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Contents

List of Figures and Photos

List of Tables

Preface and Acknowledgements

This monograph is the result of Polish-German cooperation within the INT107 project (acronym: REGE). The project was carried out between 2018 and 2022 under the title "Cross-border cooperation between universities and large-scale protected areas in the Pomerania Euroregion (Ger.: *„Grenzüberschreitende Zusammenarbeit von Hochschulen und Großschutzgebieten in der Euroregion Pomerania"*, Pol.: *„Współpraca transgraniczna między uczelniami i dużymi obszarami chronionymi w Euroregionie Pomerania"*). The project was co-financed by the European Union from the European Regional Development Fund (ERDF) as part of the Interreg V-A Mecklenburg-Vorpommern/Brandenburg/Poland Cooperation Programme.

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1. Introduction

1.1. Relevance and motivation for the project

Biodiversity loss is one of the most important global challenges of our time. Factors causing the observed significant decline in biodiversity include loss of habitats, the spread of invasive alien species, overexploitation of natural resources, pollution, the impacts of climate change related to global warming, and others (IPBES, 2019). The existing and newly-created protected areas (PAs) are seen as an opportunity for humankind to preserve nature's assets in a non-degraded condition for future generations to benefit from ecosystem services (Lopoukhine et al., 2012; Maxwell et al., 2020). Globally, the number and total area of PAs have increased significantly in recent years, as noted by the World Database on Protected Areas (UNEP-WCMC and IUCN, 2022). Meanwhile, the international community is constantly monitoring progress in achieving the ambitious biodiversity targets (UNEP-WCMC and IUCN, 2020) by using the relevant instruments such as data collection procedures and tools, databases, data analysis and evaluation methods, and means of ensuring data comparability. At the same time, PAs create conditions that favour the development of nature-based tourism, education and research, and are perceived as possible drivers of regional development (Job et al., 2005, 2008; Woltering, 2012; Mayer, 2013). However, protected areas are also often objects of contention, conflict, and resistance, mainly articulated by the local population living inside or adjacent to their boundaries, which could put their nature protection aims at risk (Allendorf, 2022).

Global problems and challenges should be addressed by undertaking appropriate actions on a regional and local level, also through international cooperation. Euroregions, the main objective of which is to remove barriers introduced by national borders, are one of the many forms of regional cross-border cooperation in the European Union. There are four Euroregions along the Polish-German border, namely (from the south to the north): The Neisse Euroregion, the Spree-Neisse-Bober Euroregion, the Pro Europa Viadrina Euroregion, and the northernmost Pomerania Euroregion. The Pomerania Euroregion comprises on the German side the north-eastern part of the federal states of Brandenburg and the eastern part of Mecklenburg-Vorpommern, and on the Polish side the entire area of Zachodniopomorskie Voivodship (Pol.: *województwo zachodniopomorskie*). This region is characterised by a relatively weak economic structure and low industrial development (Kommunalgemeinschaft Europaregion Pomerania e.V., in Kooperation mit dem Verein der polnischen Gemeinden der Euroregion Pomerania, 2020, pp. 19, 39). The gross domestic product (GDP) per capita in both

the German and Polish parts of the region is well below the average for these countries, with the German side of the Euroregion reaching only approx. 70% of Germany's GDP, while Zachodniopomorskie Voivodship attains approx. 80% of Poland's. Among other consequences, these phenomena are contributing to the outmigration of young, skilled persons.

One of the Euroregion's strengths lies in its rich natural and cultural heritage creating excellent conditions for the development of tourism. Tourism is a very important economic factor for the two parts of the Pomerania Euroregion, reflected, for example, in both Mecklenburg-Vorpommern and Zachodniopomorskie Voivodship being among their countries' most important national tourist destinations (Statista, 2021; GUS, 2021b, p. 18). The importance of the natural wealth and tourism in the Pomerania Euroregion's constituents is emphasised not only in the national concepts and strategies (SRWZ, 2019; Vorpommern-Strategie, 2021), but also in documents regulating cross-border relationships (Zathey et al., 2016).

The natural wealth of the Pomerania Euroregion derives, in particular, from its large-scale PAs. Such areas include PA categories common to both countries, such as national parks and biosphere reserves, and PA categories that have no counterpart in the neighbouring country, such as Poland's landscape parks (Pol.: *parki krajobrazowe*) and Germany's nature parks (Ger.: *Naturpark*). The importance of large-scale PAs is demonstrated by the fact that there are 22 such units in the Euroregion covering a total area of 920,000 ha, amounting to approx. 25% of its entire surface area (Kommunalgemeinschaft Europaregion Pomerania e.V., in Kooperation mit dem Verein der polnischen Gemeinden der Euroregion Pomerania, 2020, p. 57). Because of their size, functions, and the numbers of visitors, they have a significant impact on the region, including its image and economy (Mayer et al., 2019). The enormous role of PAs, including national parks, is evidenced by the fact that Poland's 23 national parks were visited by 13.4 million people in 2020 (GUS, 2021a, p. 119), compared to 53.1 million visitor days in their 16 German counterparts (Job et al., 2016).

As elsewhere in the world (see Allendorf, 2022), the Pomerania Euroregion's PAs sometimes attract conflict and face resistance in their communities. The same happens whenever plans are made to create new PAs or expand the existing ones, as is clearly shown by the fact that after 2002 no national park has been created in Poland and the existing parks have only seen some slight expansion. The ongoing discussion invokes arguments that such parks entail land use limitations and restrictions for farmers, companies (including tourism enterprises), anglers, fishermen, hunters, and local authorities, or that there is no subjective acceptance for the protected area in the local community (NDR, 2021; Reimer, 2020; Mickiewicz, 2015, swinoujskie.info, 2017, p. 3; Vössing, 1999). This could be related to the fact that substantive arguments about the economic and social impacts of PAs are only very seldomly raised.

1.2. State of research: an overview

Although Poland and Germany have been cooperating within the European Union for more than 18 years and resolving their shared problems as part of the Pomerania Euroregion for more than 27 years now, they have been unable to develop common methods for data collection, analysis, and evaluation with regard to the socio-economic impacts of their PAs. This has been the case despite the extensive cooperation between the neighbouring parts of the PAs in Poland and Germany.

In Germany, a widely used method for estimating the regional economic impact of tourism in large-scale PAs has been established by Professor Hubert Job and his team at the University of Würzburg (Job et al., 2005, 2008, 2016). Based on this method, also applied by other researchers, the economic impact of tourism in all German national parks has been estimated, while the results for all biosphere reserves are currently being finalised. In Poland, however, estimations of socio-economic impacts for every national park are not commonly made, and where such studies are actually carried out no standardised methods are used (Mika et al., 2015; Nocoń et al., 2020; Zawilińska, 2020). Although this approach does offer certain benefits in terms of the enrichment of science and the development of research tools, it makes it impossible to directly compare the results of different studies. This gap prevents any comparison of economic effects between the PAs in Poland, and between those in Poland and Germany, even if they are located next to each other and operate within a single Euroregion (e.g. the National Parks Warta Mouth in Poland and Lower Oder Valley in Germany).

Although the approach established by Job and his team is widely recognised among the entities managing German PAs, it cannot be used on the Polish side of the Euroregion without some additional in-depth, and hence costly, research. The reason for this is that this method uses regional multipliers (actually value-added ratios) in the individual protected area regions analysed. These multipliers are estimated through very expensive studies, which are carried out in Germany by a specialised market research institute (dwif-Consulting GmbH[1]). In Poland, such multipliers are not estimated and are therefore only available for the German part of the Pomerania Euroregion.

Thus, there is a gap in the form of a missing tool allowing for a uniform estimation and evaluation of the economic impact generated by PAs along the entire Polish-German border. It would be desirable if methods were developed for harmonising estimations of the economic impact generated by protected area visitation on both sides of the border, while taking into account the widespread shortage of funds. Furthermore, it would be appropriate to simplify the method for estimating the economic impact exerted by protected area visitation to not only achieve scientific benefits but above all enable the recurring monitoring of the socio-economic situation of large-scale PAs (Woltering, 2012) – thus making it a practical tool.

[1] Deutsches Wirtschaftswissenschaftliches Institut für Fremdenverkehr an der Universität München.

The abovementioned conditions gave a stimulus for the Pomerania Euroregion's universities and the administrative bodies of its PAs to take action and address the identified problems and research/knowledge gaps. The desirability of cross-border actions exploring the socio-economic realities of these PAs also stemmed from past shared experiences and the conclusions drawn over the course of cooperation between the stakeholders. Examples of fruitful cooperation in the Polish-German borderland undertaken by the universities and the administrative authorities of the PAs implemented in the Pomerania Euroregion include:

- the project carried out in 2013–2014 titled "The socio-economic realities of cross-border tourism in the Pomerania Euroregion as exemplified by Wolin National Park" (Ger.: *„Sozioökonomische Determinanten der grenzüberschreitenden Tourismus in Euroregion Pomerania am Beispiel des Nationalparks Wolin"*; Pol.: *„Społeczno-ekonomiczne uwarunkowania turystyki transgranicznej w Euroregionie Pomerania na przykładzie Wolińskiego Parku Narodowego"*), which focused on establishing the attractiveness for German tourists of areas with high conservation value in Poland (Zbaraszewski et al., 2014),
- the ReeT project titled "The regional economic effects of national park tourism as illustrated using the example of Drawa National Park", which was carried out in 2018–2019 and was a pioneering attempt to estimate the regional economic impact of tourism of a Polish national park using the approach established by Job et al. (Zbaraszewski & Pieńkowski, 2022),
- the TAPA project – *Tourist Activities in Protected Areas*, which focused on empirical research in the Polish-German borderland with particular regard to cross-border and nature tourism between Poland and Germany, in particular concentrating on Poland's Warta Mouth National Park and Germany's Lower Oder Valley National Park (Mayer et al., 2019).

The experience gained while implementing these and other projects created favourable conditions for an in-depth discussion. The discussion and the resulting arrangements helped to establish ties between representatives of five universities and 16 PAs located in the Polish-German borderland (Table 1.1). In this way, a Polish-German project team came to life which developed the project titled "Cross-border cooperation between universities and large-scale PAs in the Pomerania Euroregion", known as REGE (*Projekt INT107 – REGE*, 2022).

Apart from the aforementioned research gaps, during the conceptual stage of the project a multitude of barriers were highlighted that prevent any enhanced cooperation within the framework of the Pomerania Euroregion in the context of the socio-economic realities of the PAs[2]. For instance, substantial dissimilarities between and an uneven accessibility of the gathered data, as well as a lack of uniform data collection and subsequent analysis methods, were pointed out. These problems make the evaluations prepared for the particular PAs located on one or

[2] During the conceptual stage of the project, 31 cross-border meetings were held involving representatives of universities and protected areas. A team of these representatives, in the course of numerous discussions and consultations, developed a joint project proposal covering the main research questions.

Table 1.1. INT107 – REGE project partners

The German part of the Pomerania Euroregion	The Polish part of the Pomerania Euroregion
The universities	
• University of Greifswald (Ger.: *Universität Greifswald*) • Eberswalde University for Sustainable Development (Ger.: *Hochschule für nachhaltige Entwicklung Eberswalde)*	• University of Szczecin (Pol.: *Uniwersytet Szczeciński*) • West Pomeranian University of Technology in Szczecin (Pol.: *Zachodniopomorski Uniwersytet Technologiczny w Szczecinie*) • Poznań University of Life Sciences (Pol.: *Uniwersytet Przyrodniczy w Poznaniu)**
Large protected areas – associated partners	
• Lower Oder Valley National Park (Ger.: *Nationalpark Unteres Odertal*) • Jasmund National Park (Ger.: *Nationalpark Jasmund*) • Western Pomerania Lagoon Area National Park (Ger.: *Nationalpark Vorpommersche Boddenlandschaft*) • Southeast Rügen Biosphere Reserve (Ger.: *Biosphärenreservat Südost-Rügen*) • Schorfheide-Chorin Biosphere Reserve (Ger.: *Biosphärenreservat Schorfheide-Chorin*)	• Drawa National Park (Pol.: *Drawieński Park Narodowy)* • Warta Mouth National Park (Pol.: *Park Narodowy Ujście Warty)** • Wolin National Park (Pol.: *Woliński Park Narodowy*) • West Pomeranian Voivodship Landscape Parks Complex (Pol.: *Zespół Parków Krajobrazowych Województwa Zachodniopomorskiego*), which oversees: – Ińsko Landscape Park (Pol.: *Iński Park Krajobrazowy*) – Drawsko Landscape Park (Pol.: *Drawski Park Krajobrazowy*), – Cedynia Landscape Park (Pol.: *Cedyński Park Krajobrazowy*), – "Beech Woods" Szczecin Landscape Park (Pol.: *Szczeciński Park Krajobrazowy "Puszcza Bukowa"),* – Warta Mouth Landscape Park (Pol.: *Park Krajobrazowy Ujście Warty*), – Barlinek-Gorzów Landscape Park (Pol.: *Barlinecko-Gorzowski Park Krajobrazowy*), – Lower Oder Valley Landscape Park (Pol.: *Park Krajobrazowy Dolina Dolnej Odry*), • Białowieża National Park (Pol.: *Białowieski Park Narodowy)**

* a partner not from the Pomerania Euroregion.
Source: own elaboration.

the other side of the Polish-German border hardly comparable. Also, problems with the local communities' acceptance of the PAs related to them being designated based on ecological criteria were indicated. It was stressed that in order to

overcome, or at least to better understand, the frequent community resistance towards PAs, it is not natural sciences research but rather social sciences research that is required. Thanks to such research, appropriate action could be taken to raise awareness among local communities in areas with identified deficits. Moreover, the results of the research could be used to enrich any discussion on the future of PAs by raising substantive arguments invoking the regional needs and interests of the local population.

The rich literature on acceptance analysis is evidence to the enormous importance of social and economic issues in the discussions about PAs. Job et al. (2016, p. 36) points out that the aim of research on regional economic impact of PA tourism is not to push into the background the idea of large-scale PAs as a means of conserving nature, but rather to show that research about the regional economic impact generated by these areas provides excellent arguments for their establishment and preservation. The literature stresses the importance of demographic, spatial, and educational factors as playing a key role in winning over the local communities for the idea of a protected area (Mbise et al., 2021). As for research carried out in Europe, work on the opposition of local communities to PAs (Stoll-Kleemann, 2015; Stoll-Kleemann et al., 2013; Hibszer, 2013), and cost-benefit analyses of PAs (Mayer, 2013), deserve special attention. Researchers point to the benefits of a protected area depending on its protection category (Dudley, 2008), indicating the need for further research into estimating the regional economic impact exerted by PAs (Mayer et al., 2010). Eagles et al. (2000, p. 75), based on research conducted in Canada and the US, conclude that "the economic impact of parkland use and the value placed on it by society is large and under-reported. If this important economic impact is to be used in shaping public policy, it would be more effective if information about it were developed in a coordinated and professional fashion across the two countries".

Both parts of the Pomerania Euroregion are traditional tourist destinations in their respective countries, resulting in the tourism industry being perceived as crucial for the entire Euroregion. The region derives its tourism potential from both the attractiveness of the Baltic Sea and the natural qualities of its PAs that are frequented by those who seek the enjoyment of their exceptional natural beauty. The numbers of visitors to, say, Jasmund National Park, Western Pomerania Lagoon Area National Park (Job et al., 2016), and Wolin National Park (Partyka, 2010) are evidence of the region's popularity. However, the tourist flow, which goes into the millions, is largely limited to the summer season. This is likely to cause a perception of overcrowding, thus reducing visitor satisfaction. In order to ensure that the tourists visiting these sites are satisfied with their stay, the parks' stakeholders – in particular the authorities – must gain an insight into the visitors' expectations and the experience they get. The literature contains examples of research into visitor satisfaction, whereby the PAs' qualities affecting the level of satisfaction are identified and assessed (Agyeman et al., 2019; Ranasinghe et al., 2019; Geng et al., 2021) and the tourists' expectations explored, thus allowing for the optimal allocation of resources and provision of services (Bushell & Griffin, 2006). Through such studies, opportunities are created that enable the

visitors to derive the benefits they expect (Crilley et al., 2012). Overall, visitor satisfaction is considered as one of the most important indicators characterising a given tourist destination and has the potential to drive tourism development in the area (Rodger et al. 2012; Wang 2016).

Our overview of the literature, and the information we obtained from the authorities of the Pomerania Euroregion's PAs, indicate that there is a shortage of studies assessing visitor satisfaction, in particular for the landscape parks in the Polish part of the region. Moreover, as incompatible data collection methods have been used and diverse questions asked in the surveys, the results of the research conducted in some parts of the Euroregion do not lend themselves to reliable comparison. Hence, although the PAs are part of the same region, the fact that they lie on opposite sides of the border have thus far made any comparative visitor satisfaction studies impossible. In this context, the cross-border tool that we created (our survey) and the studies that we conducted constitute a novel approach to measuring visitor satisfaction in PAs and bridge the identified research gap.

Although many publications highlight the importance of research about the socio-economic realities of large-scale PAs, and despite the observed progress in these topics worldwide, our literature overview shows that these issues are hardly ever addressed in the context of the German-Polish border. For the countries forming the Pomerania Euroregion, namely Germany and Poland, there are no common methods for collecting and analysing data on park–people relationships.

