The importance of tourism for the regional costs and benefits of national parks – the case of Bavarian Forest National Park, Germany

Marius Mayer, Ernst-Moritz-Arndt Universität Greifswald, Germany, marius.mayer@uni-greifswald.de

Introduction

For a number of years, national parks in Germany have been recognized as major attractions for nature-based tourism which generates considerable income and employment possibilities for the mostly peripheral and structurally weak communities surrounding protected areas (MAYER et al. 2010; WOLTERING 2012). However, the economic impact studies of national park tourism fall short of comparing the tourism benefits with the costs caused by national parks, being direct costs (i.e. in terms of state expenditures for park staff and investments), indirect costs (i.e. bark beetle damage in commercially managed forests adjacent to parks) or opportunity costs (i.e. the forgone income of timber sales and production impeded by the protected area) (DIXON/SHERMAN 1990). Additionally, as tourism constitutes only one of several benefits of national parks, the importance of tourism compared to other benefit categories (i.e. impact of park expenditures, ecosystem services, non-use values etc.) is widely unknown. Furthermore, the economic impact of tourism derived from the park visitors' expenditure is not the only tourism-/recreation related benefit category of protected areas. The recreational value - that is the consumer surplus of park visitors being not charged any entrance fees for recreation in German national parks - has so far been largely overlooked in Germany. Nevertheless, visitors are definitely attributing value to this public good which is proven for instance by the costs borne in travelling to national parks and the opportunity costs of time (forgone income because of not working while abroad) (MAYER 2013, 2014).

In order to overcome the shortcomings of existing research a comprehensive cost-benefit-analysis of a national park focusing on the regional level of its neighboring counties is presented in this study. It seeks to answer the following research questions:

(1) Which costs and benefits of national parks occur on a regional scale?
(2) Which share of park benefits can be attributed to tourism?
(3) Which share of park costs can be covered by tourism benefits?

The survey area of the presented study is the oldest and most well-known German national park, the Bavarian Forest National Park, established in 1970 in a densely wooded mid-mountain range and its two surrounding counties, Freyung-Grafenau and Regen.

Methods

Cost-benefit-analysis (CBA) as a standard tool in environmental valuation compares the discounted costs and benefits of a project in a given timeframe and measures its net present value (NPV) which

should be higher than zero in order to achieve an economic justification. The input data of the CBA are derived from a wide range of valuation approaches including an economic impact analysis of tourism, a travel-cost model, contingent valuation, a budget analysis of the park, modelling of opportunity and indirect costs etc. The valuation tasks are again based on several empirical surveys, for example a large-scale visitor survey (>10,000 short and ~2000 long interviews), an enterprise survey in the counties surrounding the park, qualitative interviews with foresters, forest owner associations and sawmill operators (>40 interviews), as well as an extensive literature review and secondary data research. The alternative scenario required by a CBA is based on the very likely assumption that the area would be a regularly managed state forest in case that the national park would not exist. The methodology is explained in full detail in JOB/MAYER 2012 and in MAYER 2013, 2014.

Results and discussion

Table 1 shows that the regional benefits of the Bavarian Forest National Park surpass its costs in both the maximum and the minimum scenario with benefit-cost-ratios >1. The direct costs are mostly paid by the Bavarian State Government and not by regional institutions. These state expenditures for staff wages, park management and investments provide an enormous benefit for the park region, as the majority of the staff (in total ~190 full-time employees) lives nearby and thus spends their income mostly in the park surroundings. The opportunity costs of forestry and timber industry are smaller than on the national economic perspective, because only staff wages and the (limited) investments of the state forest remain in the survey area as the profits are transferred to the state budget. In contrast, the economic impact of tourism remains in the region to a much higher extent. However, its size varies with differing assumptions of the role of the national park for the trip motivation. The consumer surplus of park visitation is rather limited on the regional scale, as only the consumer surplus of local visitors is considered here – the consumer surplus of overnight visitors occurs per definition in the source areas of these visitors. In general, the national park is economically justified from the regional economic perspective. The region profits from the park's existence and receives net gains in income and employment through state expenses and tourism.

