	285	856	1,426
1.1.2	Non-timber products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1.1.3	Water provision, supply	2,585	3,700	5,280	624	1,480	1,971
1.1.4	Water retention / flood protection	363	726	862	455	808	1,068
1.1.5	Carbon sink, climate regulation, CO2 sequestration	56	91	240	52	90	224
1.1.6	Erosion control	*see 1.1.4*					
1.1.7	Medicinal resources	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1.2	Agricultural products						
1.2.1	Cattle, grazing	0	0	0	0	0	0
1.2.2	Grains, food production	0	0	0	0	0	0
1.3	Fishing	0	0	0	2	2	n.a.
1.4	Hunting	0	0	0	n.a.	n.a.	n.a.
1.4	Recreation values	435,000	519,000	601,000	99,431	152,325	215,273
1.5	Recreation (Transport costs, entry fee, museum)	18,000	21,000	24,000	20,272	30,972	43,763
	Rough estimate of use values	**438,004**	**523,517**	**607,382**	**100,849**	**155,561**	**219,962**
1.7	Biodiversity conservation values						
1.7.1	Existence values	65,971	92,100	119,410	11,250	15,938	25,417
1.7.2	Option / quasi-option values	35,027	48,900	63,400	5,000	7,083	11,296
1.7.3	Bequest values	54,302	75,810	98,290	37,750	53,479	85,287
1.8	Cultural values	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Non-use values	**155,300**	**216,810**	**281,100**	**54,000**	**76,500**	**122,000**
	Rough estimate of TEV (Total Economic Value)	**593,304**	**740,327**	**888,482**	**154,849**	**232,061**	**341,962**

Source: Getzner, 2009.

Recreation benefits are most significant for both national parks. About two thirds total benefits have their origin in recreation benefits. Biodiversity conservation (non-use val-ues) is also significant as the second most important ecosystem service. Other ecosys-tem services (water, timber, erosion control) are especially significant to the local com-munities.

The existing valuation study for the Maramures Natural Park (RO) shows that also this protected area can be of eminent importance to the provision of ecosystem services in money terms.

The most important ecosystem services in Maramures Natural Park (RO) are hay and timber production, watershed protected and CO2 sequestration. Recreation or non-use values only play a minor role – possibly due to the limited number of visitors in the re-gion.

Based on these studies valuing ecosystem services, the current report discusses the fol-lowing issues:

- Foundations and scenarios for a PES (Payments for Ecosystem Services) scheme in the three regions; discussion of the importance of benefit sharing and stake-holder involvement;
- Potentials and conditions for regional development based on the existence and management of the protected areas, and consideration of regional development plans; discussion of the mutual push-and-pull effects

between conservation tar-gets and economic targets, with the rough outline of a strategic concept that harmonizes both targets;

- Recommended actions for future activities.

Table 2: Values for ecosystem services provided by Maramures Natural Park (RO)

Ecosystem goods and services	*in 1,000 RON, per year*
Water supply	1,848
Hay	34,685
Timber	31,876
Non-timber forest products	3,645
Hunting	102
CO2 sequestration (lower/upper bound)	26,470 171,722
Watershed protection	43,295
Erosion control	3,189
Wildlife habitat	800
Recreational fishing	685
Recreation	4,835
Cultural heritage	737
Traditional landscapes	589
Total Economic Value (TEV), per year	**152,756 298,008**

Source: Ceroni, 2007.

The current report deals specifically with these questions and draws on the results of three workshops held in Baia Mare (Maramures Natural Park, RO) on 18 February 2010, in Spisska Nova Ves (Slovensky Raj National Park, SK) on 25 February 2010, and in Za-kopane (Tatra National Park, PL) on 26 February 2010. The report deals with the results in a joint discussion, where necessary, specific conclusions for the different regions and protected areas are drawn separately. However, the main parts of the report outline with fundamentals of regional development and sustainable financing of protected areas and aim at functioning as a base-line and handbook to be considered by the respective park management and authorities. The final section deals with specific recommendations for the three parks.

The first part of the report (Getzner, 2009) included an introductory discussion on biodi-versity, ecosystem functioning, ecosystem services, and the drivers of change, and high-lighted the importance of economic reasoning for ecosystem service valuation. This dis-cussion will not be repeated in the current paper.

2 Ecosystem services, regional development and financing of parks

2.1 Economic concept of ecosystem services and support of sustainable development through protected areas

The basic economic notion of dealing with ecosystem services is the differentiation be-tween the ecological capital and the flow of services provided by this stock:

- Ecological capital refers to the whole stock of elements of biodiversity and natural resources, such as the full range of all elements of an ecosystem. This ecosystem consists of the different animals and plants (genetic and species diversity), and energy and material flows, dynamics and interdependencies (ecosystem and landscape diversity).
- Ecosystem services (environmental services) refer to the flow of goods and ser-vices provided by the ecological capital stock over a certain period of time (such as one year). The services can consist of use and non-use benefits (e.g. production of timber, recreation services; existence values).

From an economic point of view, it is practically impossible to value the ecological capital stock in money terms as such. There is, however, a wide range of economic valuation techniques which may put a money value on the flow of goods and services provided by the ecological capital, and which therefore can also value the change in the quality of the ecological capital (environmental quality).

Biodiversity conservation, for instance in protected areas, may contribute significantly to the future provision of ecosystem services. The benefits of conservation, however, are not only locally enjoyed, but also accrue to regional, national and even global beneficiar-ies.

Many biodiversity hotspots are located in peripheral regions, considered on a global level as well as on a regional level (Friedl et al., 2007).[1)] While developing countries are espe-cially rich in biodiversity, poor and peripheral regions in developed countries such as in Central Europe (e.g. Slovakia, Poland, Romania) also exhibit above-average species and ecosystem diversity. This concentration of biodiversity has implicitly been recognized by the Convention on Biological Diversity (CDB), passed in 1992 at the UN conference on environmental and development (UNCED) in Rio de Janeiro, with its reference to the importance of benefit sharing of biodiversity conservation. While the conference concentrated on an integration of environmental and equity issues, it was also acknowledged that the sharing of conservation benefits is a prerequisite for effective conservation management and poverty reduction (Convention on Biological Diversity: Secretariat of the CBD, 2005). As such, the conservation of biodiversity is important for regional sustainable development both as a precondition for sustainability, as well as a major potential con-sequence of securing the livelihood of residents, and of regional development (Wells and McShane, 2004). The conservation of biodiversity therefore can integrate the crucial dimensions of sustainable development (cf. for instance Barker and Stockdale, 2008):

(1) Biodiversity conservation contributes, of course, to the ecological aims of sustainable development by protecting genetic, species, ecosystem (habitat) and landscape di-versity; the conservation of biodiversity in situ in national parks is especially important due to the stringent ecological management plans and subsequent international monitoring. Hence, the establishment of a national park preserves the natural capital by observing the carrying capacity, and limiting and steering visitor flows which would otherwise be a threat to the ecological integrity of the regional ecosystems.