1.3. Main objectives of the project

Solving problems common to both parts of the Euroregion with regard to the functioning of PAs requires cross-border cooperation, while efforts should be made to overcome the existing barriers and restrictions using shared data collection tools and jointly developed data analysis methods, while taking advantage of synergies. In order to address this challenge, we decided that the main scientific objective of the REGE project would be to work out common methods for collecting, analysing, and evaluating data on the social and economic impacts of large-scale PAs. This objective was pursued in three research areas:

1. an analysis of park–people relationships, studying the relationships between the large-scale PAs and the respective local population,
2. a visitor satisfaction analysis, studying the degrees of the visitors' satisfaction with their stay in the PAs,
3. an analysis of the regional economic impact of park visitation, estimating the monetary benefits for the region resulting from visitor spending within the PAs or in the PA region.

The results of such research will be presented to the general public, which will hopefully improve local people's attitudes towards these protected areas. This will correspond to greater opportunities for a better functioning of the Pomerania Euroregion.

To accompany the main objective of the REGE project, the following specific objectives were conceived:

- to improve cross-border cooperation between the participating universities with regard to the functioning of the PAs, for example by engaging in joint efforts to solve scientific problems and run joint events (workshops, seminars),
- to mutually get to know and help improve the conditions under which the PAs operate in the cross-border context, due to the fact that all PAs face similar problems: insufficient funding and a shortage of staff in relation to the needs, a low number of visitors from the neighbouring country, and a shortage of arguments confirming that the benefits of protected areas go beyond the environmental realm,
- to transfer knowledge on the socio-economic impacts of the PAs and on the comparability of databases in order to allow for more in-depth conclusions to be drawn for the Euroregion as a whole.

1.4. Overview of empirical approaches and methods used

The research process used a broad variety of methods supporting the accomplishment of the project objectives. Quantitative and qualitative methods were applied, which used primary and secondary data sources. Empirical research conducted in the form of surveys was the main source of primary data. The evaluations made in the REGE project were carried out for fifteen large-scale PAs in the Pomerania Euroregion (see Figure 1.1), i.e., six national parks, seven landscape parks, and two biosphere reserves, the scope of which is shown in Table 1.2. The surveys mainly made use of the CAPI (*computer-assisted personal interviewing*) method for an analysis of visitor satisfaction and of issues related to the COVID-19 pandemic, as well as the CATI (*computer-assisted telephone interviewing*) method for the park–people relationship analysis and for pilot studies related to estimating the regional economic impact of park tourism. All surveys of the REGE project were carried out on the basis of questionnaires developed during our cross-border workshops.

Table 1.2. Scope of research carried out in the Pomerania Euroregion's PAs as part of the REGE project.[3]

Large-scale protected area	Park–people relationships	Visitor satisfaction analysis	Economic impact assessment of park visitation	Effects of COVID-19 on park visitation
Polish part of the Pomerania Euroregion				
Barlinek-Gorzów Landscape Park[4]	■			■
Cedynia Landscape Park	■	■		■
Drawa National Park	■	■		
Drawsko Landscape Park	■			■
Ińsko Landscape Park	■	■		
Lower Oder Valley Landscape Park	■			■
Warta Mouth Landscape Park	■			■
Warta Mouth National Park	■	■		■
"Beech Woods" Szczecin Landscape Park	■	■		
Wolin National Park	■	■	■	■
German part of the Pomerania Euroregion				
Lower Oder Valley National Park	■			
Jasmund National Park	■	■		
Western Pomerania Lagoon Area National Park	■	■		
Southeast Rügen Biosphere Reserve	■			
Schorfheide-Chorin Biosphere Reserve			*	■

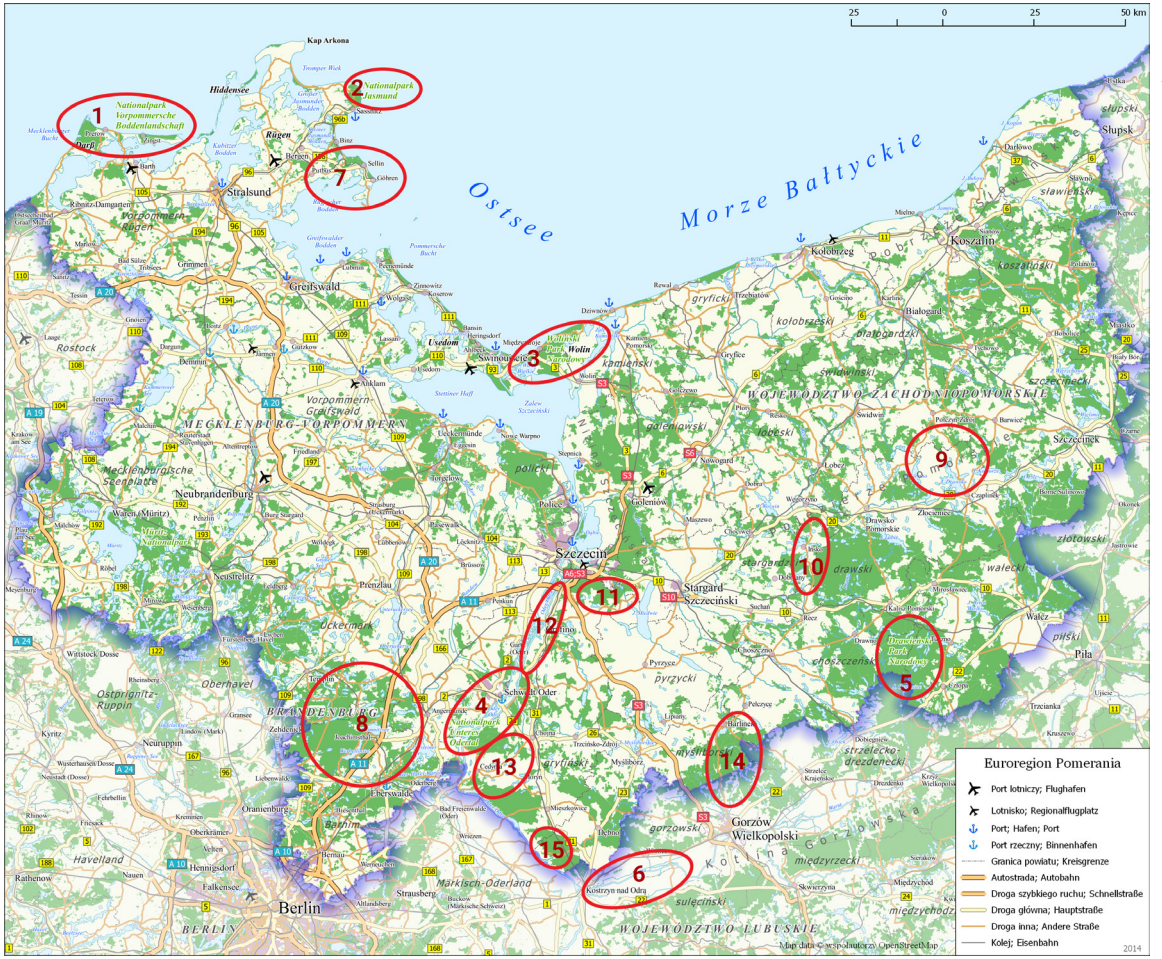
* incl. economic impact assessment of tourism businesses.
Source: own elaboration.

1.5. Book outline

The outline of this publication is influenced by the main objective of, and the challenges faced by, the project. It consists of seven chapters presenting the results of social science research carried out for 15 large-scale PAs in the Pomerania Euroregion (see Figure 1.1). The monograph's structure follows the fundamental research issues of the visitor satisfaction analysis, park–people relationship

[3] The need for and scope of research in a given protected area was discussed each time during joint cross-border meetings also involving the park authorities.

[4] In 2020–2021, organisational changes were made in Barlinek-Gorzów Landscape Park. In September 2020, the part of the park situated in Zachodniopomorskie Voivodship was transformed by the Zachodniopomorskie Voivodship Assembly into Barlinek Landscape Park. Its remaining part situated in Lubuskie Voivodship was converted in April 2021 by the Lubuskie Voivodship Assembly into Gorzów Landscape Park, and the park is now supervised by the Head of the Lubuskie Voivodship Landscape Park Complex. Despite these transformations, its former name, i.e., Barlinek-Gorzów Landscape Park, is used here, as the surveys were conducted before this change took place.



National parks:
1) Western Pomerania Lagoon Area
2) Jasmund National Park
3) Wolin National Park
4) Lower Oder Valley National Park
5) Drawa National Park
6) Warta Mouth National Park

Biosphere reserves:
7) Southeast Rügen Biosphere Reserve
8) Schorfheide-Chorin Biosphere Reserve

Landscape parks:
9) Drawsko Landscape Park
10) Ińsko Landscape Park
11) "Beech Woods" Szczecin Landscape Park
12) Lower Oder Valley Landscape Park
13) Cedynia Landscape Park
14) Barlinek-Gorzów Landscape Park
15) Warta Mouth Landscape Park

Figure 1.1. Protected areas in the Pomerania Euroregion surveyed in the REGE project. Source: Elaborated by the author based on the Pomerania Euroregion (2014).

analysis, and the economic impact of tourism in large-scale PAs. All the problems discussed herein were assessed in a cross-border context, in particular by the Polish-German project team jointly developing a set of methodological tools applicable in both countries, carrying out the research, and evaluating the results of that research.

Chapter 1 of this monograph presents the reasons for the actions undertaken as part of the project, primarily from the point of view of the Pomerania Euroregion. The importance of the project in addressing the current socio-economic challenges concerning PAs is demonstrated. The current state of research is briefly outlined, the existing knowledge gaps identified, and the ways to bridge such gaps suggested. The relevant empirical methods used are mentioned, with particular regard to the experiences gathered by the Polish and German stakeholders.

Chapter 2 provides an overview of the Euroregion as a form of cross-border cooperation. The natural environment of the Pomerania Euroregion is characterised here, including the legal forms of PAs in Poland and Germany. The chapter also assesses the socio-economic situation, identifying the existing similarities and differences.

Chapter 3 focuses on studying the levels of visitor satisfaction experienced in selected large-scale protected areas of the Pomerania Euroregion. The chapter gives an overview of earlier satisfaction analyses carried out in Poland and Germany and describes the method used in the studies carried out as part of the REGE project. A total of eight large-scale PAs in the Pomerania Euroregion were investigated. As up-to-date research results for the German PAs were already available, the focus was on surveys for the PAs on the Polish side of the Euroregion. As for the German part of the Euroregion, two national parks – Jasmund National Park and Western Pomerania Lagoon Area National Park – were included.

Chapter 4 presents the results of surveys concerning park–people relationships. As in the previous chapter, the presentation of results is preceded by an overview of existing studies in this subject area and of the methods used to achieve them. This chapter contains a comprehensive comparative study and covers park–people relationship analyses for 14 protected areas of the Pomerania Euroregion (four German and ten Polish large-scale protected areas).

Chapter 5 deals with the regional economic impact of park visitation and includes an overview of earlier studies on estimating the economic impact of tourism in protected areas. It presents an adapted methodological approach for estimating the regional economic impact of park tourism developed by the Polish-German research team which is compatible with the available secondary data in Poland.

Chapter 6 includes the results of surveys conducted among visitors to the PAs during the COVID-19 pandemic. These studies provide a valuable source of knowledge about the role of the PAs during the pandemic, and about the impact of the COVID-19 pandemic on the behaviour, relationships, and numbers of visitors to the PAs. They allow for a better understanding of the mechanisms responsible for how we behave during a pandemic.

The empirical chapters are followed by conclusions drawn from our studies and analyses, which are summarised in Chapter 7. The conclusions concern both theoretical issues and practical matters of importance to the stakeholders of the large-scale PAs, especially their managers, and to those responsible for managing tourism.

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2. The Pomerania Euroregion and its protected areas

2.1. The Pomerania Euroregion as a form of cross-border cooperation

The progressing enlargement of the European Union documents the economic and political unification of the continent (for the history of the European Union see EU, 2022). One of the major factors strengthening the common European development is cooperation between border regions. To facilitate this process, the so-called "Euroregions" have been established. They are associations of districts and municipalities located along the EU's internal and external borders. There are currently many such associations out there, which pursue various objectives at different spatial levels (Mayer et al., 2019).

The Pomerania Euroregion was set up in 1995 and is now one of four such entities along the Polish-German border. On the Polish side, it presently encompasses the entire Zachodniopomorskie Voivodship along the Baltic Sea coast and southwards down the border, and on the German side the districts of Vorpommern-Greifswald, Vorpommern-Rügen and Mecklenburgische Seenplatte in the federal state of Mecklenburg-Vorpommern and the districts of Barnim and Uckermark in the federal state of Brandenburg. The national border within the Euroregion is 189 kilometres long (cf. Figure 2.1).

> "Cooperation in the Pomerania Euroregion aims at initiating joint activities for developing the region evenly and in a well-balanced manner and at bringing people and institutions of the territories concerned closer together." (Kommunalgemeinschaft Europaregion Pomerania e.V., 2016).

In order to address the various economic, social and also environmental challenges that do not stop at borders and therefore require cross-border solutions, the EU has initiated several funding programmes. The inter-regional programme INTERREG, which is in its sixth programming phase as of 2021, is specifically dedicated to cross-border cooperation under the "Interreg A" component (see BBR, 2022).

The Pomerania Euroregion is responsible for the administrative management of local projects financed under the "Interreg A" programme. The objectives of the previous programming periods were related to the following areas (Interreg V A 2021, p. 10):

- education, training and advanced training,
- science, research and the economy
- cross-border labour market,

Figure 2.1. The area of the Pomerania Euroregion
Source: Kommunalgemeinschaft Europaregion Pomerania e.V., 2016

- tourism with emphasis on water-based tourism ,
- constant cross-border transfer of information and knowledge.

Our REGE project fitted within the second of these domains, because the applicants were four higher education organisations.

In the current financial perspective of the Interreg programme (2021–2027), the Pomerania Euroregion focuses on four new developmental objectives (cf. Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 65):

- improving cross-border transport links,
- strengthening innovative green growth,
- strengthening cooperation in society and the administration,
- joint conservation of natural resources.

2.2. Environmental conditions

Geologically, the southern Baltic Sea coast is characterised by comparatively young coastal sediments, which are 100,000 years old at the most. "The remnants of a long geological transformation, much older than that, are hidden deep

underneath the ground – with few exceptions (e.g. chalk or erratic boulders on beaches and in the hinterland)" (Scheibe, 2014, p. 29 ff.). The southern Baltic Sea coast in Poland and Germany, as well as the adjacent parts of the mainland, provide a fascinating landscape that is, unfortunately, increasingly exposed to anthropogenic exploitation and change. In order to preserve the almost untouched natural spaces, both countries have designated protected areas (PAs). "There are 22 large-scale protected areas in the Euroregion extending over a total of 920,000 ha, corresponding to almost a quarter of the Euroregion's total area." (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 59 ff.).

In 2021, terrestrial PAs accounted for 13.4% of the total land area of all countries worldwide, while marine waters under protection accounted for 17.4% of all territorial waters. In the EU Member States, the terrestrial PAs were twice as spacious as the global average, as they accounted for 26% of the countries' combined area, with the marine PAs accounting for 11.0%. The largest share of terrestrial PAs was found in Luxembourg (51.1% of the country's area), Bulgaria (41.0%), Slovenia (40.5%), and Poland (39.6%). In Germany, the terrestrial PAs totalled 37.8%. The largest proportion of marine PAs was in France (45.6% of the territory under national jurisdiction). In Germany, this share amounted to 45.4%, while in Poland it was 23.4%. The EU countries with the lowest shares of marine PAs were Ireland (2.4%) and Slovenia (3.7%) (OECD, 2022).

Managing PAs is the responsibility of state institutions and varies between Germany and Poland.

In Germany, national parks, biosphere reserves and nature parks constitute so-called large-scale PAs, which as a rule should be larger than 10,000 hectares. They are assigned different objectives, thus leading to varied importance given to nature conservation (Job, 2018):

- **National parks** (§24 of the Federal Nature Conservation Act) are primarily designed for nature conservation; in the long term, nature should be left to its own dynamics wherever possible. This means that the economic exploitation of natural resources through agriculture, forestry, water management, hunting, and fishing is largely excluded, or only permitted under strict guidance from nature conservation authorities. National parks are designated by the German federal states in consultation with the BMUV (the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection) and managed by the national park administrations specifically appointed for this purpose. The national parks in Germany correspond to IUCN category II areas. Currently, there are 16 national parks in Germany, though occupying a mere 0.6% of the country's land area (BfN, 2022a).
- **Biosphere reserves** (§25 of the Federal Nature Conservation Act) are areas that are to be uniformly protected and developed, each having characteristics typical of their respective landscapes. They are nationally and internationally representative model regions for sustainable development, in which a sustainable and environmentally sound use of natural resources is developed and implemented together with the local community. The emphasis here is on the relationship between people and nature. UNESCO has been award-

ing the title of "biosphere reserve" since 1976. The federal states are tasked with setting up and supervising their own responsible offices. These offices may (in addition) assume other public tasks, or quite the opposite – existing authorities may take over the administration of the given biosphere reserve. Biosphere reserves should encompass strictly protected core zones covering at least 3% of their respective areas. Germany currently has 18 biosphere reserves, 16 of which are recognised by UNESCO, covering 3.9% of the country (BfN, 2022b).