Table 1: Regional cost-benefit-analysis scenario 2007

Costs (million EUR)				**Benefits (million EUR)**		
		REG MAX	**REG MIN**		**REG MAX**	**REG MIN**
Direct costs		2.364	2.364			
Indirect costs		0.363	0.041			
Opportunity costs	Economic impact of state forest expenditures	0	0	Economic impact of park expenditures	9.253	9.253
	Productive use (forestry and timber industry)	6.810	5.450	Productive use (forestry and timber industry)	1.822	1.492
	Economic impact of tourism	5.120	2.870	Economic impact of tourism	13.150	1.369
	Recreational value (consumer surplus)	0.135	0.046	Recreational value (consumer surplus)	0.135	0.046

	Ecosystem services	4.564	0	Ecosystem services	4.564	0
	Non-use values	0	0	Non-use values	1.739	0
SUM		**19.356**	**10.771**	**SUM**	**30.663**	**12.160**
Benefits minus costs REG MAX				**+11.307**		
Benefit-cost-ratio REG MAX				**1.584**		
Benefits minus costs REG MIN				**+1.389**		
Benefit-cost-ratio REG MIN				**1.129**		

Source: adapted from Mayer 2013, p. 442

Tourism contributes between 11.7 and 43.3 % of the park benefits, which is lower than on the German national economic level due to the limited recreational value of the park on the regional level. However, without tourism benefits the park's regional NPV would most likely be negative. Tourism benefits also cover between 13.1 and 68.6 % of the park's cost on the regional level, which for the same reasons is again a lower share compared to the national level. The strong variability of these shares is due to the general question whether the economic impact of all park visitors should be taken into account (maximum scenario) or just the impact generated by those who would not have visited the region if the national park did not exist (minimum scenario).

All in all, tourism benefits constitute important parts of the benefits of Bavarian Forest National Park and contribute significantly to a positive economic valuation of the park on the regional level. However, the relative importance of tourism benefits is even higher on the national level where the consumer surplus of overnight visitors generates considerable societal benefits (MAYER 2014). Furthermore, on the national level the economic impacts of park expenditures are not taken into account because they show distributive effects.That means, the state could spend this money also for other purposes in other regions if the national park did not exist, which would also lead to a comparable economic impact.

References

Dixon, J.A., Sherman, P.B. (1990): Economics of protected areas. A new look at benefits and costs. Washington, DC: Island Press.

Job, H., Mayer, M. (2012): Forstwirtschaft versus Waldnaturschutz: Regionalwirtschaftliche Opportunitätskosten des Nationalparks Bayerischer Wald. In: Allgemeine Forst- und Jagd-Zeitung 183 (7/8), 129-144.

Mayer, M. (2014): Can nature-based tourism benefits compensate for the costs of national parks? A study of the Bavarian Forest National Park, Germany. In: Journal of Sustainable Tourism 22 (4), 561-583. doi: 10.1080/09669582.2013.871020.

Mayer, M. (2013): Kosten und Nutzen des Nationalparks Bayerischer Wald - eine ökonomische Bewertung unter Berücksichtigung von Tourismus und Forstwirtschaft [Costs and benefits of Bavarian Forest National Park. An economic valuation including tourism and forestry]. München: Oekom.

Mayer, M., Müller, M., Woltering, M., Arnegger, J., Job, H. (2010): The Economic Impact of Tourism in Six German National Parks. In: Landscape and Urban Planning 97 (2), 73-82.

Woltering, M. (2012): Tourismus und Regionalentwicklung in deutschen Nationalparken [Tourism and regional development in German national parks]. Würzburg: Institut für Geographie und Geologie. URL: http://opus.bibliothek.uni-wuerzburg.de/volltexte/2012/7189