(2) Biodiversity conservation, with its aims of providing benefits for the local population, also contributes to the economic dimensions of sustainable development by supporting the livelihood of people and the regional/local economic development, provided that potential conflicts between economic and ecological development are solved (i.e. ecological and economic goals are considered as complementary). Regional economic sustainable development may therefore be supported since local residents find new income opportunities which are also ecologically sustainable – options which only a protected area is able to provide. These effects of biodiversity conservation in pro-tected areas are discussed more thoroughly in the following sections.

(3) Biodiversity conservation also contributes to the social goals of sustainability, by dis-tributing the costs of conservation equally among stakeholders (and national and in-ternational tax payers), and by empowerment and participation of (otherwise mar-ginal) stakeholder groups. In addition, further aging of the population may be re-duced, and a favorable population structure may be supported.

In European countries, the problem of poverty alleviation is certainly much less dramatic than in developing countries. However, the public debate on biodiversity conservation – especially conservation in situ in protected areas such as national parks, nature reserves, landscape conservation areas – is very much focused on an equal sharing of the burdens (e.g. local land owners and holders of land-use rights) and on providing benefits for the local residents besides the aims of protected areas for nature conservation, education and scientific research (WCPA, 2000). For instance, Mose (2007a) has presented a range of approaches and models for protected areas and regional development. It turns out that, in general, protected areas can enhance regional sustainable development. However, it is of equal importance to address adequate management strategies, e.g. regarding inclusion and participation of all relevant stakeholders in order to maximize benefits of establishing and managing protected areas. The existing Central European case studies (e.g. Mose, 2007b; cf. also Kletzan and Kratena, 1999; Getzner, 2008; Getzner, 2003; Getzner and Jungmeier, 2002; Getzner, 2010; Hammer, 2007a; Hammer, 2007b) concentrate on a broad range of topics, such as

- impacts of protected areas on regional (economic) development;
- economic effects of expenditure due to establishing and maintaining a protected area;
- issues of acceptance and identity;
- tourism, visitors' motives to visit the region, and expenditure of tourists.

In many case studies, quantitative research is limited, often due to the lack of consistent time series of relevant socio-economic data. For instance, one of the major Austrian studies (Fleischhacker, 2001) presupposes that national parks, as a main category of protected areas, lead to enhancing tourism in national park regions. However, this con-clusion is drawn on the basis of qualitative research and assumptions about the potential regional impacts of protected areas. On the other hand, studies on certain aspects of regional development are quantitative but limited on value added and employment effects of protected areas (e.g. Getzner and Jungmeier, 2002).

2.2 Conservation and regional development: conflicts or complements?

Regarding biodiversity conservation from the viewpoint of economics, the very nature of economic activities has to be borne in mind. Every economic activity, such as production and consumption, uses natural resources in the form of energy, materials, land. Of course, capital and labor are crucial inputs to economic production. However, from the point of view of social ecology and resource economics, every single human activity is connected with the use of natural resources. While the production of services are con-sidered less resource-intensive than industrial production, services need as underlying backbones and infrastructures a broad range of products stemming from resource-intensive industries (e.g. construction, heavy industries).

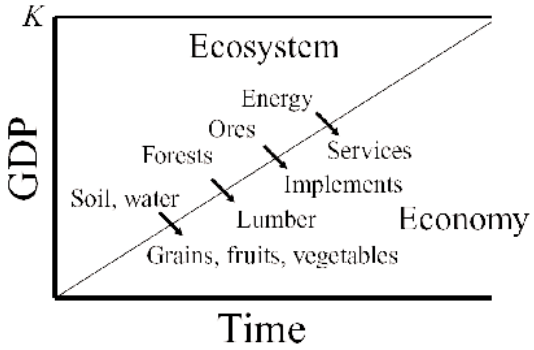


Figure 1: Reallocation of natural capital from the ecosystem and its nonhuman species to the human economy

Source: Czech, 2008.

Czech (2008) has pictured the conflict between the size of the economy and the land remaining for biodiversity conservation in a simple graph.

With a growing economy, the amount of resources transformed to inputs of the human economy grows. That means that under scarce resources (in particular, land) the eco-systems have fewer resources left for reproduction.

With respect to protected areas, these conserve land for the protection of biodiversity. However, the extent of conservation is determined by the category assigned to the pro-tected area, and by the stringency of the actual management plans and measures.

Regarding protected areas providing ecosystem services, these services might be crucial for the local and regional economy. The valuation studies in Slovensky Raj (SK), Tatra (PL) and Maramures (RO) protected areas showed that water provision, forest products, and recreation are the most important ecosystem services for the local and regional economy.

However, the expansion (economic development) of adjacent communities around the parks increases the pressure on ecosystem in terms of resource use, high numbers of visitors, new infrastructures for tourists, and also utilities for the local economy (water and energy supply, waste water treatment).

Therefore, ecosystems can provide crucial services to the local economy, but can also be affected by local and regional (economic) development.

2.3 Conditions for regional development

For balancing the use of resources by the local economy, and nature conservation on the other side, there is one main condition for this balance. The institutions establishing pro-tected areas have to care

for a credibly implemented, effective and efficient nature con-servation policy.

This means that the ecosystem services needed for the local economy must be secured in the long run, and not be jeopardized by short-term considerations. Otherwise, the unique selling proposition of the region is lost.

Such a policy presupposes essentially three main frameworks:

- Authority of the park administration over measures and policies within the park boundaries: The park management not necessarily has to be the land owner, but has to have the full authority over all activities within the park.
- Effective ecological management plan: During the life-cycle of a park, there are numerous activities (see IPAM, Integrative Protected Areas Management, www.ipam.info). However, the central part of management is certainly an effective and efficient management plan with which the policies can be implemented.
- Sufficient financing of protected areas management and policies: Without a suffi-cient funding of park administrations, effective policies cannot be implemented.

These three major policies secure that the parks conserve their ecological capital for future provision of crucial ecosystem services in a sustainable way, that management policies are effectively implemented, and that the park can also be "used" for regional development in the long run. Otherwise, the ecological capital may be deteriorated, and the ecosystem services unique for the single parks may be deteriorated in the long run.

While the above-mentioned aspects can be influenced by the national park administration and have to be set up by the local, regional and national nature conservation institutions, it is also of crucial importance to consider an additional aspect in regional development policies.