- **Nature parks** (§27 of the Federal Nature Conservation Act) are sites which are to be uniformly developed and maintained. They serve to protect, maintain and develop cultural landscapes and ensure that the latter are utilised and managed for the benefit of local recreation and tourism. This means that emphasis is placed on usability for recreational purposes. There are currently 105 nature parks in Germany, covering 28.4% of the country's overall area (BfN, 2022c).

Detailed descriptions of the German large-scale PAs in the Pomerania Euroregion are featured in Steingrube and Zbaraszewski (2014, p. 39 ff.).

In Poland, the Nature Conservation Act (UoP 2004) is the fundamental law governing the objectives, operational principles and methods for establishing the various forms of nature conservation.

According to this Act, the available nature conservation forms include nature reserves, Natura 2000 sites, natural monuments, documentation sites, sites of ecological interest, nature and landscape complexes, plant animal and fungal species protection (Article 6 of the UoP 2004), and the so-called large-scale PAs. Large-scale PAs are those sites which have the recommended area of at least 1,000 hectares (Kistowski, 2001, p. 80):

- **National parks** (Ger.: *Nationalparks*; Pol.: *park narodowy* (Article 8.1, UoP 2004) should be construed as areas distinguished by their unique natural, scientific, social, cultural, and educational values, extending over at least 1,000 hectares, where all the elements of nature and the landscape potential are protected. A national park is set up to preserve biodiversity, the resources, formations and components of the inanimate nature, as well as landscape values, to restore the resources and components of nature to an appropriate condition, and to reconstruct the disturbed natural, plant, animal and fungal habitats. A new national park in Poland is established through a regulation of the Council of Ministers (with the most recent one – Warta Mouth National Park – established in 2001). Each of the Polish national parks is a state budgetary unit with its own budget and is supervised by the Minister responsible for the environment. By 2020, Poland had established 23 national parks with a total area of 315,128 hectares, covering 1% of the country (GUS OS, 2022, p. 118). National parks, due to their unique natural, cultural and educational values, are very popular tourist destinations. Visitor frequentation is one of the indicators to measure their recreational function. At the end of 2020, the national parks had 3,900 km of tourist trails attracting 13.4 million visitors (738,000 fewer than in 2019). The largest numbers of visitors were recorded

for Tatra National Park (NP) (3.5 million people) and Karkonosze NP (2.0 million people), while Narew NP and Drawa NP had the lowest frequentation, with 23,500 and 27,300 visitors, respectively (GUS OS, 2022, p. 120).

- **Landscape parks** (Ger.: *Landschaftsschutzparks;* Pol.: *park krajobrazowy* (Article 16 of the UoP 2004) contain areas protected due to their natural, historical, cultural and landscape values for the purpose of preserving and promoting these values under sustainable development circumstances. A landscape park is created or enlarged by a resolution of the voivodship assembly. At the end of 2020, Poland had 126 landscape parks covering 2.6 million hectares, accounting for 8.3% of its area. Since 2000, the total area of landscape parks has increased by 78,500 hectares, or 3.1%. The first landscape park in the country was established in 1976 (Suwalski Landscape Park). In 2020, Barlinek Landscape Park with an area of 11,700 hectares, located entirely within Zachodniopomorskie Voivodship, was cut out of Barlinek-Gorzów Landscape Park (GUS OS, 2022, p. 121).
- **Protected landscape areas** (Ger.: Landschaftsschutzgebiete*;* Pol.: *obszar chronionego krajobrazu*) (Article 23.1 of the UoP 2004) are areas protected due to their distinctive landscape featuring diverse ecosystems, valued for their potential to satisfy tourism and recreation needs and for their role as wildlife corridors. A protected landscape area is created by the voivodship assembly adopting a proper resolution. In 2020, there were 387 protected landscape areas in Poland covering a total of 7.023 million hectares, or 22.5% of the country (GUS OS, 2022, p. 121). As of 2020, Zachodniopomorskie Voivodship had 22 protected landscape areas extending over 351,000 hectares (GUS BDL, 2022).

Under the Nature Conservation Act (Article 113 of the UoP 2004), Poland operates the Central Register of Nature Conservation Forms. All nature conservation forms governed by the Act are entered in the Register by their establishing authority, with the competent authorities being, respectively: municipality councils for natural monuments, documentation sites, nature and landscape complexes, and sites of ecological interest; voivodship assemblies for landscape parks and protected landscape areas; regional environmental protection directors for nature reserves; the General Director for Environmental Protection for Natura 2000 sites; and the national park directors for national parks (CRFOP, 2022).

Apart from these large-scale PAs, Poland has eleven biosphere reserves compared to Germany's 18. In Poland, however, unlike in Germany, the activity of these forms of area protection is not governed by national law, i.e. the Polish Nature Conservation Act. The reason for this may be that as many as five of them are cross-border reserves, compared to a single cross-border reserve operating in Germany (UNESCO, 2022).

In March 2022, Poland continued to work on the revision of its nature conservation legislation, in particular regarding national parks. The National Parks Bill (Government Legislation Centre 2022) provides, among other things, for:

- the establishment of a single state-owned legal entity called "Polish National Parks", consisting of a directorate and the individual national parks,

- assigning the following tasks to the Polish National Parks directorate: monitoring coordination, scientific activity, educational activity, and international cooperation,
- a central budget for all the parks funded – for instance – from tickets for making the parks available, also to visitors,
- the inclusion of all the existing employees of the individual national parks in the Park Service.

In contrast to the existing regulations, the Bill provides for a clear subordination of all national park activities to nature conservation. In addition, nature conservation (and not just the creation or enlargement of a park, as is the case with the current legislation) is declared in the Bill to be a public purpose, resulting in, for example, the option of the expropriation of land within a landscape protection zone of the park should conservation be otherwise impossible.

The report on the future of Pomerania confirms that this Euroregion boasts high natural values and, among other proposals, recommends that the following two actions should be taken (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 64):

> "Joint actions for the protection of biodiversity and the sustainable use of the PAs. Increased exchange of information on sustainable development and on the implementation of joint pilot projects".

2.3. Socio-economic situation

The Pomerania Euroregion is the largest of the Polish-German Euroregions, with an area of 40,000 km^2. Its population is approx. 2.7 million; the population density of 68 inhabitants per km^2 is clearly lower than the average for both the Federal Republic of Germany (231 inhabitants per km^2) and the Republic of Poland (123 inhabitants per km^2) (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 17).

In demographic terms, the German part of the Pomerania Euroregion – with a few exceptions in places attracting increased tourism – has for many years been characterised by a declining population. As a result of young people emigrating from the region, the average age is constantly increasing, and thus the region is currently experiencing progressing "ageing" (cf. BBR, 2021).

This age structure correlates with the lower-than-average proportion of employed persons paying compulsory social insurance, exacerbated by the noticeably high share of long-term unemployed people that the German part of the Pomerania Euroregion has been facing for years (BBR, 2021).

> "The Euroregion's economy is characterised by its location on the Baltic Sea and along important transport corridors, as well as the presence of the Szczecin metropolitan region, plentiful forests and lakes, and agricultural lands. Furthermore, an important role is played by its higher education institutions and their profiles" (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 41).

The area's economic structure is shaped by small enterprises: more than 95% of all businesses employ fewer than nine people (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 41).

> Although the economy has been on a constant rise in recent years, "the gross domestic product per capita in both the German and Polish parts of the Euroregion is below the national average: it is approx. 70% of Germany's figure in Brandenburg and Mecklenburg-Vorpommern, and 83% of Poland's in Zachodniopomorskie Voivodship" (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 40).

This below-average economic power is mainly a result of the very low industrial density. The primary sector, including agriculture, forestry and fisheries, has an above-average share of the added value compared to the national one, with the share of the Euroregion's service sector amounting to nearly three quarters (Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 41). This points to the importance of the tourism sector, which – at least in the German part of the Euroregion – is characterised by a strong spatial concentration on the Baltic Sea coast and some inland lakes. (Mayer & Stoll-Kleemann, 2020).

Table 2.1 presents selected characteristics of the Pomerania Euroregion. The comparison was based on the single coherent source of Eurostat (Eurostat, 2022) for the available selected characteristics of the reference units, i.e. NUTS 2 level units. These units were Zachodniopomorskie Voivodship in Poland, and Mecklenburg-Vorpommern and Brandenburg in Germany.

The rural nature of this region can be inferred from its population density indexes, similar on both sides of the border (i.e. 79 persons/km^2 +/–10%), which are significantly below the national average values (123 persons/km^2 in Poland and 231 persons/km^2 in Germany, respectively). At the same time, it should be noted that the population density varies greatly across the Euroregion. The Euroregion encompasses one densely populated metropolitan area, namely that of Szczecin (1,325 persons/km^2) on the one hand, and rural areas on the other, such as Choszczno district with a population density of only 16 persons/km^2. At the same time, the three component states of the Euroregion had a similar unemployment rate, which in 2019 was 3.5%.

A common characteristic of Zachodniopomorskie Voivodship and Mecklenburg-Vorpommern is the continued population decline which has been observed for years. Brandenburg, however, has seen population growth. The reason for this is most likely the influence of the German capital, Berlin. According to the available forecasts, the declining population trend in Mecklenburg-Vorpommern (MEID MV, 2019) and Zachodniopomorskie Voivodship (GUS, 2017, p. 15) is expected to continue. Progressing population ageing, another negative trend, has also continued for years in both provinces. Although the median age for the inhabitants of Zachodniopomorskie Voivodship was approx. 10 years lower than that for the two German federal states investigated, all of these areas witnessed population ageing in the period of interest – namely between 2017 and 2019 (Table 2.1).

Table 2.1. Characteristics of the NUTS 2 units forming the Pomerania Euroregion

Indicator	Year	Zachodnio-pomorskie	Mecklen-burg-Vor-pommern	Branden-burg
Population as of 1 January	2017	1 681,246	1,610,674	2,494,648
	2018	1,678,873	1,611,119	2,504,040
	2019	1,675,502	1,609,675	2,511,917
Population density [per km^2]	2017	76.9	71.4	86.1
	2018	76.8	71.3	86.4
	2019	76.6	71.3	86.7
Median age of population [years]	2017	40.9	49.8	49.9
	2018	41.3	50.0	50.2
	2019	41.7	50.3	50.3
Gross domestic product (GDP) per capita at current market prices [Euro]	2017	10,100	27,400	28,300
	2018	10,800	27,600	29,000
	2019	11,500	29,200	30,000
Gross domestic product (GDP) at current market prices [PPS per capita]	2017	17,000	25,300	26,100
	2018	17,800	25,400	26,800
	2019	18,800	26,500	27,200
Unemployment rate [%]	2017	4.7	5.2	4.5
	2018	3.8	4.9	4.1
	2019	3.2	4.0	3.4
Number of nights spent at tourist accommodation establishments	2017	10,596,002	25,537,298	10,222,421
	2018	11,319,165	26,569,371	10,558,659
	2019	12,045,049	29,776,929	10,981,869
Number of accommodation establishments	2017	1,449	2,795	1,608
	2018	1,553	2,818	1,626
	2019	1,604	3,328	1,654

Source: own elaboration based on Eurostat, 2022.

The weak economic position of the Pomerania Euroregion is reflected in its GDP per capita. Zachodniopomorskie Voivodship, as well as Mecklenburg-Vorpommern and Brandenburg, are below their national average GDP per capita values, ranking 9th out of the 17 NUTS 2 regions in Poland and 36th and 34th out of the 38 NUTS 2 regions in Germany, respectively (Eurostat, 2022).

Significant differences between the analysed states are observed in terms of income. According to the data shown in Table 2.1., in 2019, the disposable income of a single inhabitant of Mecklenburg-Vorpommern was 41% higher than that of a person living in Zachodniopomorskie Voivodship, while the difference was even larger (44%) compared to Brandenburg. Importantly, however, during the period under consideration these disparities in the Pomerania Euroregion decreased over time. In 2017, the gap between Zachodniopomorskie Voivodship and Mecklenburg-Vorpommern amounted to 49%, and as much as 53% between Zachodniopomorskie Voivodship and Brandenburg.

From the point of view of the living conditions enjoyed by the inhabitants of the Pomerania Euroregion, this situation is more favourable for Germans than

Poles. However, from a purely economic perspective on cross-border tourism, this situation favours the development of tourism and related infrastructure in the Polish part of the Pomerania Euroregion, in order to profit from the lower costs of accommodation, food, services, etc., in Poland.

The EU Commission's economic analyses and forecasts show that Poland's economy had been developing at a rate several times higher than Germany's during the COVID-19 pandemic. The economic crisis that coincided with the COVID-19 pandemic has erased many of the differences between these countries. The lockdowns imposed on the economy, exacerbated by the slowdown of the global automotive market, have caused a drop in Germany's GDP. In the years 2020–2022, the GDP of Germany grew by a total of 1.8%, while that of Poland grew by as much as 8.7% (EC, 2022). Consequently, it turns out that the crisis has allowed Poland to catch up more quickly. It is worth noting that at the time of Poland's accession to the European Union in 2004, its GDP per capita was only 24.6% of Germany's, to reach 36.2% in 2019 and 37% one year later (Eurostat, 2022).

Thanks to the considerable attractiveness of the Baltic Sea and the natural richness of the Pomerania Euroregion, both its German and Polish parts have been traditional, very popular tourist destinations. Even the region's towns that are small population-wise are widely known in their respective countries with, for example, Bansin, Ahlbeck, Heringsdorf and Sassnitz in Germany, and Międzyzdroje, Rewal, Dziwinów and Kołobrzeg in Poland. In both parts of the Euroregion an upward trend in the number of nights spent at tourist accommodation facilities was observed in the period of interest, i.e. between 2017 and 2019, ranging from 7.4% in Brandenburg, 13.6% in Zachodniopomorskie Voivodship, to 16.6% in Mecklenburg-Vorpommern. A similar growth was observed regarding the number of accommodation establishments. Despite this similarity, the two parts of the Euroregion demonstrate significantly different tourism potential. Mecklenburg-Vorpommern stands out clearly as both its number of nights spent at tourist accommodation establishments and its number of such establishments reach twice the figures of the other two areas, i.e. Brandenburg and Zachodniopomorskie Voivodship (StatA MV, 2021, p. 571; GUS Tur, 2021, p. 45).

Tourism is one of those sectors that have been directly affected by the COVID-19 pandemic. Introduced in 2020, the restrictions on the movement of persons and on hospitality services resulted in a significant drop in the number of overnight stays at tourist accommodation establishments compared to the previous years. However, it will only be possible to compare the effects of the restrictions on tourism by using single-source data that has yet to be published.

The socio-economic situation in the Pomerania Euroregion can be summarised by the statement that, given the attractiveness of the Baltic Sea coast and the landscape of lakes and forests, tourism constitutes an important factor in the region's economy, which is why large-scale PAs should be seen as an opportunity for the future, where cross-border management is recommended (cf. Kommunalgemeinschaft Europaregion Pomerania e.V., 2020, p. 48).

However, as a result of the war against Ukraine that began in February 2022, the entire global economy is facing an array of risks. These risks, in addition to

the human casualties, are linked to the disruption of supply chains, shortages of product supplies, in particular to countries which have close economic ties with Ukraine and Russia, and the rising prices of wheat and energy in 2022 (IMF, 2022). This may also affect the future socio-economic situation of the Pomerania Euroregion.

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3. Visitor satisfaction analysis

3.1. Introduction

Protected areas (PAs) typically have a dual mandate to both preserve natural heritage and/or ecological integrity and/or habitats for rare and endangered species on the one hand, and to provide possibilities for outdoor recreation and the enjoyment of (near-)natural spaces on the other – often with limited funding and staff (Newsome et al., 2013; Crilley et al., 2012; Moore et al., 2015). Thus, PA visitation management comprises an inherent trade-off. For instance, visitor number limitation through management measures aimed at reducing negative ecological impacts leads to fewer encounters and a perception of less crowding. However, the number of people who get to enjoy a certain area is also much lower (Kalisch, 2012, p. 15). Over decades, there has been a growing awareness that visitors can not only put at risk the protection and preservation goals of PAs but, on the contrary, (if properly managed) can also contribute to attaining these goals by providing the necessary funding to finance PA management and, furthermore, to considerably integrate PAs into societies by securing the political back-up and positive attitudes towards PAs, given the manifold benefits PAs generate for societies (see Chapter 4 for details) (McCool, 2006; Moore et al., 2015; Pearce & Dowling, 2019) – "visitors are viewed as an asset rather than a liability" (Moore et al., 2015, p. 668). A crucial aspect of these benefits is PA visitor experience, which needs to be as positive as possible to fulfil the second part of the dual mandate, i.e. the provision of recreation opportunities for people (Wardell & Moore, 2005; Tonge et al., 2011). However, to make sure that visitors actually enjoy positive experiences in PAs which lead to the mentioned benefits, these PA visitor experiences need to be systematically assessed and evaluated. This is the precondition for potential necessary changes in PA visitor management to improve visitor experience. Only if the level of satisfaction with the current visitor experience in PAs is known to the decision makers in PA authorities and the responsible state administrations can the people in charge evaluate the prevalent visitor management required, decide about adaptations, and later monitor the effects of these measures (Kalisch & Klaphake, 2007). Accordingly, the literature sums up the following reasons why PA managers should analyse visitor satisfaction (Hornback & Eagles, 1999; Baker & Crompton, 2000; Borrie & Birzell, 2001; Bushell & Griffin, 2006, p. 26; Carbone, 2006, p. 53; Tonge & Moore, 2007; Weber, 2007; Tonge et al., 2011, p. 290; Manning, 2011; Crilley et al., 2012; Moore et al., 2015, p. 668; Geng et al., 2021, p. 2):

- It allows one to check whether the facilities and services provided by PAs meet the visitors' expectations (visitor satisfaction as a key indicator of PA man-

agement quality/PA performance) and explore potentials for improvement in order to remain competitive and relevant for (potential) visitors;
- Improved visitor experience, facility/service quality and resultant satisfaction will lead to repeat (visitor loyalty) and/or increased visitation, as well as the visitors' political support for PAs;
- It can be used to systematically inform park planning and management, as it makes it possible to determine if the desired outcomes of PA management measures (e.g. repeat visitation, recommendations to others) have been achieved, and to analyse the influences on these outcomes;
- The consequences of management decisions must be monitored to determine their effectiveness, as they should be based on reliable data and not just the gut feeling;
- It is a decisive step in setting up and realising an effective visitor management plan/concept;
- It is important to both justify expenses and help in the wise allocation of limited resources.

However, what exactly is "visitor satisfaction"? According to Crilley et al. (2012, p. 217f.)

> "visitor satisfaction is a complex, multi-dimensional concept. It is affected by many variables including use levels, perceived crowding, absence of litter, the extent to which a visitor values the site, level of development, weather, behaviour of others, interactions with family and friends, and condition of trails".

Satisfaction can be defined as the "positive perception or feeling that an individual forms, elicits, or gains as a result of engaging in leisure activities and choices; it is the degree to which one is content or pleased with his or her general leisure experience and situations" (Beard & Ragheb, 1980, p. 22). Thus, satisfaction is the difference between the goals desired and achieved, or the congruence between expectations (i.e. motivations) and outcomes (Needham & Rollins 2009, p. 142). While the notion of Beard and Ragheb (1980) fits in the emotional response paradigm, where satisfaction is emotionally derived from a consumption experience, the second paradigm of cognitive evaluation seems to prevail in most satisfaction studies (Del Bosque & San Martín, 2008; Lee & Thapa, 2017). The cognitive perspective on satisfaction is highlighted by Hunt (1977, p. 459) as "not the pleasurableness of the experience, it is the evaluation rendered that the experience was at least as good as it was supposed to be".

Other authors focus more strongly on the important differentiation between visitor satisfaction and service quality. Moore et al. (2015, p. 669) distinguish between both concepts as follows:

> "Satisfaction[5] is a measure of a visitor's emotional state after experiencing a destination, while service quality focuses on perceived quality of performance

[5] Neal and Gursoy (2008) categorised tourism satisfaction into four theoretical models: expectancy-confirmation model (Oliver, 1980), norms theory (Woodruff et al., 1983), equity theory and the performance-only model (Burns et al., 2003) (see Lee & Thapa, 2017, p. 62 ff.).

> based on evaluating services (e.g. staff interactions with visitors) and facilities (e.g. infrastructure)".

In a similar vein, Lee and Thapa (2017, p. 62 ff.) acknowledge that consumers' perceptions of satisfaction and service quality are confounded and, therefore, list three perspectives to discern the two concepts:

1. Satisfaction is defined as subjective evaluation, while service quality is viewed as objective judgment (e.g. service quality in a PA can be evaluated by cleanliness of restrooms and friendliness of staff). In contrast, satisfaction can be influenced by many other factors (e.g. crowding, weather), as well as the service quality delivered.
2. Satisfaction is based on the experiential aspects of service from the visitors' perspective, while service quality can be influenced by the suppliers/PA management.
3. Perceived service quality is a more specific evaluation, while satisfaction equals the broader overall evaluation. That means that quality is assessed during each step of the visitor experience and sums up continuously to lead to overall satisfaction.

Therefore, Chen et al. (2011) regard service quality in nature-based tourism as a forerunner of satisfaction. Thus, it is important for PA managements to find out which service aspects are the drivers of visitor satisfaction (Lee & Thapa, 2017).

However, there is also a diverging line of argumentation, dating back to Hendee (1974) with his "multiple satisfactions" approach – where recreation provides a range of experiences that lead to various satisfactions – or Mannell (1989), who divides satisfaction into a "global appraisal" (i.e. satisfaction with the entire experience) and "facet appraisal" (i.e. satisfaction with various subcomponents of the experience) (Needham & Rollins, 2009).

These notions have important repercussions for the measurement of visitor satisfaction, which can be either measured using a global evaluation of the overall experience (Q: How satisfied are you with your visit to XY National Park?) or by asking for the satisfaction with more specific attributes of the setting and experience. Both approaches have advantages and disadvantages: global satisfaction measures are straightforward to analyse, communicate and understand, and often tend to be uniformly high, while satisfaction with various aspects can outweigh others but provides more detailed information for PA managements (Ryan & Cessford, 2003; Needham & Rollins, 2009; Roemer & Vaske, 2014). Nevertheless, it is useful to determine the relative importance of satisfaction items, for instance by using importance-performance analysis (IPA) (Martilla & James, 1977), which is one of the most popular approaches to measuring visitor satisfaction (Tonge et al., 2011; Lee & Thapa, 2017). In a PA context, Tonge and Moore (2007) reconceptualised IPA as importance-satisfaction analysis (ISA) focusing on satisfaction because of its attention to desired recreation and leisure experiences. More recently, there has been a shift in the literature from quality perception and visitor satisfaction to visitor loyalty (Rodger et al., 2015; Pearce & Dowling, 2019). Loyalty can be simply defined as commitment to a destination (Rivera & Croes, 2010). Loyalty in nature-based tourism research has been largely

operationalised and measured as a multi-item construct, with the intention to revisit and recommend to others as the most widely measured items. In the literature, visitor loyalty is usually causally connected to quality of service and (overall) visitor satisfaction, with the former directly influencing loyalty and having a mediated influence via satisfaction. Thus, it is necessary but not sufficient to include satisfaction in loyalty studies (Moore et al., 2015). However, other approaches use questions about the probability of a recommendation of a PA visit to friends/family or one's own intention to revisit a PA as part of satisfaction assessments (see Ryan & Cessford, 2003).

To sum up, Manning (2011), Tonge et al. (2011) and Moore et al. (2015) conclude that the visitors' satisfaction with outdoor recreation experiences (in and outside PAs) has been an important field of research for decades and has received extensive attention in leisure, recreation, and tourism and more recently in nature-based tourism research. In the USA, for instance, the National Park Service (NPS) has established systematic visitor experience monitoring since the 1980s, including standardised analyses of visitor satisfaction since 1995 (Roemer & Vaske, 2014). These authors were able to base their meta-analysis of visitor satisfaction in NPS units on more than 170 studies using the same methodology containing more than 80,000 responses. As section 3.2 will show, the level of visitor satisfaction studies in Poland and Germany lags behind these achievements. This is in line with the observation of Burns et al. (2010) that the PA management frameworks common in the US place emphasis on long-term monitoring efforts regarding social aspects, while in most of the Central European countries long-term monitoring is applied only for ecological purposes. These authors argue that given the high visitation level of many PAs, especially national parks, social science research (visitor satisfaction, crowding, etc.) needs to be included in the management standards (Burns & Cardozo Moreira, 2013). Therefore, the aim of this chapter is to present the methodology and the results of explorative visitor satisfaction pilot studies in several PAs of the Pomerania region.

This chapter is structured as follows: in the next section (3.2), we provide an overview of the state of research about visitor satisfaction analyses in Polish and German PAs, while section 3.3 presents the methods used to assess visitor satisfaction in the PAs of the Pomerania region. In Section 3.4 and 3.5, we show the results of these analyses for the Polish and the German PAs, respectively, followed by a comparison (3.6) and a discussion (3.7) of these results. A short interim summary (3.8) closes this chapter.

3.2. State of Research

Similar to the US example cited above, there are satisfaction analyses for a number of PAs around the globe, such as Banff National Park, Canada (Geng et al., 2021), Kafue National Park, Zambia (Thapa & Lee, 2016), Kakum National Park, Ghana (Agyeman et al., 2019), Dadia–Lefkimi–Souflion National Park, Greece (Arabatzis & Grigoroudis, 2010), to name but a few. In the following sections, we provide overviews of visitor satisfaction studies in Polish (3.2.1) and German (3.2.2) PAs.

3.2.1. Poland

Protected areas (PAs) attract large numbers of visitors due to their natural, cultural, and educational qualities. At the same time, their unique nature is the reason why their use for recreational purposes must be subject to multiple restrictions. Visitor frequentation can be regarded as a measure of a PA's fulfilment of its recreational function. At the end of 2020, Polish national parks attracted 13.4 million visitors (738,000 fewer than in 2019). The largest numbers of visitors were recorded for Tatra National Park (NP) (3.5 million) and Karkonosze NP (2.0 million), while Narew NP and Drawa NP had the lowest visitor numbers, with 23,500 and 27,300 visitors, respectively (GUS, 2021, p. 120).

The Polish literature offers a substantial contribution to the studies of PA tourism and recreation, where the focus is, for instance, on the scale of tourism (Partyka, 2010; Kruczek & Przybyło-Kisielewska, 2019; Miazek, 2020), PA attractiveness (Czarnecki, 2009; Muszynska-Kurnik & Gajewski, 2009; Muszyńska-Kurnik, 2010; Adamski et al., 2014; Muszyńska-Kurnik, 2016; Widawski et al., 2018, 2018), NP visitor profile (Bąk & Zbaraszewski, 2014; Urbaniak & Mazur, 2014; Rogowski & Artur, 2018), and conflicts between nature conservation and the PAs' role as a tourist destination (Stasiak, 1997; Matuszewska, 2003; Hibszer & Partyka, 2005; Hibszer, 2008; Felczak, 2019).

Notably, though, our overview of existing publications failed to render any studies assessing visitor satisfaction for Polish protected areas prior to 2010. The overview did, however, reveal publications covering the period under investigation here for all Polish NPs, except Narew NP, which is the least frequently visited NP in the country. A compilation of the study results is presented in Table 3.1.

These highly positive satisfaction assessments by Polish national park visitors fit within the wider phenomenon of high satisfaction with tourism trips that are monitored by the Polish Tourism Organization. According to its surveys (POT, 2016), the vast majority of domestic tourists were satisfied with their tourism trips (93%), with the uncertain or dissatisfied tourists accounting for less than 7%. A survey conducted among foreign visitors (POT, 2019) showed that they mostly arrived in Poland for leisure, recreation, and holidays (53%), while their assessments of their stays were definitely high (65% of the respondents) and rather high (30%).

Our overview of the literature dealing with Polish PA visitor satisfaction analyses shows that this topic is gaining more and more attention. In addition, the Polish Tourism Organization is not only carrying out its own research in this area, but is also involved in a number of supporting actions by, for instance, publishing a valuable compendium of tourism service recipient satisfaction studies with a focus on measurement methods, data presentation methods, and examples of good practices (Dziedzic, 2015).

At the same time, from our literature overview concerning visitor satisfaction analyses it is evident that there are many studies available, but they concern only the 23 Polish national parks, which cover about 1% of Poland's area. In the available literature there are no studies presenting results of visitor satisfaction surveys

Table 3.1. Overview of visitor satisfaction studies in Polish national parks

National Park	Study/ Source/ Year	Main results
Bieszczadzki, Gór Stołowych, Gorczański, Kampinoski, Narwiański, Pieniński, Ojcowski, Poleski, Słowiński, Wielkopolski, Świętokrzyski, Wigierski	Prószyńska-Bordas, 2013, 2014	• The respondents (n = 4,044) were questioned about their satisfaction with how tourism was organised in 12 out of the 23 Polish national parks. • The largest proportions of fully satisfied visitors were recorded for the mountain parks of Bieszczady (69.3%) and Góry Stołowe (66.3%), followed by Gorce (53.8%). The positive and negative opinions collected for Ojców, Pieniny and Wigry National Parks were distributed roughly evenly. The lowest ratios of fully satisfied visitors were in Świętokrzyskie NP (24.6%), Kampinos NP (32.5%), Polesie NP (32.8%), Wielkopolska NP (33.3%), and Babia Góra NP (40.0%). • Dissatisfaction with how tourism was organised grew with age, with almost 15% of negative opinions among men aged 50 or above. As for women, the most dissatisfied were visitors aged between 50 and 59 (15.9%), although those aged 60 or above were much more lenient in their assessments (7.1%) than men were. • A large majority of the respondents claimed the national parks they were visiting were well adapted to tourism. Negative opinions ranged from 5% to 13% in ten of the studied parks. The two parks that stood out clearly here were Wielkopolski NP (25.6%) and Narew NP (37.6%). • Men were distinctly more likely to be dissatisfied than women. • Highly educated people were significantly more likely to have a negative opinion on the degree of the park's preparation for the purposes of tourism. • Tourists using human-powered means of transport (bikes, canoes) were the least satisfied.

Table 3.1. cont.

National Park	Study/ Source/ Year	Main results
Babiogórski, Białowieski, Biebrzański, Bory Tucholskie, Drawieński, Gorczański, Gór Stołowych, Kampinoski, Magurski, Ojcowski, Pieniński, Poleski, Roztoczański, Słowiński, Świętokrzyski, Tatrzański, Karkonoski, Ujście Warty, Wielkopolski, Wigierski, Woliński	Adamiak & Dubownik, 2017	• Average TripAdvisor rating (on a scale of 1 to 5): – Babia Góra 4.9 – Biebrza 4.8 – Bory Tucholskie 4.7 – Drawa 5.0 – Gorce 4.6 – Góry Stołowe 4.8 – Białowieża 4.4 – Kampinos 4.7 – Magura 4.5 – Ojców 4.8 – Pieniny 4.8 – Polesie 4.8 – Roztocze 4.9 – Słowiński 4.7 – Świętokrzyski 4.6 – Tatra 4.6 – Karkonosze 4.5 – Warta Mouth 4.3 – Wielkopolski 4.0 – Wigry 4.9 – Wolin 4.4 • Roughly fifty percent of the ratings given to Tatra, Białowieża and Biebrza NPs were in languages other than Polish. For other mountain parks this figure reached 20%, while for coastal parks it ranged from 33% to 38%. However, this does not mean that these figures corresponded to the actual numbers of foreign visitors, as foreigners are generally more willing to provide their feedback on the website, and some Poles have a custom of leaving their comments in English.
Babia Góra	Barniak & Banaś, 2015	• 80% of the park's visitors declared they would return, which indirectly indicated a high level of visitor satisfaction.
Gorce	Bordas & Markiewicz, 2011	• The vast majority of the respondents (75.2%) stated the park was well prepared for tourism, with only 8.7% claiming the opposite. • More than half of the visitors (53.8%) were fully satisfied with their stay in the park.

Table 3.1. cont.

National Park	Study/ Source/ Year	Main results
Góry Stołowe	Rogowski, 2019, p. 125–135	• There was a clear correlation between the degree of visitor satisfaction at certain times of day and the frequentation (IN+OUT). At 10 o'clock, there were 601 counts with every second respondent expressing satisfaction (giving a score of 5 or 4) and every fourth visitor stating dissatisfaction. Later, the situation changed so that at 11 a.m. there were 985 counts with one in three respondents expressing satisfaction and 42% of them stating dissatisfaction, while at 12, when the maximum number of counts was observed (1,191), one in five was satisfied and almost 70% were dissatisfied. In the subsequent hours, the ratio of satisfied to dissatisfied visitors dropped as the number of counts kept falling. At 1 p.m. (800 counts), two-thirds of the respondents expressed their dissatisfaction with one in five stating satisfaction, while at 2 p.m. (665 counts) there were 54% of dissatisfied and 26% of satisfied tourists. This tendency was maintained as time passed, and at 6 pm only one in five respondents claimed they were dissatisfied, with two-thirds claiming they were satisfied. In most cases, dissatisfaction was indicated when crowding was peaking, i.e. between noon and 2 p.m.
Kampinos	Gałązka, 2018	• The respondents expressed very positive opinions about the extent to which their expectations were met by the park, as over 36% of them gave ratings between 90 and 100%. Their assessments were comprehensive in that they accounted for all the expectations (tourism and recreation infrastructure, transport accessibility, kind customer service, etc.) they had regarding the trip. • Then there were persons whose expectations were met in 80 to 90% (21%), which was still a very high score, and those whose expectations were met in 70–80% (15%) and 50–60% (10%), i.e. which was a satisfactory result.
Pieniny	Barniak & Olucha, 2018	• The respondents' assessments of the park's preparation were either good (80% of the respondents) or very good (18%). • The vast majority of the visitors (94%) were likely to return, which meant they were satisfied with their stay.

Table 3.1. cont.

National Park	Study/ Source/ Year	Main results
Polesie	Śliwińska et al., 2020, p. 153–160	• Almost half of the respondents (48%) declared that the money they spent during their trip was far less than the benefits they enjoyed, and they were therefore very satisfied with their time spent at the site. • A further 42% were satisfied with their stay in the park, as well, finding that the benefits derived were slightly above the costs incurred in connection with their arrival and stay. • Only 10% of the respondents indicated that coming to the park was a waste of money.
Wielkopolski	Kubiczak, 2015	• More than half of the respondents (53%) were satisfied with their visit to the park, with only 13.6% responding they were "neither satisfied nor dissatisfied". • The level of satisfaction among the respondents followed the pattern of a sinusoid, rising with age for people below 30 years old, then dropping for those between 31 and 50 years old, and rising again for those aged 50 or above. • There were no statistically significant differences in the level of satisfaction depending on the respondents' educational background.