Park administrations have to be involved in regional planning and development. That means that the regional development plans and strategies have to account for the exis-tence of the park, of the provided ecosystem services, and have to direct the regional strategy with respect to the "use" of the park for regional development. Only with coor-dinated efforts of the park management and the regional and local planning authorities, joint design and implementation of development strategies are effective. It is not only crucial to establish a formal system of communication and cooperation, but the park administration has to set up a communication platform for regional development in which regional stakeholders can discuss park policies, and also assess economic consequences of park policies.

2.4 Payments for Ecosystem Services (PES) and sustainable financing mechanisms of protected areas

2.4.1 Importance of sufficient funding

The financing of protected areas is one of the most crucial ingredients for effective and efficient protected areas management. Without sufficient funding (i.e. resources devoted to the co-management of biodiversity conservation, education and information, and sci-entific research), management would not be effective, and is therefore also not able to provide contributions to regional development based on ecosystem services provided by the PA.

In the following, some key-aspects are discussed in more detail.

2.4.2 Functions and tasks of Protected Areas with public and private elements: Strong indications for public financing

Economic relevance of Protected Areas

The economic characteristics of Protected Areas (PAs) are derived from the functions of PAs (nature conservation and protection of biodiversity, recreation, education and infor-mation, and scientific research), the economic attributes of PAs as public, private and/or meritory goods, the impacts of PAs (e.g. internal vs. external effects), and the valuation of PAs and their functions (e.g. use values, non-use values).

The consideration of PAs as providing goods and services is complicated by intergenera-tional existence of PAs, ethical standards and commitments, lack of information, uncer-tainties and ignorance.

Taking these arguments as the baselines for financing PAs does not only result in differ-ent approaches to financing (public-private), but also leads to different conclusions re-garding the role of private households and companies as contributors of financial re-sources of PAs.

Establishing a PA is connected with opportunity costs in a variety of aspects. The area where the PA is located may be used for other options (economic development, housing, agriculture). Establishing and managing a PA therefore is connected to foregone benefits of alternative use of funds. The financing – private and public – is as well related to op-portunity costs.

Ecosystem functions

As discussed above, ecosystems and Protected Areas provide a number of ecological functions determined – among others – by the category of the PA (e.g. national park, state park, landscape conservation, Natura 2000). While the conservation of biodiversity is certainly one of the most important aspects, PAs also should provide – to varying de-grees – recreation and education opportunities, research, sustainable (regional) devel-opment and economic opportunities for the local population.

All these functions include public and private components that may rest on a variety of financing instruments and mechanisms. In principle, the public functions of PAs are more likely to be financed publicly, while some of the more private functions (e.g. tourism) may be based on private financing and private decision making.

Public goods

We now turn to describing a number of economic concepts that are relevant arguments for public financing of the core functions of Protected Areas.

Public goods – opposite to private goods – as well as (to a certain degree) common pool resources ("commons") are characterized by non-rivalry and non-excludability. Non-rivalry means that a good can be "consumed" (used, enjoyed, valued) by many people at the same time. Non-excludability means that no one can be excluded from "consuming" the good even if he/she does not pay for the provision of the good.

Private companies and households – based on the attributes of public goods – therefore do not (or not sufficiently) provide public goods due to strategic and free-rider behavior. This kind of market failure leads to the conclusion that the public sector (state, govern-ment) is responsible for providing such goods. However, the public may, of course, commission private agents to fulfill public tasks.

Environmental/natural goods and services often carry attributes of public goods. For instance, Protected Areas include many public goods (or common-pool resources) attrib-utes in their functions (each related to their "public elements"):

- Conservation of biodiversity (genes, species, ecosystems, landscapes);
- Social equity and justice;
- Education;
- Recreation and leisure.

Biodiversity may be used and valued by everyone, no one may be excluded from more/less biodiversity, and is also affected by the state of biodiversity in one or the other way.

Social justice and social functions of PAs are valued by most of the members of society.

Education is also perceived partly as a public good since the state of education and training within a society affects every member of that society.

Recreation also carries public components related to public health and safety.

Taking the manifold function of PAs, the core issues carry public elements and are there-fore subject to public (state) intervention including a regulatory framework and public financing of PAs' tasks. In particular, biodiversity conservation as the core tasks of PAs has to be financed publicly, and an efficient and effective management of this core task may be the basis for the many other functions and tasks of PAs, some of them possibly financed by private sources.

External Effects

External effects are unintended effects of consumer or producer activities on other households and companies without adequate compensation. External effects can be positive or negative. In the case of Protected Areas, they very often exhibit (positive) external effects in many ways, such as regional development, biodiversity conservation also outside the area, tourism opportunities etc.

On private markets, goods that exhibit positive external effects, are offered in a quantity lower than the optimum, at prices above the optimum.

In order to correct such market failure, state intervention into the market in the form of regulatory frameworks and subsidies (public financing of PAs) is appropriate.

Increasing economies of scale and natural monopolies

Subsidies (public financing of PAs) may also be reasoned by natural monopolies exhibiting increasing economies of scale. Taking the efficient price of a natural monopoly results in a price below production costs. Therefore, in order to provide the good, the public has to subsidize the production of the good in order to secure an efficient supply.

Protected Areas exhibit some elements of increasing economies of scale since networks and larger PAs may fulfil the core functions of PAs much better than smaller and dis-persed areas.

Meritory goods

Meritory goods are goods whose consumption is mandatory. Consumer sovereignty is limited to issues of public interest such as mandatory school attendance of children be-tween 6 and 14 years, or traffic safety (e.g. seat belts). PAs with their specific education and recreation functions may carry some meritory elements since it is commonsense that education and recreation are important for the standard of living, and should therefore be supported (and ultimately subsidized by the public).

Further arguments for public financing

There have been discussed many more arguments for public financing, for instance:

- Asymmetric or insufficient information;
- Institutional rigidities;
- Incomplete mobility of factors of production;
- Incomplete capital markets;
- Subsidies to foreign producers;
- Adjustment to new market conditions;
- International trade considerations;
- New growth theory.

However, public financing and recommendations for financial instruments may best be laid on the following arguments:

- Protected Areas as public goods
- External (positive) effects of PAs.
- Increasing economies of scale;
- Meritory elements of PAs.

Inefficiency of public financing

The principle call for public financing of public tasks has, of course, to be discussed thor-oughly in terms of the efficiency and effectiveness of the public sector.

Only if the overall economic costs are smaller than the benefits of public financing, state intervention is justified. Problems with state intervention and public financing include:

- Inefficiency of bureaucracies;
- Political economy of public actions;
- Crowding out of private funds by public financing;
- Inadequate, ineffective public intervention.