Source: own compilation based on the listed sources.

for the 126 landscape parks, which cover as much as 8.3% of the country's area (the readers may find more information on area forms of nature protection in Poland in Chapter 2.2). Due to the existing research gap, which manifests itself in the lack of studies on visitor satisfaction analysis for Polish landscape parks, it is not possible to authoritatively assess the correctness and accuracy of actions taken by the administrations of these areas in terms of tourist infrastructure, meeting the expectations of visitors, and monitoring the effectiveness of actions taken. At the same time, most of the studies mentioned in Table 3.1 covering national parks were conducted many (more than five) years ago, and because of the different research methods used, there is currently no basis on which to compare the results of the studies for the protected areas in the Pomerania Euroregion. In order to eliminate the identified research gaps, it is fully justified to carry out a visitor satisfaction survey based on a questionnaire developed by a German-Polish team of scientists and to include Polish landscape parks in the survey, besides the national parks.

3.2.2. Germany

Nearly a decade ago, Burns and Cardozo Moreira (2013) reported that socioeconomic issues like tourism, recreation, and conflicts between different user groups were considered to a much lesser extent as part of research and management activities in German protected areas, compared to ecological issues. However, since then interest in these topics has increased and more and more parks have

Table 3.2. Overview of visitor satisfaction studies for German national parks

National Park	Study/ Source/ Year	Main results
Bavarian Forest	Centouris, 2007, pp. 25 f., 28	• Czech visitors to Bavarian Forest National Park were very satisfied with nature and landscape (1.2), hospitality (1.3), information centres (1.4), hiking trails (1.4) and animal enclosures (1.5). They were less satisfied with the Czech-language offers: information offer in Czech (2.8), menus in Czech (3.1), Czech-speaking staff (2.9) and Czech-language guided tours in the park (3.4). • 86.4% of Czech visitors to the Bavarian Forest National Park intended to revisit it
	Nationalparkverwaltung Bayerischer Wald & Nationalparkverwaltung Šumava, 2020, pp. 17, 38, 41, 55f.	• 95.5% of visitors were very satisfied and satisfied with their visit to the park, 96.2% with the park as a recreation area • Comparisons between the Bavarian Forest and the neighbouring Czech Šumava National Park reveal more satisfied visitors on the German side for most indicators. • Compared to 2007, the Czech visitors were much more satisfied with the Czech-language offers of the Bavarian Forest National Park • 99.4% of respondents would recommend a park visit to their family or friends • Intention to revisit was significantly higher among Šumava visitors • Significant positive correlations could be found between visitor satisfaction, revisit intention, recommendation rate and perceived nature experience.
Eifel	Landesbetrieb Wald und Holz NRW Nationalparkforstamt Eifel, 2012, p. 21	• Most national park guests were in complete agreement with the trail network: At 79 percent, locals were even more satisfied than non-locals (69%). • Visitor satisfaction with the service staff was very high: 98% of visitors rated friendliness and competence (97%) of staff as “very good” or “good”.
	Wölfle et al., 2016, pp. 77f., 103, 115	• 93.8% were very satisfied or satisfied with the park as a recreation area • 92.0% of the respondents were very satisfied or satisfied with their visit to the park on the day of the survey • 97.1% liked visiting the park very much and thought it was something special (83.4%).
Kellerwald-Edersee	Nationalpark Kellerwald-Edersee, 2017	• All aspects were considered good by at least 80% of the respondents • Locals were more critical of the quality of the paths and the number of existing routes than guests

Table 3.2. cont.

National Park	Study/ Source/ Year	Main results
Saxon Switzerland	Schreiner, 2009, p. 85f.	• Satisfaction with the overall experience of the National Park: 44.6% "very good", 50.4% "good" • A significantly negative, but very weak correlation between visitor satisfaction and crowding perception: Spearman Rho –0.118
	Schamel, 2011	• >95% of visitors were very satisfied or satisfied • A significantly negative, but low correlation between visitor satisfaction and crowding perception (r = –0.24) • >80% of visitors were not or only slightly disturbed in their nature experience; however, at the Bastei one in three visitors was disturbed
	Analyse & Transfer UG, 2017	• "Meeting the expectations of a national park": 45.4% were very satisfied, 42.6% were "rather satisfied" • Significant improvement compared to a 2001 study: Mean value increased from 2.14 to 1.68 • Regulars more critical than first-time visitors
Hunsrück-Hochwald	Hollweg, 2017	• Repeat visitation: nearly 70% totally agreed, ca. 25% rather agreed • "Overall, I particularly like the park": ca. 64% totally agreed, ca. 31% rather agreed • Visitors were most satisfied with parking facilities, fondness for children, state of hiking trails • Least satisfaction with public transport, catering offer, marketing
Lower Oder Valley	Nationalpark Unteres Odertal, 2017, p. 71	• In general, very satisfied visitors • 88.4% would recommend a visit in any case • 6% reported disturbances: conflicts on the paths • Visitors missed catering offers, resting infrastructure such as benches and picnic tables; signage and visitor information was criticised.

Source: own compilation based on the listed sources.

also introduced socio-economic monitoring efforts (see also Chapters 4 and 5). These efforts notwithstanding, there is no systematic monitoring of visitor satisfaction in German protected areas which would even remotely equal the US example mentioned above. Published scientific papers and PhD theses, such as Kalisch and Klaphake (2007), Kalisch (2011), or Schamel and Job (2013), deal with crowding and related visitor satisfaction, but interestingly do not report any satisfaction data. Most visitor satisfaction studies seem to be conducted by the park administrations themselves or by students for their diploma and master theses. This means that a considerable part of the existing research is not published and must be labelled as grey literature.

Nevertheless, in Table 3.2. we provide a first, and surely not comprehensive, overview of visitor satisfaction results from German national parks based on a combined literature search using Google Scholar®, the parks' websites, and experts' judgments, including those of the socio-economic monitoring working group of the German national natural landscapes network. No visitor satisfaction results were found/accessible for the National Parks Berchtesgaden, Eifel, Hainich, Harz and Müritz, as well as for the two German survey areas covered by this study, namely Jasmund and Western Pomerania Lagoon Area National Parks. For the Lower Saxony and Schleswig-Holstein Wadden Sea National Parks there are satisfaction studies available, but these do not clearly refer to the National Parks only and therefore cannot be regarded as visitor satisfaction studies for both of the large parks.

3.3. Methods

We conducted visitor satisfaction studies based on visitor surveys of six Polish protected areas of the Pomerania region, three national and three landscape parks (the questionnaire is attached in Appendix A, https://doi.org/10.12657/9788379864201-apps):

- Drawa National Park (Pol.: *Drawieński Park Narodowy*) – DNP,
- Wolin National Park (Pol.: *Woliński Park Narodowy*) – WNP,
- Warta Mouth National Park (Pol.: *Park Narodowy Ujście Warty*) – PNUW,
- Cedynia Landscape Park (Pol.: *Cedyński Park Krajobrazowy*) – CLP,
- Ińsko Landscape Park (Pol.: *Iński Park Krajobrazowy*) – ILP,
- Szczecin Landscape Park (Pol.: *Szczeciński Park Krajobrazowy Puszcza Bukowa*) – SLP,

and two German national parks of the Pomerania region (questionnaire see Appendix B, https://doi.org/10.12657/9788379864201-apps):

- Jasmund National Park (Ger.: *Nationalpark Jasmund*),
- Western Pomerania Lagoon Area National Park (WPLA) (Ger.: *Nationalpark Vorpommersche Boddenlandschaft*).

The surveys for the Polish PAs were conducted using the CAPI (computer-assisted personal interviewing) method. The survey was performed by a professional market research company onsite in the parks between September 25 and October 23, 2021. The surveyed population consisted of persons aged 18 years or older. For every PA we collected around 400 completed questionnaires to ensure the confidence level of 95% and 5% of precision. The survey instrument contained 23 questions including four about socio-demographics. Our analysis presents the respondents' socio-demographic structure and their satisfaction from visiting the protected area. Visitor satisfaction was measured as overall satisfaction with the visit to the PA on a five-point Likert-scale from 1 to 5, with 1 indicating a very low and 5 a very high level of satisfaction (see Ryan & Cessford, 2003; Roemer & Vaske, 2014). In addition, the probabilities of recommending a PA visit to family and friends, as well as one's own intention to revisit the respective PAs, were

enquired using the same scale to collect further indicators of overall visitor satisfaction and visitor loyalty (Moore et al., 2015).

In general, the analysis aims at detecting differences between visitors to various PAs. We assess the differences by analysing associations between the nationality or type of PA and the responses to the questions. Because the dataset contains mostly nominal or ordinal scaled data, Cramér's V association coefficient[6] is applied (Cleff, 2019, p. 81f.). Statistical differences between numerical variables (age) were analysed using one-way analysis of variance with Welch's correction (because the assumption of homogeneity of variances was not satisfied) (Welch, 1951). The *post-hoc* pairwise comparisons were made by the non-parametric Games-Howell test (Lee & Lee, 2018)[7]. We also present the basic descriptive statistics (mean, median and percentages of the two top categories – 4 and 5 – which denote the highest level of satisfaction or agreement).

Visitor satisfaction for the two German national parks was analysed based on standardised intercept interviews conducted onsite in the parks by the staff of a renowned market research company and by university staff between August 30 and October 14, 2021 (Jasmund), respectively, and between September 7 and October 13, 2021 (WPLA). The basic population included adult park visitors (older than 17 years). The questionnaire was developed together with the Polish project partner, but was somewhat modified in line with comments provided by the national park administration. In Jasmund National Park, 937 interviews could be completed, with 891 in WPLA.

3.4. Satisfaction results for Polish protected areas

3.4.1. Socio-demographic characteristics of the respondents

As a first step of the satisfaction analysis, we present the socio-demographic structure of visitors to the PAs analysed here. The structure of the respondents with respect to age is presented in Table 3.3.

Basic descriptive statistics for age are presented in Table 3.4.

The largest fraction of visitors to Drawa National Park and Warta Mouth National Park were between 25 and 34 years old. For Cedynia, Ińsko and Szczecin Landscape Parks, the largest share was for visitors aged 35–44. The structure of visitors to Wolin National Park was quite uniform for ages between 25 and 64 years old. On average, the oldest visitors were in Wolin National Park and the youngest in Drawa National Park and Warta Mouth National Park. The Welch's test indicated that the average age was not equal for visitors to all the parks ($F = 24.387^{***}$). The results of the Games-Howell *post-hoc* test show that the

[6] Its value belongs to the interval [0; 1]. On its basis we can distinguish the following ranges of values indicating the association strength: [0.0; 0.1) – no association, [0.1; 0.3) – weak association, [0.3; 0.6) – moderate association, [0.6; 1.0] – strong association.

[7] For all significance tests, the following threshold p-values were used: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

differences in the average age were in most cases statistically significant. The differences between the average age were not statistically significant between Drawa National Park and Warta Mouth National Park, Wolin National Park and Cedynia Landscape Park, and Ińsko Landscape Park and Szczecin Landscape Park. The gender distribution of PA visitors is presented in Table 3.5.

Table 3.3. Structure of visitors with respect to age [years]

Protected area	Percentage of respondents								
	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85–94	95–104
DPN	8.70	40.06	27.02	13.04	8.70	2.48	0.00	0.00	0.00
WPN	5.21	21.59	22.33	19.60	22.08	8.93	0.25	0.00	0.00
PNUW	14.96	33.33	23.10	15.75	10.50	1.31	0.79	0.26	0.00
CPK	8.50	16.25	30.00	17.00	16.50	10.25	1.50	0.00	0.00
IPK	7.77	25.47	27.61	21.98	11.80	4.02	0.80	0.27	0.27
SPK	6.70	27.79	31.02	15.38	13.15	5.21	0.74	0.00	0.00

Source: own elaboration.

Table 3.4. Basic descriptive statistics of respondents' age [years]

Protected area	Descriptive statistics		
	mean	median	standard deviation
DPN	37.52	35.00	11.03
WPN	45.00	45.00	13.51
PNUW	37.52	35.00	12.62
CPK	44.59	43.00	14.19
IPK	41.67	40.00	13.18
SPK	41.27	39.00	12.62

Source: own elaboration.

Table 3.5. Structure of respondents with respect to gender

Protected area	Percentage of visitors		
	female	male	no answer
DPN	36.32	59.95	3.73
WPN	52.48	47.52	0.00
PNUW	37.25	62.75	0.00
CPK	48.25	51.75	0.00
IPK	43.70	55.31	0.99
SPK	47.89	52.11	0.00

Source: own elaboration.

In all but one protected area (Wolin National Park), males accounted for the largest proportion of the visitors (up to almost 63% in Warta Mouth National Park).

Figure 3.1 indicates the education level of the respondents.

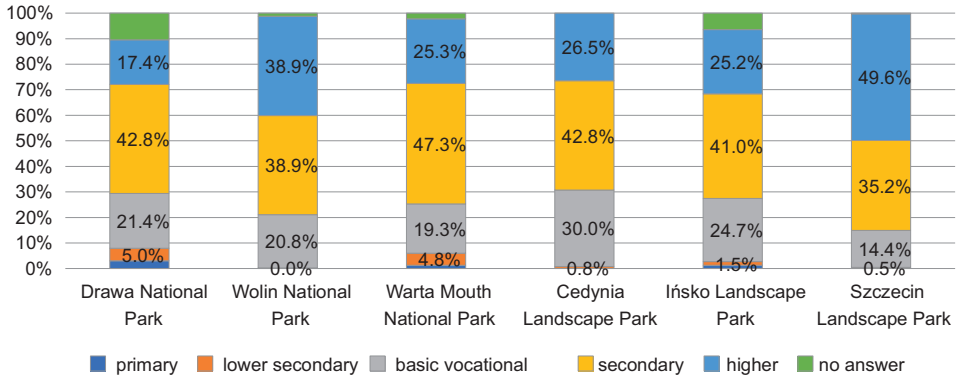

Figure 3.1. Structure of visitors with respect to their education.
Source: own elaboration.

In most protected areas, the largest fraction of visitors had secondary education. Szczecin Landscape Park was the exception – the visitors with higher education accounted for the highest proportion there. Also, in Wolin National Park the visitors with two educational levels – secondary or higher – accounted for equally high proportions.

Finally, we asked about the provenance of PA visitors, i.e. which voivodship or, if not from Poland, which country they came from (see Figure 3.2). As we have 16 voivodships in Poland and for most of them the share of visitors was very small or even equal to 0, we included only these ones for which the fraction of visitors to any of the protected areas was not less than 5%.

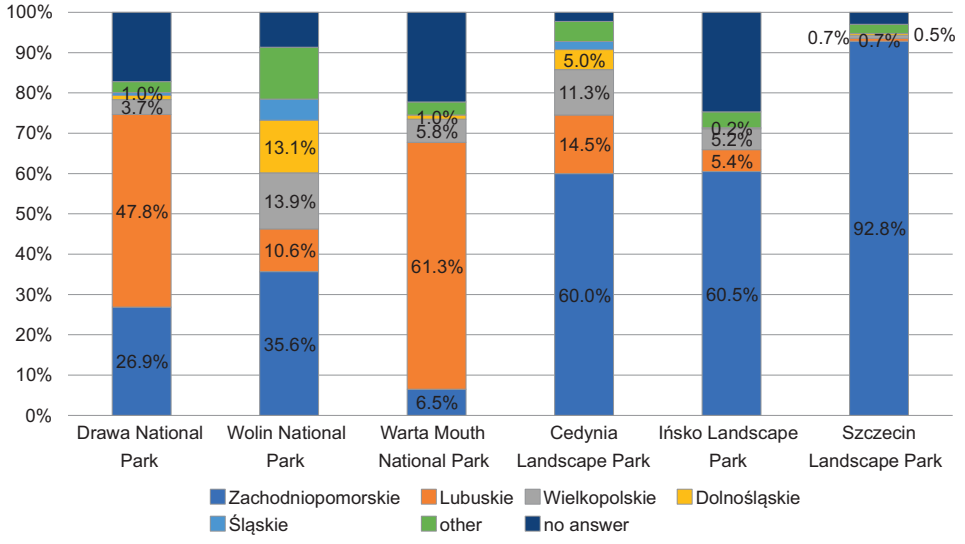

Figure 3.2. Structure of visitors with respect to voivodship/country they came from
Source: own elaboration.

Visitor provenance differed significantly between the protected areas. The vast majority of visitors to Szczecin Landscape Park (almost 93%) came from Zachodniopomorskie Voivodship. This can be explained by the fact that this PA is located on the outskirts of the agglomeration of Szczecin and, therefore, its inhabitants accounted for the largest proportion of visitors. The largest proportion of visitors to Drawa National Park and Warta Mouth National Park came from Lubuskie Voivodship. It is also understandable, as both parks lay (the former partially and the latter almost exclusively) within the territory of this voivodship. Quite a substantial fraction of visitors to Wolin National Park and Cedynia Landscape Park (13.9% and 11.3%, respectively) came from Wielkopolskie Voivodship. In the case of Wolin National Park, over 13% of the visitors came from Dolnośląskie and 5% from Śląskie Voivodships. The visitor structure in this park was the most diversified. This is most likely because Wolin National Park is the most attractive PA in terms of tourism and draws visitors from the whole Poland. Also, a small fraction of visitors to Wolin National Park came from Germany and Czechia (1.73% and 0.5%, respectively). Very few German citizens also visited Cedynia Landscape Park (0.25%), while Ukrainian nationals came to Szczecin Landscape Park (0.5%).

3.4.2. Trip characteristics and role/awareness of protected areas

The next section deals with visitors' trip characteristics, the awareness of PAs and the role PAs played for trip decisions. First, we show the frequency of visits to the PAs analysed (Figure 3.3).

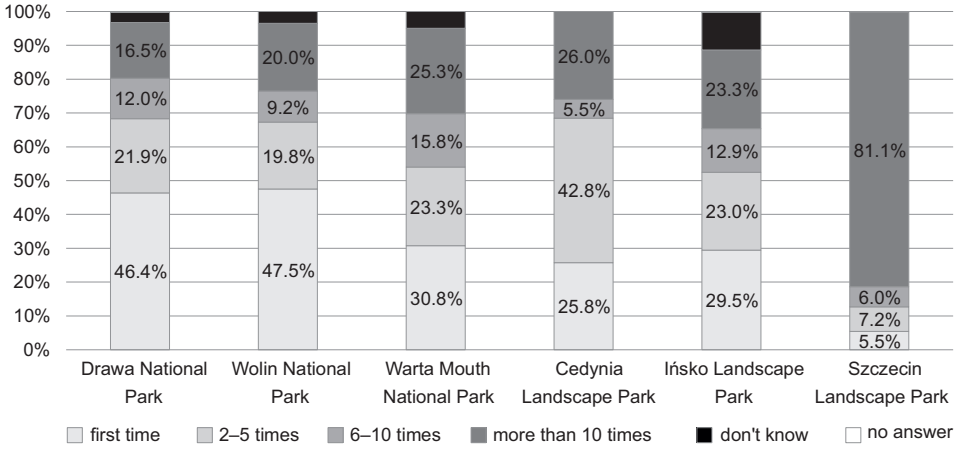

Figure 3.3. Structure of visitors with respect to the number of times they visited the protected areas.
Source: own elaboration.

The largest fraction of visitors to the two national parks visited them for the first time. In the case of Cedynia Landscape Park, the largest fraction of visitors

had been there between two and five times. The visit frequency of Szczecin Landscape Park differed to the highest degree from other parks. A vast fraction of visitors had been there more than ten times. It confirms the findings from Figure 3.2 – visitors to Szczecin Landscape Park were mostly the inhabitants of Szczecin who regularly came there as day-trippers. Figure 3.4 illustrates the length of stay in the PAs.

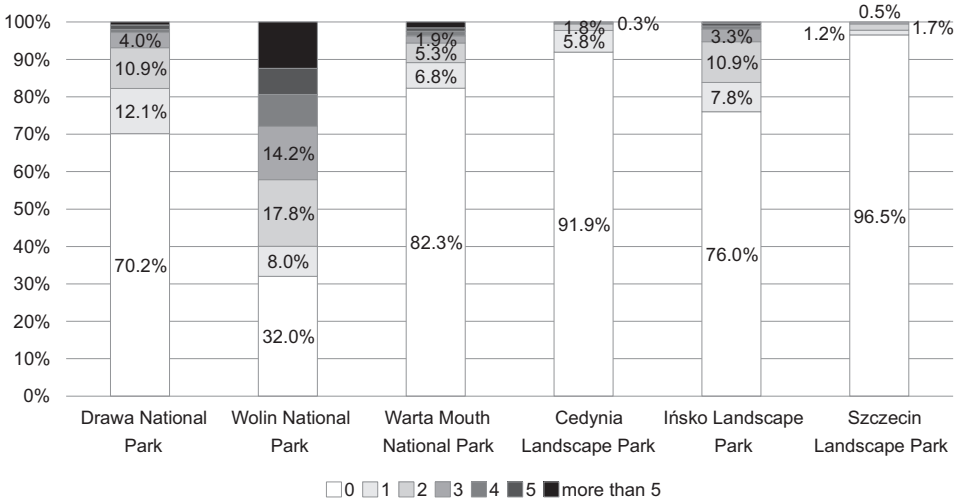

Figure 3.4. Structure of visitors with respect to the number of nights they spent in the protected areas.
Source: own elaboration.

In the case of most PAs, the vast majority of visitors were day trippers. The highest fraction (96.5%) of day trippers were those visiting Szczecin Landscape Park, which confirms the findings presented in Figure 3.2 and Figure 3.3. The only exception was Wolin National Park with a share of day trippers reaching 32%. Many more (68%) stayed there overnight. This could be expected, because Wolin National Park is by far the most popular tourism destination among the PAs analysed.

Next, we analysed the protected area awareness of the visitors (Table 3.6).

Table 3.6. Protected area awareness of the visitors

Protected area	Percentage of visitors			
	yes	no	don't know	no answer
DPN	83.33	13.43	2.74	0.50
WPN	98.02	1.73	0.25	0.00
PNUW	83.25	9.50	7.00	0.25
CPK	93.25	1.75	4.75	0.25
IPK	92.33	2.72	4.46	0.50
SPK	98.26	0.99	0.74	0.00

Source: own elaboration.

Although there were some minor differences, the great majority of our respondents (over 83%) were aware that they were visiting a PA. The differences were not marked enough to be statistically significant.

The next question enquired the visitors about how the existence of the PA influenced their decision to travel there (Figure 3.5).

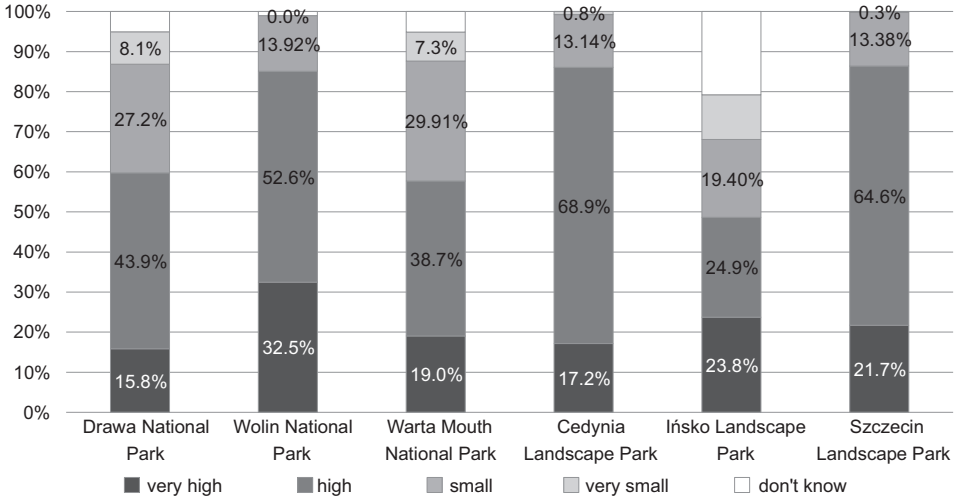

Figure 3.5. Influence of protected area status on visitors' trip decision.
Source: own elaboration.

Surprisingly, in the case of the national parks, their higher protection levels compared to landscape parks did not influence the visitors' decision to any larger extent. In the case of Wolin National Park, Cedynia Landscape Park and Szczecin Landscape Park, the answers of "very high" and "high" accounted for at least 85% of answers. For the rest of the areas, the total share of these two answers did not exceed 60%. The association between the types of protected areas and the responses to the question regarding how the existence of the protected area influenced the visitors' trip decision was weak, although statistically significant (Cramér's $V = 0.1221^{***}$).

The next topic explored the connection between the visitors' main activities in the parks and their satisfaction (Figure 3.6).

Wolin National Park and Szczecin Landscape Park are relatively similar regarding the visitors' main activities, with hiking/Nordic walking tours being the most frequently selected activity. The most diversified answers were given by visitors to Drawa National Park. The most frequently selected other activities differed between particular protected areas. In Drawa National Park, the most frequently selected other activity was kayaking – the Drawa river is famous from it. In Szczecin Landscape Park, the most frequently selected other activity was walking. In Cedynia Landscape Park and Warta Mouth National Park, many visitors were just passing by. The association between the visitors' main activity and the types of protected areas was significant, but weak (Cramér's $V = 0.17^{***}$).

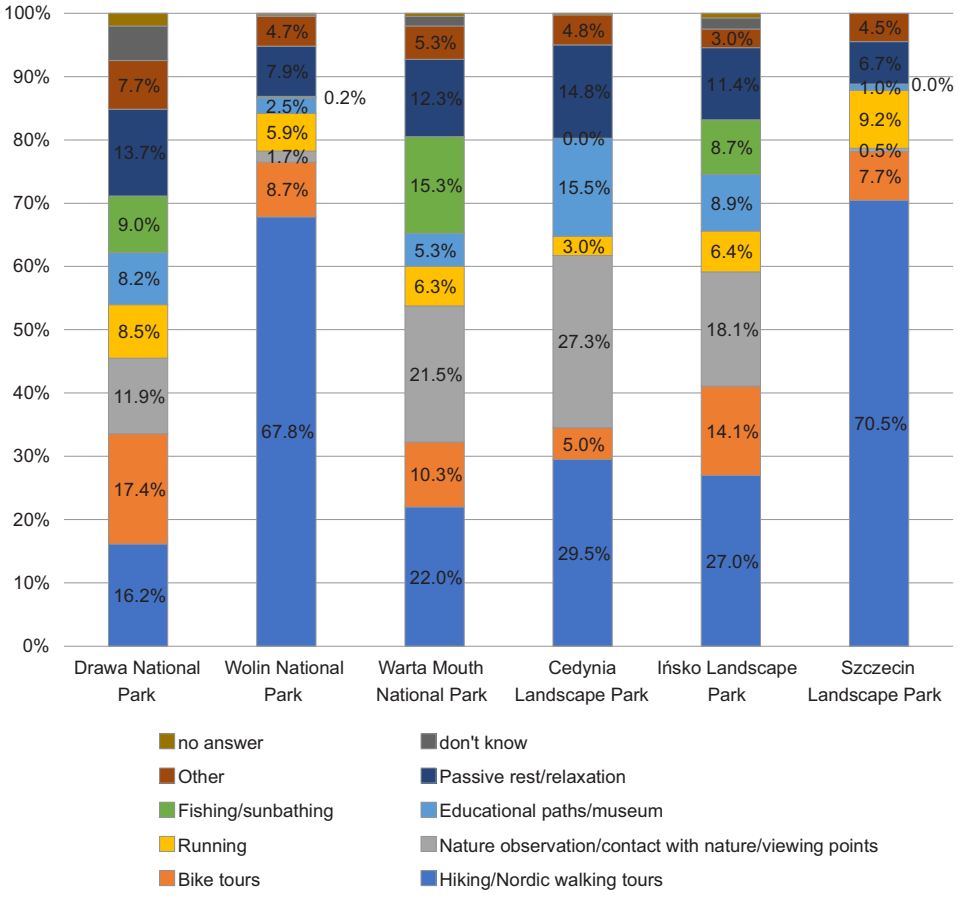

Figure 3.6. Structure of answers to the question about main activity in the protected areas.
Source: own elaboration.

3.4.3. Analysis of visitor satisfaction

The most important part of the results is the analysis of visitor satisfaction regarding various aspects of their PA visits. The aspects are as follows:

- access,
- local transport,
- accommodation,
- catering,
- tourist attractions,
- nature,
- tourist information,
- weather,
- total cost of journey.

First, the basic descriptive statistics for all aspects and for every protected area are presented in Table 3.7. Wishing to learn the level of satisfaction of the

Table 3.7. Visitor satisfaction with various aspects of PA visits

aspects	descriptive statistics	Protected areas					
		DPN	WPN	PNUW	CPK	IPK	SPK
access	mean	3.71	4.77	3.77	4.03	4.22	3.91
	median	4.00	5.00	4.00	4.00	5.00	4.00
	answer 4	27.34%	19.59%	31.00%	81.61%	26.24%	47.99%
	answer 5	31.65%	78.61%	31.54%	10.58%	53.06%	25.47%
local transport	mean	3.40	4.14	3.03	3.50	1.79	2.83
	median	4.00	4.00	3.00	4.00	2.00	3.00
	answer 4	28.09%	42.19%	18.54%	50.00%	2.42%	10.34%
	answer 5	22.41%	39.06%	12.92%	25.00%	0.81%	19.54%
accommodation	mean	3.60	4.33	3.40	4.35	3.84	3.10
	median	4.00	4.00	3.00	4.00	4.00	4.00
	answer 4	28.88%	60.20%	26.74%	64.86%	30.47%	46.67%
	answer 5	26.44%	36.73%	20.35%	35.14%	35.16%	13.33%
catering	mean	3.63	4.30	3.55	4.06	3.79	2.97
	median	4.00	4.00	4.00	4.00	4.00	4.00
	answer 4	32.29%	60.54%	38.57%	73.64%	35.57%	31.15%
	answer 5	26.86%	34.94%	17.14%	16.36%	26.88%	19.67%
tourist attractions	mean	3.81	4.40	3.68	4.31	3.82	3.88
	median	4.00	4.00	4.00	4.00	4.00	4.00
	answer 4	30.26%	48.59%	33.14%	55.73%	29.89%	43.41%
	answer 5	31.58%	45.52%	23.51%	37.91%	30.73%	28.17%
nature	mean	4.09	4.80	4.21	4.61	4.62	4.86
	median	4.00	5.00	4.00	5.00	5.00	5.00
	answer 4	29.31%	18.20%	35.46%	37.84%	10.31%	14.43%
	answer 5	45.76%	80.80%	45.92%	61.40%	77.06%	85.57%
tourist information	mean	3.81	4.01	3.55	4.23	4.25	3.37
	median	4.00	4.00	4.00	4.00	4.00	3.00
	answer 4	33.95%	58.73%	29.63%	53.44%	33.64%	41.11%
	answer 5	31.84%	21.16%	22.53%	35.71%	46.97%	8.75%
weather	mean	3.90	4.58	4.00	4.31	4.33	4.72
	median	4.00	5.00	4.00	4.00	5.00	5.00
	answer 4	30.46%	33.91%	26.57%	41.75%	16.92%	16.87%
	answer 5	38.07%	61.88%	43.11%	45.00%	61.69%	77.67%
total cost of journey	mean	3.77	3.54	3.39	2.84	3.92	2.76
	median	4.00	4.00	3.00	3.00	4.00	3.00
	answer 4	32.38%	50.77%	27.20%	13.04%	18.60%	21.05%
	answer 5	29.53%	4.34%	18.41%	2.05%	41.40%	6.37%

Source: own elaboration.

respondents who did in fact use the PAs' offer, we removed the "not applicable" responses from the dataset here.

The visitors' responses for the various PAs varied to quite a high degree. We observed the highest satisfaction with access to a given PA in Wolin National Park and the lowest in Drawa National Park. Local transport was the aspect for which there were the highest differences between the protected areas. The highest degree of satisfaction with this respect could be observed in Wolin National Park and the lowest in Ińsko Landscape Park. Amongst the visitors that used accommodation, the highest satisfaction was observed for Wolin National Park and Cedynia Landscape Park and the lowest for Szczecin Landscape Park. The situation was similar in the case of catering – the highest satisfaction was observed for Wolin National Park and the lowest for Szczecin Landscape Park. Tourist attractions were assessed the best in Wolin National Park and the worst in Warta Mouth National Park. Quite surprisingly, visitor satisfaction with respect to nature was the highest not in the national parks, but in one of the landscape parks – Szczecin Landscape Park. Also surprisingly, the lowest degree of satisfaction with respect to this aspect was recorded in Warta Mouth National Park. The highest satisfaction from the aspect of tourist information was recorded amongst the visitors to Ińsko Landscape Park and the lowest in Warta Mouth National Park. Weather assessment was the aspect which differed to the lowest degree between the visitors to the protected areas analysed. The probable cause was that all the interviews were done at more or less the same time and during the same period of the year. The highest satisfaction with the weather was amongst the visitors to Szczecin Landscape Park and the lowest in Drawa National Park. The total cost of journey was the aspect with respect to which the visitors were generally the least satisfied. It was assessed the best in Ińsko Landscape Park and the worst in Szczecin Landscape Park.

We present the associations between the types of protected areas and the visitors' satisfaction level with respect to the various aspects of visiting the PAs in Table 3.8. As mentioned earlier, we removed the answers of "not applicable" from the dataset.

Table 3.8. Associations between assessment of visitor satisfaction with respect to the various aspects of visiting the protected areas and the types of the protected areas.

Aspects	Cramér's *V*
access	0.2808***
local transport	0.4235***
accommodation	0.1122**
catering	0.0652
tourist attractions	0.0796**
nature	0.2081***
tourist information	0.0679**
weather	0.1585***
total cost of journey	0.3012***

Source: own elaboration.

Although the values of most of these coefficients are statistically significant, the strength of the associations is medium at most. The strongest associations are in the case of two aspects: local transport and total cost of journey. Therefore, we present the levels of satisfaction with these services in Figure 3.7 and Figure 3.8, respectively.