When choosing a certain policy instrument such as public financing of PAs, it has to be stressed that the principles of public financing have to be tested in the concrete situation. If the costs such as “red tape”, efficiency losses due to taxation, limited effectiveness, overweigh the benefits, public action may not be recommended.

2.4.3 Criteria for choosing instruments for financing nature conservation

Choice of policy options

Choosing instruments for Protected Areas (PAs) and PA networks has to be considered in a variety of contexts, not only of economic considerations, but of ecological, social, ad-ministrative, institutional and instrument specific dimensions.

Ecological effectiveness

A policy instrument should lead to fulfillment of ecological goals and targets which have to be based on sound scientific evidence. Especially in nature conservation, where potentially irreversible effects may results from inadequate or in effective measures (such as species extinction, habitat loss), ecological effectiveness is the main and foremost objective of any instrument regardless whether the instrument is

regulatory (command-and-control) or economic (taxes, subsidies).

Economic efficiency

A policy instrument should be efficient in the sense that a certain goal is achieved with the lowest cost, and that action should be taken when benefits are larger than costs. There may be different effective instruments for achieving a certain ecological goal but there may also be more and less efficient instruments among these effective instru-ments.

Social equity and justice

Nature conservation policies should also take into account social fairness, equity and justice. For instance, it has to be explored which social group (e.g. income group) enjoys the main benefits, and which social group bears the costs. In a broader sense, social fairness also means that peripheral regions with income below average may be supported if they face restrictions in the economic use of resources due to the establishment of a PA.

Administrative feasibility

Some instruments for nature conservation and environmental protection may be close to the "polluter-pays-principle" while they cause high administrative costs. For instance, it might be feasible to charge visitors of a national park closely according to their activities in the park. However, such system would be too costly in terms of administration; there-fore, uniform entrance fees (if any) are charged.

Political acceptance

Nature conservation policies are not only influenced by experts, managers and planners of PAs, but take place in a political context. Some instruments may be efficient and ef-fective, but there might not be a political will to realize such policies.

Flexibility and reversibility

Instruments in nature conservation and PA management should also be flexible enough to account for changes in the managerial context. For instance, public funding should be flexible in order to account for extensions of the PA area, or for changes in management objectives.

Differentiation in time and space

Finally, instruments should also be differentiated according to local requirements, and also account for different seasons.

2.4.4 Protected areas on their way to financial sustainability[2)]

The concept of financial sustainability is more than just increasing the annual budgets of protected areas. It can be a tool to improve the core objective of a protected area, i.e. conservation management. According to IUCN (Emerton et al., 2006), financial sustain-ability is "the ability

- to secure sufficient, stable and long-term financial resources,
- and to allocate them in a timely manner and in an appropriate form,
- to cover the full costs of protected areas, and
- to ensure that protected areas are managed effectively and efficiently with re-spect to conservation and other objectives."

Finances shall be factored into the protected area planning and management processes and financial tools such as business planning shall be employed. Financial sustainability therefore needs adequate sources (= supply side) and wise use (= demand side) of funds and is impossible without "strong and effective institutions for protected area management" (Emerton et al., 2006).

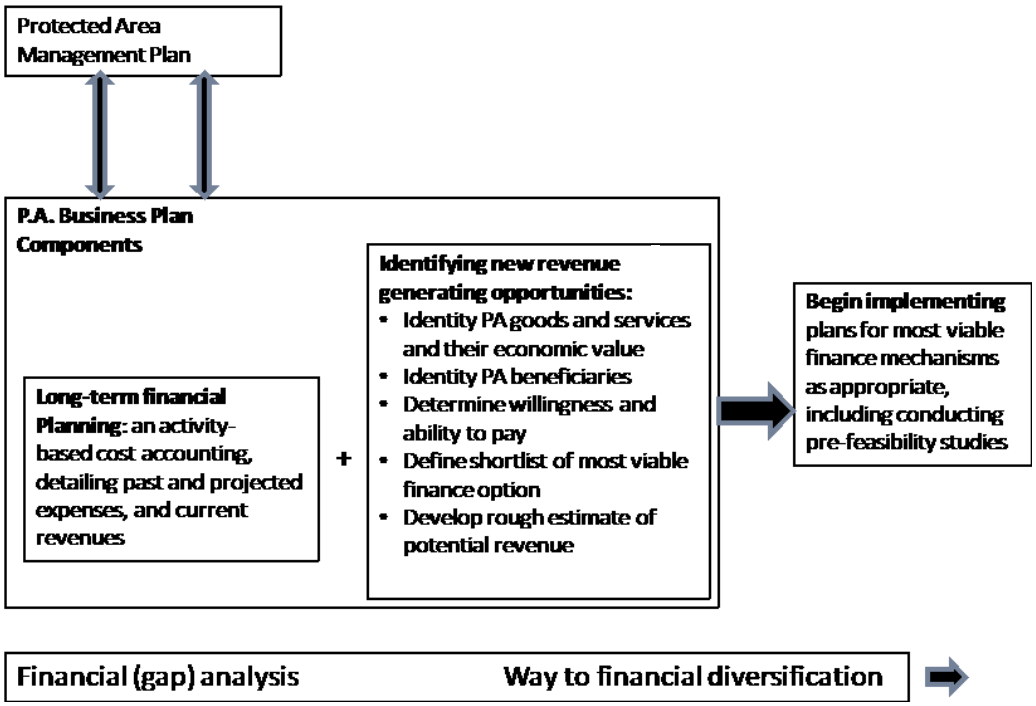
Business-oriented financial planning as a process

Sustainable financial planning is a working framework that includes interactive processes involving numerous stakeholders in order to create broad ownership across constituen-cies, systematise actions and attract a sufficient and stable resource base. It fosters en-trepreneurial thinking among managers and administrators to run the protected area as a business making it ecologically, socially and financially sustainable.

Steps in the financial planning process include a financial (gap) analysis which lists current income sources and identifies funding needs according to the protected area man-agement plan; the resulting financial gap is the basis for the next and most crucial step, the identification of feasible financing mechanisms. The financial plan condenses all pre-

vious analyses and formulates financial strategies and their implementation (Figure 2).

Figure 2: Parts of the financial planning process as defined in the Conservation Finance Guide



Source: Conservation Finance Alliance.

Financial (gap) analysis

Funds needed depend on the type and extent of management action taken. PA managers need to prioritise measures in order to fulfil the conservation objectives according to the management plan and quantify the financial needs based on the past experience and projections taking into account cost effectiveness. The financial (gap) analysis is the baseline for all your efforts to increase and diversify the protected area financial portfo-lio.

The process of a financial (gap) analysis generally involves various stages (e.g. Flores et al., 2008):

- planning and preparation to define scope and methodologies;
- information collection involving stakeholders;
- processing and analysis of past and projected financial streams using different scenarios for future management action (e.g. mission critical and optimal state); and
- validation of results leading to a shared understanding of the funding gaps and the funding framework.

Ways to financial diversification

There is a universe of potential funding mechanisms for protected areas or biodiversity conservation. Table 3 shows the broad range of potential funding instruments.

In order to identify and assess feasible financing mechanisms for a specific protected area (system), it is necessary to understand the assets and ecosystem services provided by the PA. At best there is already an economic valuation of the use and non-use values in the protected area.

On the way to diversify the funding portfolio the following actions should be considered:

- Identification and evaluation of benefits of the protected area;
- definition of the products and services (public and private goods components) offered;

- assignment of customers/markets to these products and services;
- assessment of their willingness and ability to pay;
- overview of potential financial mechanisms resulting from the above analysis;
- feasibility assessment for the shortlisted mechanisms; and
- selection and implementation of the chosen funding instruments.

Table 3: Overview of financial mechanisms for biodiversity conservation

Local Level Financial Mechanisms	
More traditional - Protected areas entrance and fees - Tourism related incomes - Local markets for sustainable rural products - Local NGO and charities - Local businesses good will investments	**More innovative** - Earmarking public revenues - Local green markets - Local markets for all type of ecosystem services (PES)
National Level Financial Mechanisms	
More traditional - Government budgetary allocations - National tourism - National NGO fundraising and fund granting - National businesses good will investments	**More innovative** - Earmarking public revenues - Environmental tax reform - Reforming rural production subsidies - National level PES - Green lotteries - New good will fundraising instruments (internet based, rounds, up, etc) - Businesses/public/NGO partnerships - Businesses voluntary standards - National green markets - National markets for all type of ecosystem services (PES)
International Level Financial Mechanisms	
More traditional - Bilateral aid - Multilateral aid - Debt-for Nature-Swaps - Development banks and agencies - GEF - International NGOs fundraising and fund granting - International foundations - International tourism - International businesses good will investments	**More innovative** - Long term ODA commitments - Auction or sale of part of carbon emission permits and other cap-and-trade schemes - Environment related taxes - Other international taxes - Reforms in the international monetary system - Green lotteries - New good will fundraising instruments (internet based, rounds, up, etc) - Businesses/public/NGO partnerships - Businesses voluntary standards - International green markets - International markets for all type of ecosystem services (PES)

Source: Gutman and Davidson, 2007.

PES = Payment for Ecosystem Services; ODA = Official Development Aid; GEF = Global Environmental Facility.

Generally, PAs will depend mostly on public funds (from various local, regional, national or international sources) such as public coverage of management costs, ear-marked funds, coverage of project costs, or funding from international institutions. As PAs pro-duce various public goods and services (biodiversity conservation, scientific research, and recreation), the scope of private funding is commonly limited. Furthermore, private funding (e.g. sponsoring, merchandising, local products) especially need efforts in terms of time and money to be effective. Therefore, the costs and benefits of private funding programmes have to be taken into account before starting such venture.

Business planning

In the corporate world business planning is an exercise of strategic management in which the potential

economic success of a business idea is assessed. It leads to the production of a document, the business plan. It is characterised by a succinct and well-structured form of presentation and its comprehensive information content. It serves internal (adaptive management) and external (communication, finance) functions. Business planning for protected areas is less standardised due to different enabling environments and methodological approaches, growing but limited good practice, varying terminology and few guidelines and tools.

The financial plan as discussed above forms part of a business plan document. For a pro-tected area, this document could contain the following components:

1. Executive summary.
2. Protected area at a glance: short description of geography, size, zoning, natural asset base, management categories, rights and ownership.
3. Organisational information: areas of operation, organisational structure, man-agement, employees, legal form, decision-making.
4. "Products and services" (findings as of financial analysis process).
5. "Business environment": protected area system, legal and regulatory framework, stakeholders, marketplace, customers, competition, socio-economics of area.
6. Strategy & implementation: from vision to action plan (describing also scenarios, if used in financial analysis process), marketing.
7. Financials: historic and pro-forma numbers and assumptions (based on financial gap analysis and new financing instruments).

Financial planning and participation

Planning for sustainably financed protected areas is complex, needs time and adequate (human and financial) resources, and above all the commitment of government and relevant authorities (later also stakeholders). Although it is a core competence of man-agement and decision-making bodies within the protected area, it generates a "learning" dynamic for the larger group of involved people with regards to economic values of goods and services provided by protected areas and their real funding needs. It can in-crease public awareness finally leading to a higher willingness to pay for biodiversity con-servation.

Regional development and benefit sharing

Financial planning unveils the beneficiaries of and contributors to conservation ("winners", "losers") and by structuring of tailor-made financial mechanisms allows for the distribution of the costs and benefits. A lot of the funding instruments are targeted not only to the site level but rather to the system level of protected areas like government budget allocations, environmental tax reforms, earmarked international donor assistance and philanthropy, international markets for ecosystem services etc. Such instruments generally focus beyond financing the protected area but rather improving economic development in the region with the protected area being an important player in the region.

A trend towards the commoditisation of biodiversity assets, liberalisation of capital mar-kets, privatisation and globalisation may also have impacts on local protected areas. There is a need for local ownership, effectiveness, transparency, accountability and cus-tomer-mindedness if protected areas are to become financially sustainable in the long run. The financing and use of resources may be of eminent importance to regional (eco-nomic) development. As a PA can be considered a major local and regional project also in economic terms (e.g. number of jobs created), the PA management can influence re-gional development by

- purchasing goods and services from local companies;
- setting up networks and partnerships with commercial stakeholders; and
- contributing to the development of regional marketing and destination management.

Furthermore, the PA may also influence decisions on how resources are financed, e.g. by ear-marked taxes and charges for certain (specific) user groups.