Large differences between the answers for national and landscape parks

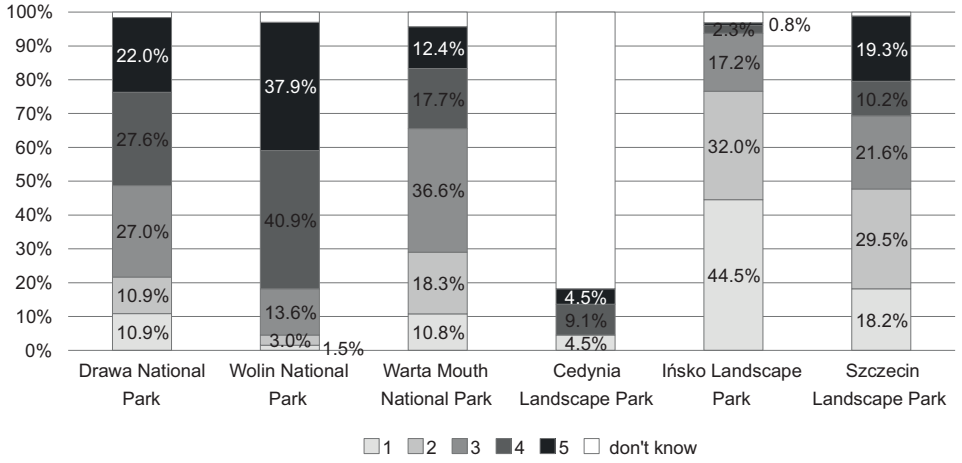

Figure 3.7. Visitor satisfaction with local transport during PA visits.
Source: own elaboration.

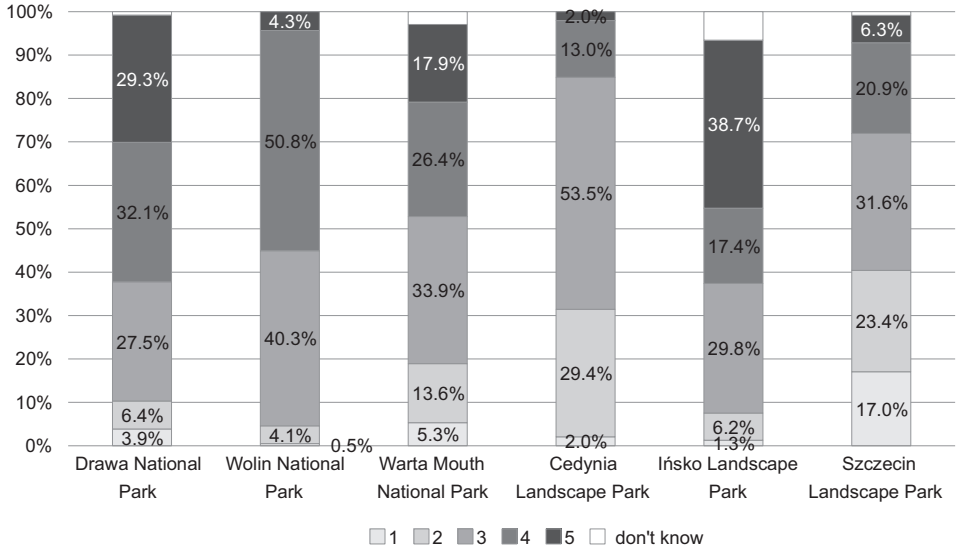

Figure 3.8. Visitor satisfaction with the total cost of journey during PA visits.
Source: own elaboration.

could be observed. The visitors to national parks were generally more satisfied with the local transport than the visitors to landscape parks. The answers provided by visitors to Cedynia Landscape Park were different from the remaining ones to the highest degree – the vast majority of the respondents did not express an opinion about their satisfaction (most likely because they did not use any local transport).

As for the aspect of the total cost of journey, the response structure does not follow directly the division by park types. Generally, the visitors to national parks

were more satisfied with this aspect than the visitors to landscape parks. However, the notable exception was Ińsko Landscape Park, where the visitors showed the highest level of satisfaction in this regard.

The next area of analysis was an assessment if the visitors felt any restrictions when visiting the PAs (Table 3.9).

Table 3.9. Structure of responses to an assessment if the visitors could feel any restrictions when visiting the protected areas

Protected area	Percentage of visitors			
	yes	no	don't know	no answer
DPN	2.24	80.10	16.42	1.24
WPN	5.20	93.32	1.49	0.00
PNUW	4.25	80.25	12.25	3.25
CPK	0.00	100.00	0.00	0.00
IPK	0.74	75.74	19.55	3.96
SPK	0.25	99.50	0.25	0.00

Source: own elaboration.

The vast majority of the visitors could not feel any restrictions. In Drawa National Park, Ińsko Landscape Park and Warta Mouth National Park, relatively large shares of the respondents (between 12 and 20%) did not have an opinion on this issue. Amongst the visitors that could feel restrictions affecting them, their indications differed between the PAs. In Wolin National Park, the most frequently indicated restriction was the ban on entering with a dog. In Drawa National Park, the visitors indicated that they lacked the right to pick mushrooms. The association between the assessment of whether the visitors could feel any restrictions when visiting the protected areas and the types of protected areas was significant, but weak (Cramér's $V = 0.137^{***}$).

The next question applied to the national parks alone. The visitors were asked if there should be a charge for entering a national park. The structure of responses to this question is presented in Table 3.10.

Table 3.10. Structure of visitors with respect to their answers to the question if there should be a charge for entering a national park

Protected area	Percentage of visitors			
	yes	no	don't know	no answer
DNP	4.73	72.39	19.90	2.99
WNP	2.97	94.06	2.97	0.00

Source: own elaboration.

In both national parks, most visitors stated that no entry fees should be charged by national parks. However, this fraction was much higher for Wolin National Park. A prevailing fraction of visitors to Drawa National Park did not have an opinion on this issue. Among the small fraction of visitors that were in favour of a charge (less than 5% for Drawa National Park and 3% for Wolin National

Park), three respondents said that this charge should be "symbolic", while not providing any specific value. The most frequent (and minimal) value was PLN 5 (just over 1 Euro). The maximum value was proposed at PLN 30 (almost 6.5 Euro). The average answer was almost PLN 9 (less, than 2 Euro) and the median value – PLN 7 (1.5 Euro)[8].

The next part was the visitors' attitude towards several statements. The statements were as follows:

- Bicycle paths should be as close to natural dirt paths as possible (S1).
- Walking paths should be as close to natural dirt paths as possible (S2).
- Campsites should have running water and electricity (S3).
- There should be as few dustbins as possible (S4).
- Tourists should take their litter with them (S5).
- It is desirable to temporarily exclude certain areas of the park from tourism, e.g. during breeding, grazing (S6).
- An information board is sufficient to inform about the exclusion of the park area for tourism (S7).
- Residents of park municipalities should be exempt from national park entrance fees (S8) – only applicable to National Parks[9].
- Nature protection is more important than the convenience of tourists (S9).

Similarly, as in the case of the aspects of PA visits, we present basic descriptive statistics for the degree of agreement with the above-listed statements in Table 3.11.

The visitors generally displayed a medium or small degree of agreement with the statement that bicycle paths should be as close to natural dirt paths as possible. The highest level of agreement was in the case of Cedynia Landscape Park and the lowest of Wolin National Park. Exactly the same situation occurred in the case of the second statement – walking paths should be as close to natural dirt paths as possible. Agreement with the statement that campsites should have running water and electricity was generally medium. The highest agreement was in Wolin National Park and the lowest in Warta Mouth National Park. The next two statements: "there should be as few dustbins as possible" and "tourists should take their litter with them" are connected with one another. The visitors generally disagreed with the former, but agreed with the latter. This may indicate a misunderstanding of the first statement. Many dustbins in a protected area create problems with their emptying as this requires regular drives by waste trucks inside the areas. The highest degree of agreement with the former statement was in Ińsko Landscape Park and the lowest in Cedynia Landscape Park. The highest degree of agreement with the latter statement was amongst the visitors to Szczecin Landscape Park and the lowest among those visiting Drawa National Park. When it comes to the next statement – it is desirable to temporarily exclude certain areas of the park from tourism, e.g. during breeding, grazing – the highest degree of agreement

[8] Current exchange rate is 1 Euro = 4.67 PLN (as of May 16th, 2022).

[9] Due to the incorrectly selected questionnaire, this statement is not available for Warta Mouth National Park.

Table 3.11. Descriptive statistics of visitors' attitude to statements.

State-ments	Descriptive statistics	Protected areas					
		DNP	WNP	WMNP	CLP	ILP	SLP
S1	mean	3.56	2.15	3.51	3.73	3.68	2.45
	median	4.00	1.00	4.00	4.00	4.00	3.00
	answer 4	27.25%	12.12%	27.13%	59.50%	15.88%	17.96%
	answer 5	29.10%	9.60%	28.72%	7.25%	45.29%	3.74%
S2	mean	3.64	2.19	3.56	3.66	3.62	2.50
	median	4.00	1.00	4.00	4.00	4.00	3.00
	answer 4	26.26%	11.22%	29.29%	51.75%	16.62%	17.37%
	answer 5	31.56%	10.47%	30.61%	7.75%	39.95%	4.47%
S3	mean	3.82	4.11	3.03	3.07	3.99	3.34
	median	4.00	4.00	3.00	3.00	4.00	3.00
	answer 4	32.26%	46.31%	21.41%	29.55%	24.61%	32.83%
	answer 5	32.26%	36.24%	18.03%	0.60%	46.09%	16.23%
S4	mean	3.45	1.91	3.13	1.36	3.53	1.87
	median	4.00	1.00	3.00	1.00	4.00	2.00
	answer 4	30.93%	5.47%	21.88%	0.75%	15.32%	2.49%
	answer 5	24.48%	3.98%	21.88%	0.25%	40.52%	0.25%
S5	mean	4.14	4.74	4.24	4.70	4.37	4.92
	median	4.00	5.00	5.00	5.00	5.00	5.00
	answer 4	28.02%	6.93%	22.34%	22.75%	16.67%	5.24%
	answer 5	46.53%	87.62%	56.35%	73.50%	64.68%	94.01%
S6	mean	3.99	4.24	4.15	4.69	3.50	4.31
	median	4.00	4.00	5.00	5.00	4.00	4.00
	answer 4	36.07%	56.40%	22.95%	29.41%	18.18%	43.48%
	answer 5	37.40%	34.01%	52.19%	69.82%	35.11%	43.79%
S7	mean	3.93	4.04	3.92	4.28	4.14	3.90
	median	4.00	4.00	4.00	5.00	5.00	4.00
	answer 4	28.38%	56.06%	21.63%	28.83%	20.56%	44.51%
	answer 5	38.99%	26.20%	45.79%	52.73%	50.47%	26.59%
S8	mean	3.93	4.15				
	median	4.00	4.00				
	answer 4	28.73%	40.71%				
	answer 5	41.19%	42.31%				
S9	mean	4.02	4.29	4.18	4.66	4.20	4.35
	median	4.00	4.00	5.00	5.00	5.00	4.00
	answer 4	38.40%	53.13%	21.99%	32.58%	22.80%	46.22%
	answer 5	35.05%	37.84%	52.17%	66.92%	52.07%	44.59%

Source: own elaboration.

with it was amongst the visitors to Cedynia Landscape Park and the lowest amongst the visitors to Ińsko Landscape Park. The visitors highly agreed with the statement that an information board was sufficient to inform about the exclusion of the park area from tourism. In Cedynia Landscape Park, the degree of agreement was the highest, while in Szczecin Landscape Park it was the lowest. The attitude towards the next statement (residents of park municipalities should be exempt from national park entrance fees) was analysed only for Drawa and Wolin National Parks. In the latter, the degree of agreement with this statement was slightly higher. The visitors to all the protected areas generally agreed to a high degree with the last statement – that nature protection was more important than the convenience of tourists. In Cedynia Landscape Park, the degree of agreement was the highest, while in Drawa National Park it was the lowest.

Table 3.12. Associations between the attitude of the visitors to statements and the PA types.

Statements	Cramér's *V*
S1	0.1822***
S2	0.2038***
S3	0.2268***
S4	0.2527***
S5	0.1741***
S6	0.1304***
S7	0.1048***
S8	0.2576***
S9	0.1501***

Source: own elaboration.

We present the associations between PA types and the attitude of the visitors towards the statements in Table 3.12.

The associations for all the statements are significant, although generally weak. The association for the statement S8 was estimated only for national parks, so we can measure only the differences between the answers provided by NP visitors. We present the responses to the two statements with the strongest associations

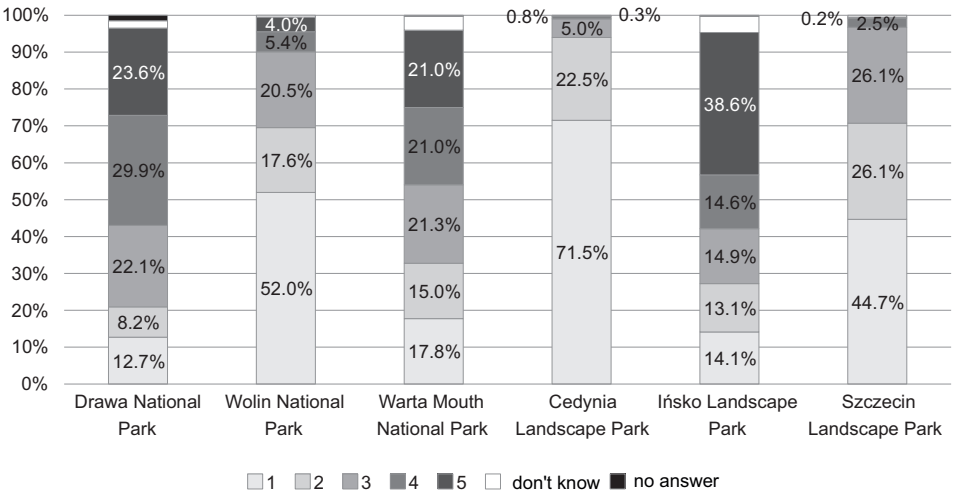

Figure 3.9. Attitude of the visitors towards the statement that campsites should have as few dustbins as possible.
Source: own elaboration.

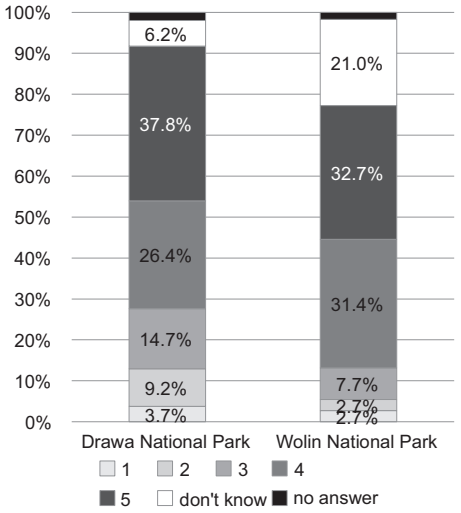

Figure 3.10. Attitude of the visitors towards the statement that residents of park municipalities should be exempt from national park entrance fees.
Source: own elaboration.

(statements S4 and S8) in Figure 3.9 and Figure 3.10, respectively.

There were visible differences between the responses provided by visitors to various parks. The largest proportions of visitors to Wolin National Park, Cedynia and Szczecin Landscape Parks, did not agree at all that there should be as few dustbins as possible. In the rest of the PAs, the visitors rather agreed with this statement (their responses mostly fell under categories of 4 and 5).

When we compare the answers to the statement that residents of park municipalities should be exempt from national park entrance fees, we can see clear differences between the answers given by the visitors to the two national parks, which confirms the weak yet distinct association presented in Table 3.12. In both Drawa and Wolin National Parks, the largest fractions of visitors strongly or totally agreed with this statement. In Wolin National Park, however, a large share of visitors (21%) did not have an opinion on this issue.

The last issue in the satisfaction analysis referred to the degree of overall satisfaction from visiting the protected areas. The association between the degree of overall satisfaction from visiting the PAs and the PA types was statistically significant, but the strength of this association was rather weak (Cramér's V = 0.2564***).

The structure of answers for the PAs analysed is presented on Figure 3.11.

The vast majority of the visitors to Wolin National Park and Cedynia and Szczecin Landscape Parks were very satisfied with their visits to the PAs. In Ińsko Landscape Park, the largest fraction of the visitors was also very satisfied. In Drawa National Park and Warta Mouth National Park, the largest shares of the visitors were satisfied with their visits. In general, the visitors to Wolin National Park and Cedynia and Szczecin Landscape Parks had the highest overall satisfaction with their visits (the average levels of satisfaction in these parks equalled 4.72, 4.79 and 4.83, respectively). The average visitor satisfaction level was 4.05 for Drawa National Park, 4.07 for Warta Mouth National Park, and 4.28 for Ińsko Landscape Park. These results corresponded with the assessment of the probability of recommendation of a visit to the analysed protected areas to family/friends and the assessment of the respondents' intention of revisiting the areas. The highest average probability of recommendation was also amongst the visitors to Wolin National Park and Cedynia and Szczecin Landscape Parks (4.78, 4.84 and

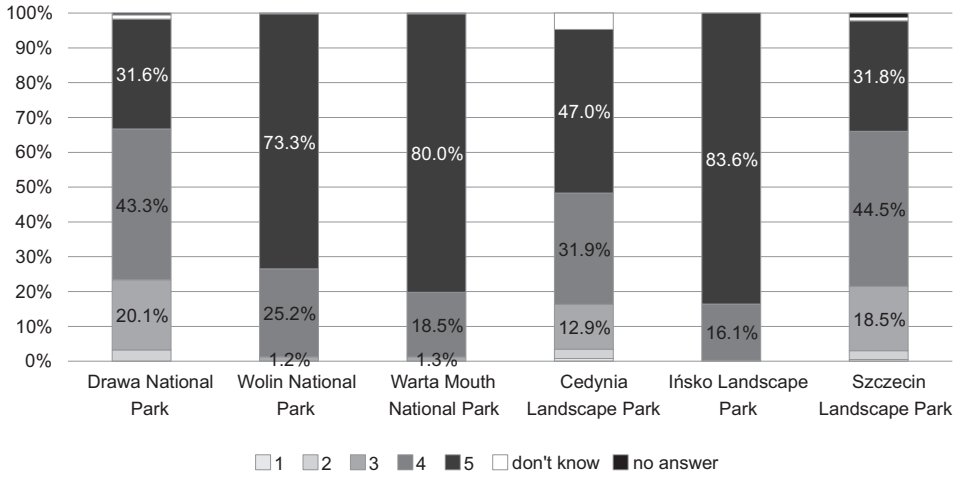

Figure 3.11. Overall satisfaction with visiting Polish PAs
Source: own elaboration.