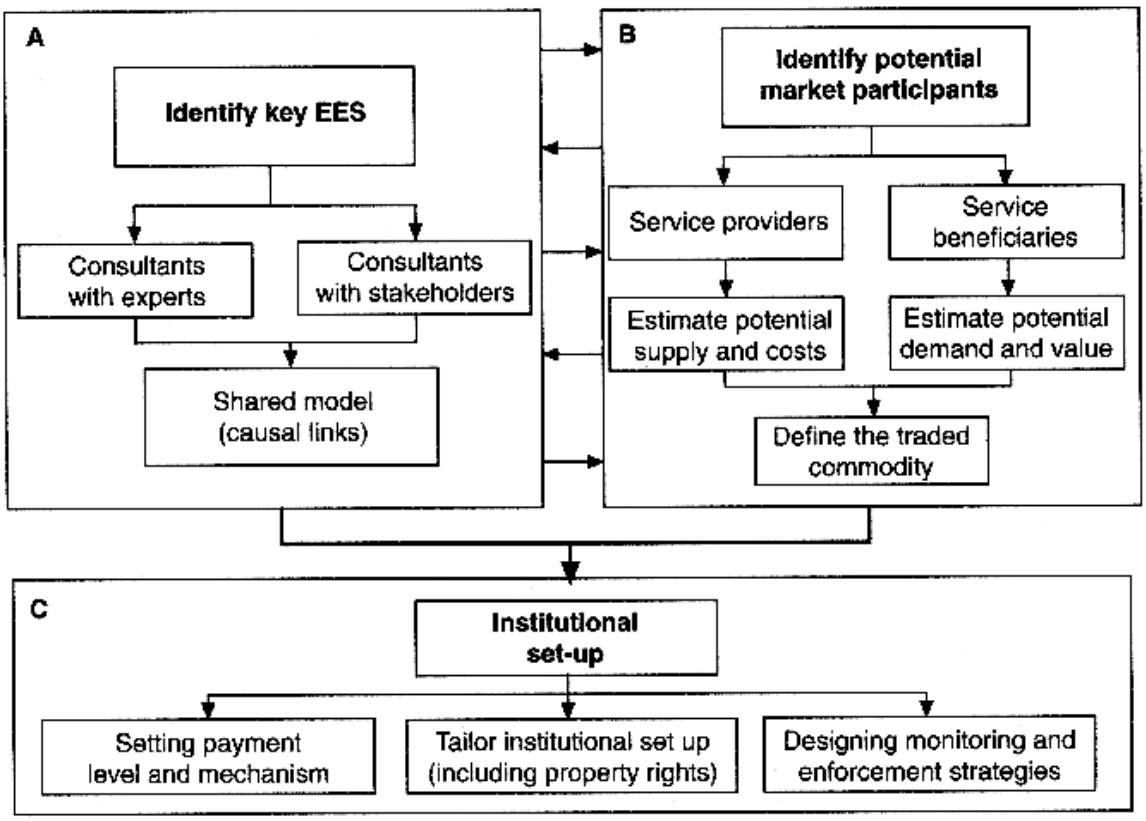
2.4.5 PES Payment for Ecosystem Services schemes

In the following, one specific financial instrument, the PES scheme, that was already mentioned above in Table 3 is described in Figure 3.

The design of a PES scheme starts out with the identification of key ecosystem services (see Part 1 in Figure 3). The current valuation study (Getzner, 2010a) has provided a range of valuation results regarding the economic values of ecosystem services. While water provision and forest products are

significant, the most important service provided by Slovensky Raj and Tatra National Parks is recreation. There is a range of recreation benefits provided within the region. However, with respect to the provision of national park services, the national park administration is clearly the provider of the services. For some, the park administrations take the planning responsibility and commission certain services to local providers (part B). The institutional set-up (part C) with concrete pro-posals for the three protected areas is discussed below in the summarizing section 3

Figure 3: Design of a PES scheme



3 Summary, conclusions and recommendations of Tatra and Slovensky Raj national parks and Maramures Mountains Natural Park

3.1 Preconditions for regional development and financial sustainability: general conclusions

In order to "use" protected areas for regional development which also serves as a basis for financial sustainability, a range of pre-conditions have to be met.

For balancing the use of resources by the local economy, and nature conservation on the other side, there is one main condition for this balance. The protected areas have to care for a credibly implemented, effective and efficient nature conservation policy.

This means that the ecosystem services needed for the local economy must be secured in the long run, and not be jeopardized by short-term considerations. Otherwise, the unique selling proposition of the region is lost.

Such a policy presupposes essentially three main frameworks:

1. Authority of the park administration over measures and policies within the park boundaries: The park management not necessarily has to be the land owner, but has to have the full authority over all activities within the park.
2. Effective ecological management plan: During the life-cycle of a park, there are numerous activities (see IPAM, Integrative Protected Areas Management, www.ipam.info). However, the central part of management is certainly an effective and efficient management plan with which the policies can be implemented.
3. Sufficient financing of protected areas management and policies: Without a suffi-cient funding of park administrations, effective policies cannot be implemented.

The first framework includes a country's willingness to set up organisations and institu-tions which are responsible for the management of certain areas that may be protected according to existing national or international standards. This realm cannot be decided upon by the protected area management itself but has rather to be discussed at the re-gional and national level.

However, if the protected area management is in place, there is a broad range of Fields of Activity (FoA; www.ipam.info) in which both stakeholder involvement and regional de-velopment can play a crucial role. According to this second framework, the effective eco-logical management plan is a central part in all Fields of Activity. Over the "life-cycle" of protected area, there are several phases to be detected:[3)]

- During the preparatory phase ("pre-phase"), the first ideas for the establishment of a protected area are collected and discussed publicly, a feasibility check is made, and a first direction of the further development is drafted.
- The planning phase is divided into the period of basic planning which includes basic research, and planning of designation and implementation, and ends with the legal nomination of the area as a protected area; and into the period of detailed planning with a focus on specific plans for the ecosystems (ecological manage-ment plan), regional economy, management set-up, and monitoring. The focus on the latter is to establish a system of adaptive management, and clear institutions and rules for transparent responsibilities and decision-making.
- The implementation and management phase begins with the legal establishment of the protected area and involves the full range of management activities such as business planning and management, visitor steering and infra-structure, marketing and day-to-day business decision making.

As all three protected areas that are discussed in the current report are already estab-lished, but lack to a broadly varying degree some of the basic and detailed planning steps, the following list of the Fields of Activity of PA management may serve as an input to further implementation of management steps:

Pre-Phase

FoA (Field of Activity)-1: Development of Idea and Vision. The idea of establishing a pro-tected area is often raised and developed by a limited number of people (stake-holders) dedicated to the conservation of biodiversity. By involving all relevant

stakeholders a broader vision has to be agreed upon in an extensive process of dis-cussion and debate.

FoA-2: Feasibility Check. Once the vision of developing a protected area is clear, the feasibility of its implementation is analysed by focusing on the regional situation in spatial, socio-cultural and economic dimensions. Potential problems or risks are iden-tified and balanced with the opportunities for the region stemming from the potential establishment of a protected area.

FoA-3: Communication and Participation I. Previously identified stakeholders are in-formed in an appropriate way and have the chance to become involved in the further planning process. Already at this stage, it is also crucial to involve potential opponents of the prospective protected area.

FoA-4: Incorporation into PA-Systems. The site to be developed as a protected area is envisioned to fit into the existing national (and international) protected areas system. Core functions and unique attributes of the intended protected area are identified.

Basic Planning

FoA-5: Planning Handbook. The basic planning processes of a protected area are set up as precisely as possible in order to avoid misunderstandings, mistrust, or potential flaws which consequences may multiply during the further planning and management of the site. The "road map" for the whole process can nevertheless differ con-siderably according to environmental, economic or legal conditions of a particular re-gion, and has, of course, to be adapted to changes in the relevant frameworks.

FoA-6: Communication and Participation II. Involving a broad range of stake-holders allows for a better understanding of the potential resistance and generally also in-creases the acceptance of the protected area. Key-players are identified, regularly informed and invited to contribute to the planning of the protected area.

FoA-7: Basic Investigation. All kinds of data and information are collected for the plan-ning process, such as ecological and economic data, GIS (Geographical In-formation System) and remote sensing data.

FoA-8: Implementation Planning. The implementation plan contains all basic information required for the (legal) designation of the protected area, for in-stance, fixed boundaries, proper zoning and a defined organisational structure. The implementation plan also has to correspond to the legal frameworks and the international re-quirements of the chosen protected area's category.

FoA-9: Designation and Establishment. The (legal, official) designation is the final act of the basic planning process. After a successful application the new protected area is nominated by national or European legislation and/or an international organisation (e.g. UNESCO, Ramsar Convention). The establishment includes the formal (legal) set-up of the protected area (e.g. legal and organisational implementation).

Detailed Planning

FoA-10: Mission Statement and Basic Concepts. Once a protected area is designated, it has to be pointed what it stands for. A mission statement highlights the core values and objectives of the site in a few words. A corporate identity is developed to express and promote the mission of the protected area.

FoA-11: Ecosystem-based Management Plan. An ecosystem-based management plan indicates how the habitats and species in the protected area can be used, developed and managed in order to achieve the conservation objectives. A monitoring system is established to measure the effectiveness of all management activities.

FoA-12: (Regional) Economic Programmes. Nature conservation does not necessarily prevent economic development. In contrast, protected areas often stimulate regional economic development as the PA often attracts tourists and provides a platform for presenting, promoting and selling regional products and services.

FoA-13: Specific Planning (Subsidiary Plans). Certain issues such as public and private transport and waste (water) treatment may affect a protected area. They are taken into account when planning and managing the site.

Implementation and management phase

FoA-14: Personnel & Organisational Development. A particular type of organisation (e.g. limited company, government body or authority, commu-

nity or NGO based man-agement) and professional staff are chosen to form the managing structures of the protected area. Specific emphasis lies on the management of change from organisa-tional as well as economic and ecological viewpoints.

FoA-15: Evaluating Management Effectiveness. The whole process of establishing a pro-tected area is monitored and evaluated, from site-based actions to broad political and policy reviews. SMART (specific, measurable, achievable, relevant, time-bound) indicators have to be defined which can easily be monitored.

FoA-16: Financing (Business Plan). Financing is one of the major concerns of protected areas. The expected earnings and expenditures are usually presented and forecast in a business plan. When planning the financial component of the protected area's business plan, the benefits the park to its customers (e.g. local and regional stake-holders, visitors) are to be considered. Innovative ways of funding are discussed and developed. A good mixture of funding sources can substantially widen the financial opportunities and independence for a protected area (financial sustainability of PAs).

FoA-17: Impact Assessment and Limitation. Protected areas may be affected by other infrastructure projects such as road construction, electricity production, industrial or housing development. In such cases, public authorities and, often, legal regulations, require an assessment of the environmental impacts on the parks ecology. Park staff may offer to pre-check a planned project. Therefore, clear procedures for impact as-sessment have to be established to ensure transparency and completeness of poten-tial impact assessment processes.

FoA-18: Data and Information Management. An ICT (Information and Communication Technology) system is developed according to the specific needs of the park in order to collect, store, control and disseminate information and data relevant to the pro-tected area.

FoA-19: Research Setting and Monitoring. It is generally advisable to prepare an over-view on the research already available or still required by the protected area. A long term monitoring programme is set up.

FoA-20: Communication and Participation III. All relevant stakeholders are permanently involved in the ongoing management activities (participatory management). However, a clear differentiation is made between decision-making, controlling, and consulting bodies, and informative groups of stakeholders. Differentiated technical information is provided to stakeholders, decision makers and the broad public.

FoA-21: Development of PA's Region. Developing the region of a protected area means that there will most likely be a need to adjust or develop regional strategies, policies, programmes and guidelines with the focus on social, economic and ecological sus-tainable development.

FoA-22: Co-operation Design. For the long term benefit of the protected area a strategic network is created with regional, national and international partnerships including, for instance, individuals, NGOs, governmental institutions, international bodies, and um-brella organisations.

FoA-23: Information, Interpretation & Education. With few exceptions, protected areas have the task of educating and raising public awareness regarding nature, ecology, sustainability and related issues. The core messages and target groups are clarified in order to plan and manage all educational and information activities.

FoA-24: Visitors, Services & Infrastructure. Visitor management, which includes regular ways of collecting feedback and opinions the PA's customers, is one of the main tasks of PA management. The needs of visitors, local tenants and residents are equally considered. A well balanced range of infrastructure and an adequate visitor programmes has to be provided. The behaviour, activities and spatial distribution of visitors as well as the feedback mentioned above is re-corded for strategic purposes.

FoA-25: Marketing and Public Relations. A professional marketing approach comprises several key elements, like client analysis, product definition, development and con-tribution, competition evaluation, strategic partnerships, campaigns and advertising. Protected areas can be promoted as a regional or even national "brand".

In all Fields of Activity, stakeholder participation may be considered, and is important for both efficient and effective PA management. Stakeholders may be included to a varying degree of participation:

- Information (basically one-way communication): Stakeholders are informed, and may also give feedback/responses to the information provided.

- Consultation (two-way communication): Stakeholders are involved in workshops, seminars, excursions, informal meetings, or may also be included in the concrete decision making processes, e.g. in a "national park forum" or another consulting or deciding body.

In addition, the regional development strategies and the park management plans have to consider each other, in the sense that while nature conservation is secured, the park contributes to regional development, for instance, by providing visitor infrastructure, information and education, recreation, and by setting up a business network in order to strengthen the regional economy by its demands for intermediate goods.

Regarding funding in general, the financial basis for all three parks considered below can only consists of public funds. With the examples of parks chosen, it seems that very so-phisticated PES (payment for ecosystem services) schemes are not warranted, except for compensation payments of land owners to comply with park regulations, and fees and charges for users of the parks.

3.2 Conclusions and recommendations for Tatra National Park

The Tatra National Park (PL) is certainly one of the well-established and managed pro-tected areas in Poland as well as in the Carpathian region. The park administration is fully established, nature conservation plans and policies are effective, and financing is secured. The authority of the park management over the park's area is fully acknowl-edged, and the park also has a range of own revenues complementing the substantial government's funding.

If recommendations are justified, they may be formulated in two directions:

4. Future policies should clearly focus on strictly implementing national park (con-servation) policies according to IUCN's category II; that means that no compro-mises should be allowed in or near park boundaries. The region of Zakopane is one of the major tourist regions in Poland and Eastern Europe. A strict observation of national park regulations does not deter visitors from coming to the area.
5. Funding may be extended by increasing the entry fee of tourist tickets, and by charging a tourism tax (with an addition to the costs of an overnight stay in the region). Both funding instruments have the advantage that the systems are al-ready in place. If the government of Poland decides to extend the own funding of the park, these two options of already existing system should be discussed fur-ther.

Regarding regional development in general, the valuation study (Getzner, 2010a) high-lighted that visitors spend their holidays in the region for several reasons that are not closely connected to the existence of the national park. It might be advisable, also regarding the acceptability of further fees or taxes benefiting the national park, that even more information on the national park and its objectives are distributed among visitors.

3.3 Conclusions and recommendations for Slovensky Raj National Park

The Slovensky Raj National Park (SK) faces a number of problems which are also hinder-ing regional development and funding of the park. Most important, the national park is acknowledged only by national law but is far from being internationally recognized.

The valuation study showed that forestry is a major economic activity within the park's boundaries. While some parts of the area are conserved based on the EU's Natura 2000 frameworks, the rest of the area is commercially used. Therefore, one crucial ingredient for the international recognition of the park as a "national park" is not fulfilled. In es-sence, this problem has its origin in the institutional set-up of the national park and its administration. The current management of the park has basically no authority regarding the decisions of land-use within the park's boundaries, and also has no substantial funds to finance management activities.

Therefore, a major precondition for supporting regional development and sustainable financing is not met in the park. Suggestions for improvement include:

6. Establishment of an institutional system with strict authority and, thus, also re-sponsibility of the national park administration to design and implement a man-agement plan and organization in accordance with IUCN's criteria for a national park (category II). This refers especially to the decisions which activities take place within the

park boundaries (visitor steering and use of infra-structure; for-estry).

7. Sufficient funding for a national park administration; this can be financing by na-tional government funds, but also by international donors and project acquisition. Furthermore, the possibilities to charge local taxes (e.g. surcharge on the user fees of visitor infrastructure) should be used. The charging systems are already in place, and the number of annual visitors is substantial so that funds may be crucial for the financing of the administration.

Regarding funding, it has also to be discussed whether the forest company now respon-sible for forestry within the park's boundaries has to be compensated, or whether the Slovak government accepts the foregone revenues of forestry by allowing for sustainable or national park conforming forestry.

Regarding regional development, the national park administration does not seem to cur-rently have a stake in regional development. For using the park for regional develop-ment, however, it is important to build up a formal and informal communication and cooperation platform with the regional planning authorities as well as all regional stake-holders.

3.4 Conclusions and recommendations for Maramures Mountains Natural Park

The problems described in section 3.3 regarding the lack of financing and authority in Slovensky Raj National Park are even worse and more fundamental in the Maramures Mountains Natural Park. While the park's administration has established regular commu-nication with the regional planning authorities, this communication does not seem to be binding in the sense of a strong commitment.

However, more fundamental are the problems of financing of the park. Sometimes over months, the lack of financing leads to the problem that park staff is not paid, or is paid with a delay of several months. The lack of authority of the park administration regarding land use and land use rights is also a fundamental problem. The lack of authority not only concerns decisions on the park's area. It also refers to the lack of authority of the park's management to apply for funds, and to communicate as a legal entity. For instance, all applications for funding or for projects have to be taken over by other authorities. The processes seem therefore to be bureaucratic, inefficient and ineffective.

Before discussing regional development or sustainable financing of the park, a number of key issues have to be addressed:

8. Establishment of a park administration with authority over land use, and with a legal authority to apply for funds and projects, and to discuss with all stakeholders in the very role of the park's managers.

9. Clarity about the different aims and objectives of the Maramures Mountains Natu-ral Park, and discussion about the "correct" assignment of the protected area as a natural park. The ecologically valuable area extends to the neighboring country of Ukraine. It should therefore be of highest priority to consider other options of designing an international protected area.

10. At least, the park's administration has to be funded sufficiently, otherwise, all na-ture conservation efforts will be ineffective since management and monitoring of all activities (e.g. by private landowners) cannot be implemented.

Interestingly, the Maramures Mountains Natural Park has a detailed management plan (MMNP, no year), and according to the UNDP's (2004) report, an efficient management authority should be in place at the latest by 2009. The recent problems of funding the park's administration point to the lack of implementation of the different plans.

The park's existence has been acknowledged in the different planning documents only to a marginal extent. The most recent document, the Development Strategy of Mara-mures – Ivano – Frankivsk – Zkarpattia cross border region (County Council of Maramures, 2009) addresses many important issue of development but lacks a comprehen-sive understanding of the value of the natural heritage in the Maramures mountains. The existence of the mountains is considered as a weakness because the hilly landscapes are a barrier to efficient agriculture (see page 12 of the document). The vast area of undis-turbed nature, the richness in species diversity, are not mentioned in the report as an asset on which substantial regional development and cooperation between Romania and Ukraine may be built.

Unfortunately, the other planning documents do not take into account the substance of the natural park as a large protected area. The regional plan for Romania (Ministry of European Integration, 2007)

acknowledges the landscape diversity and natural assets in the region in just one sentence, and there is also no reference to the potentials of re-gional development based on the Maramures Mountains Natural Park.

The most pressing recommendations for the Maramures Mountains Natural Park can therefore be the following:

11. Establishment of an effective and sufficiently funded management of the park with authority on the park's areas, clear property rights, and an authority on its own to apply for funds and projects.
12. Revision of the existing planning documents and initiation of a debate, both public and between stakeholders how the protected area may be used for the promotion of regional development.
13. Establishment of an effective system of compensation payments of private land owners (PES scheme) so that the management plans of the park's administration can be implemented.

1) The following paragraphs are taken and adapted from Getzner (2010).

2) Section 2.4.4 is based on Getzner et al. (2010).

3) For the following, see Getzner et al. (2010), and www.ipam.info.

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DISCLAIMER

This report was written based on good scientific conduct with the latest methodo-logical approaches available. All data sources have been indicated properly. However, the author cannot guarantee flawlessness of all data and results presented in here. Therefore, no claims can be accepted that may stem from the use of the results. The copyright of the report lies with the author, copying or using the report requires written approval by the author.

The conclusions and opinions presented in this report do not necessarily represent those of Klagenfurt University, WWF DCP or the park administrations.

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