4.90, respectively). The value was 3.86 for Drawa National Park, 3.97 for Warta Mouth National Park, and 4.09 for Ińsko Landscape Park. We obtained very similar results for the intention of revisiting the areas. On average, it was again the highest for Wolin National Park and Cedynia and Szczecin Landscape Parks (4.77, 4.85 and 4.90, respectively). The value was 4.01 for Drawa National Park, 4.21 for Warta Mouth National Park, and 4.28 for Ińsko Landscape Park.

3.5. Satisfaction results for German protected areas

3.5.1. Socio-demographic characteristics of the respondents

The presentation of our research results for the two German national parks, Jasmund and WPLA, will start in a similar vein as above, namely by showing the socio-demographic characteristics of the respondents.

On average, the respondents in both the parks were relatively old, between 51.1 (SD 15.4) in Jasmund and 58.7 (SD 13.4) years old in WPLA. This difference was statistically highly significant ($p < 0.001$ according to the Mann-Whitney U-test).

Regarding gender distribution, the samples from both parks contained more female than male respondents (53.8% women in Jasmund, 56.7% in WPLA).

The visitors to Jasmund National Park had a higher education level compared to WPLA National Park (Cramér's V 0.281, $p < 0.001$): while 45.7% of Jasmund visitors indicated "higher" (than secondary education) level, this figure was only 29.0% for WPLA visitors. Consequently, WPLA visitors had much higher shares among the groups with primary (7.1% vs. 1.5% for Jasmund) and lower secondary (20.7% vs. 7.7% for Jasmund) education levels.

Based on their five-digit postal codes provided by the respondents, we are able to identify the visitors' provenance: the overwhelming majority of WPLA visitors were Germans (99.3%), while Jasmund had a slightly higher share of foreign visitors (3.4%, Cramer's V 0.094, $p < 0.001$). Among the domestic visitors to Jasmund NLP, more than 50% (54.9%) came from the five federal states of Northrhine-Westfalia (17.4%), Lower Saxony (9.9%), Bavaria (9.6%), Mecklenburg-Western Pomerania (9.0%), and Saxony (8.9%). This was notably different to WPLA National Park, where the top five federal states accounted for 54.0% of all visitors, with Northrhine-Westfalia accounting for 16.4%, Lower Saxony for 12.5%, Saxony for 10.0%, Bavaria for 8.1%, and Brandenburg for 7.0%, while Mecklenburg-Western Pomerania accounted for only 6.9% of the park visitors (Cramer's V 0.142, $p < 0.01$). In this way, the visitor provenance patterns of both parks underline the sites attractiveness to visitors from all over Germany.

3.5.2. Trip characteristics and role/awareness of protected areas

This section presents the trip characteristics of the visitors to Jasmund and WPLA National Parks and includes their answers regarding awareness and the role of the PA status for trip decisions.

Visitation in both the national parks was widely dominated by overnight visitors, i.e. visitors staying at least one night in the park region (91.0% for Jasmund, 96.1% for WPLA, Cramér's V 0.102, $p < 0.001$), while the remainder of the visitors were day-trippers.

The length of stays by overnight visitors to the national park regions was relatively substantial: on average, 6.19 nights by visitors to Jasmund National Park (SD 4.253, median 6.0), and even 8.69 nights by visitors to WPLA National Park (SD 6.345, median 7.0). The difference between the two park regions was also statistically significant ($p < 0.001$ according to the Mann-Whitney U-test).

Regarding visitation frequency, WPLA National Park visitors were more likely to be repeat visitors compared to Jasmund visitors (36.5% first-time visitors to WPLA vs. 58.4% for Jasmund; Cramér's V 0.248, $p < 0.001$). This was also reflected in the much higher share of visitors with a history of more than five visits (29.5%) for WPLA vs. 12.8% for Jasmund. Differentiated between overnight visitors and day-trippers (Figure 3.12), it is obvious that the latter include a much higher share of repeat visitors (44.9% >five visits vs. 19.2% for overnight visitors) and, in turn, a much lower share of first-time visitors (33.9% vs. 48.9%). These differences were statistically significant with a weak strength of association (Cramér's V 0.216, $p < 0.001$).

Asked with "How many people are you with staying here in the region?", the respondents indicated their group size. On average, the group size in Jasmund National Park amounted to 2.56 (SD 1.044) and, thus, surpassed the arithmetic mean of 2.15 (SD 0.880) for WPLA National Park ($p < 0.001$ according to the t-test and the Mann-Whitney U-test). This varying group size was related to the differing numbers of children per group. In Jasmund National Park, 77.5% of the respondents indicated to not have any children in their travel group (WPLA

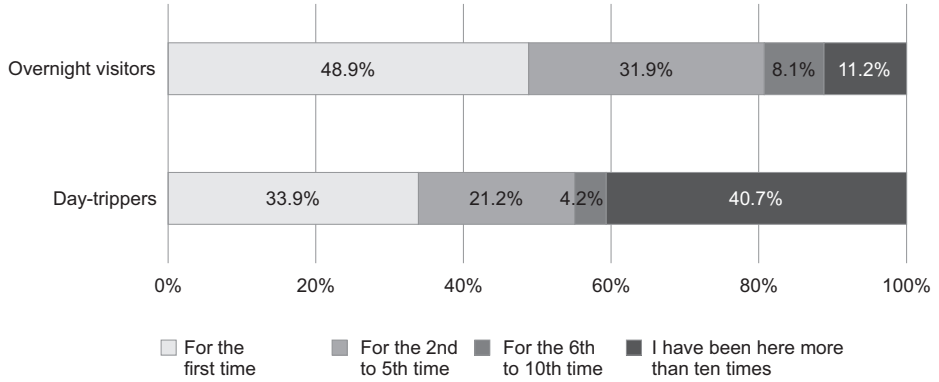

Figure 3.12. Visitation frequency differentiated by visitor types
Notes: Jasmund n = 933, WPLA n = 891
Source: own elaboration

National Park 90.7%, Cramér's V 0.198, $p < 0.001$). On average, there were 0.39 children per group visiting Jasmund National Park compared to only 0.13 for WPLA ($p < 0.001$ according to the t-test and the Mann-Whitney U-test).

Figure 3.13 shows the information sources the respondents indicated about the two national parks. The three most important information sources in both parks are, in descending order, the internet, leaflets or brochures, and outdoor

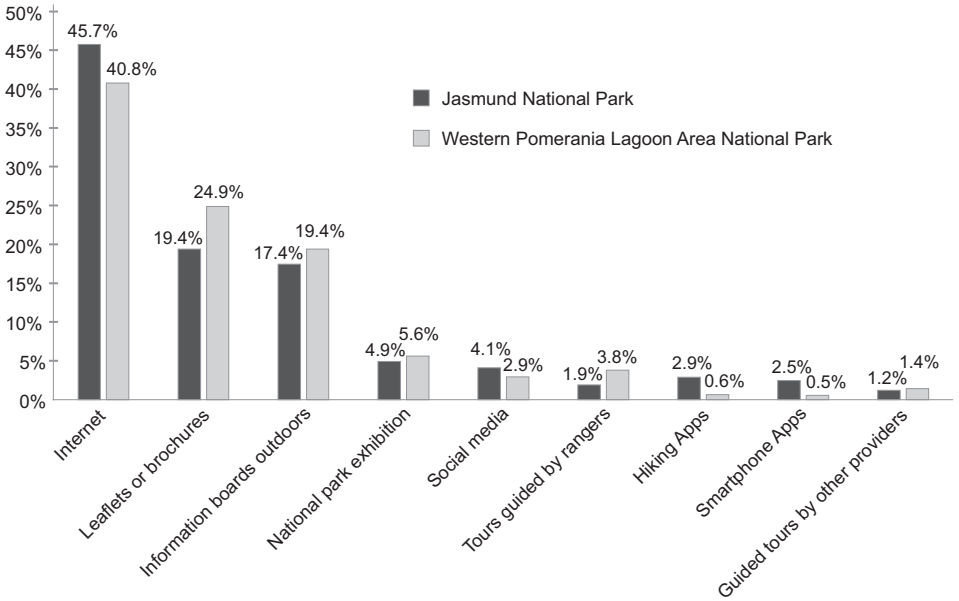

Figure 3.13. Information sources about Jasmund and WPLA National Parks (based on multiple answers).
Notes: Jasmund n = 1423, WPLA n = 924
Source: own elaboration.

information boards. On average, respondents in Jasmund National Park use significantly more information sources compared to WPLA (1.52 vs. 1.04; $p < 0.001$ based on the Mann-Whitney U-test).

The most important reasons to visit both national parks were, by far, recreation, leisure and holidays, and a special nature experience, with WPLA visitors much more motivated by a special nature experience when compared to Jasmund visitors (see Figure 3.14).

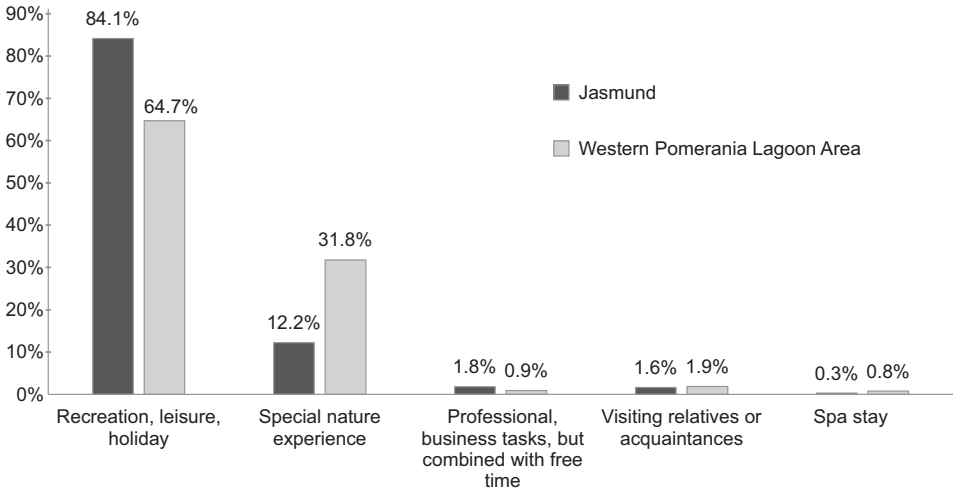

Figure 3.14. Reasons for visiting Jasmund and WPLA National Parks (based on multiple answers).
Notes: Jasmund n = 1008, WPLA n = 906
Source: own elaboration.

The activities pursued by visitors to both national parks differed in line with the physical geographical conditions of both the PAs: the most important activities in Jasmund were (in descending order) hiking/Nordic walking, nature observation, recreation/relaxation/sunbathing, museums and bike tours, while in WPLA bike tours, hiking/Nordic walking and recreation/relaxation/sunbathing, followed by nature observation (see Figure 3.15).

The next topic discussed herein is the level of awareness and knowledge about the protected area status of the two areas under investigation. Firstly, nearly all respondents answered positively that nature protection would be of importance

Table 3.13. Knowledge about the protected area status.

	Jasmund	WPLA
Yes, there is a national park in this region	96.2%	97.9%
No, there is no national park in this region	3.4%	0.7%
I don't know	0.2%	1.5%
No answer	0.2%	0.0%

Source: own elaboration.

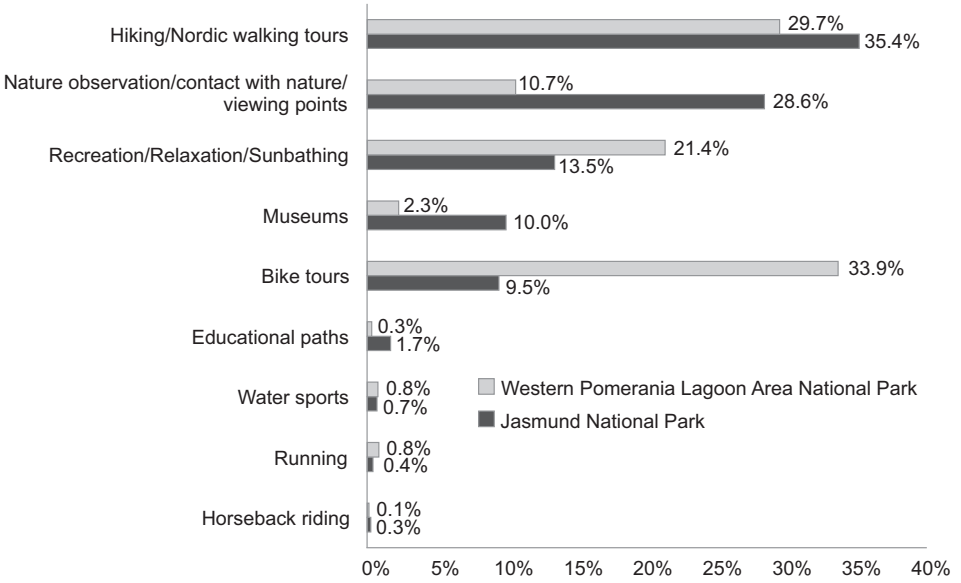

Figure 3.15. Activities in Jasmund and WPLA National Parks (based on multiple answers).
Notes: Jasmund n = 1942, WPLA n = 1544
Source: own elaboration.

for them (99.8% Jasmund, 98.8% WPLA). Secondly, as shown in Table 3.13, the overwhelming majority of the respondents claimed they knew about the national park status of both PAs, with the knowledge level in WPLA higher than it was for the other PA (Cramér's V 0.122, $p < 0.001$).

Finally, we asked the respondents to rate the role of the national park status for their trip decision to visit the PA regions. Figure 3.16 highlights that for the

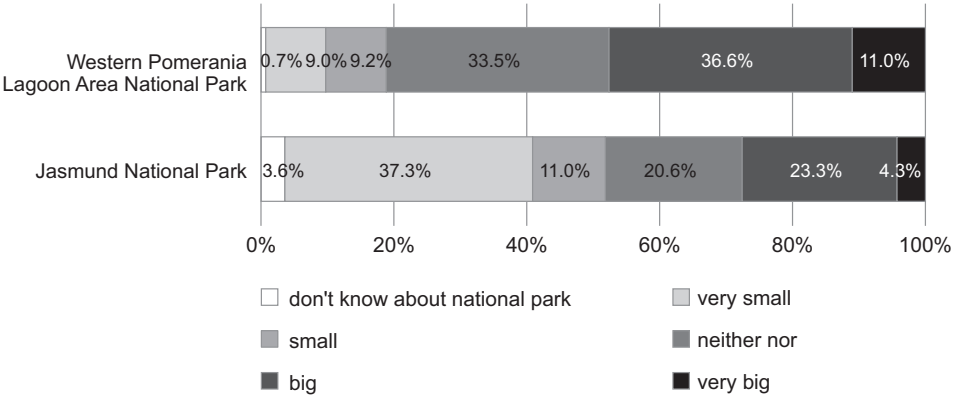

Figure 3.16. The role of the national park status for the visitors' trip decision to come to Jasmund and WPLA National Parks.
Notes: Jasmund n = 893, WPLA n = 874
Source: own elaboration.

trip decisions in favour of WLPA National Park, the national park status was significantly more important compared to Jasmund: 47.6% of WLPA visitors rated the status' role to be very big or big, compared to 27.5% for Jasmund (Cramér's V 0.376, $p < 0.001$).

Specifically for Jasmund National Park, the visitors were enquired about their knowledge regarding the park's UNESCO world heritage label, with more than half of the visitors (58.2%) having been familiar with this labelling. However, only for 5.6% of the visitors did the world heritage label play a big or a very big role for their decision to visit Jasmund, while 86.5% denied any role that the label may have had. The association between the national park affinity and the role of the UNESCO world heritage status was statistically significant (Cramér's V 0.158, $p < 0.001$), but rather weak. Nevertheless, the more important the national park status, the more important also the world heritage status for the trip decision.

3.5.2. Analysis of visitor satisfaction

In this section, the results of the questions dealing with visitor satisfaction in the two German national parks investigated are finally presented. Concerning the overall satisfaction with their national park visit, the large majority of the respondents indicated to be "very satisfied" (Jasmund 63.4%, WPLA 72.6%) or "satisfied" (Jasmund 31.4%, WPLA 21.8%). That means that only 1.5% (Jasmund) and 1.9% (WPLA), respectively, provided overall satisfaction answers of less than "three", i.e. they were "dissatisfied" or even "very dissatisfied". The overall satisfaction with the visit in WPLA was slightly higher (an overall mean of 4.64 vs. 4.54 for Jasmund, $p < 0.001$ based on the Mann-Whitney U-test, respectively, Cramér's V 0.110, $p < 0.001$) (see Figure 3.17).

When asked about the probability of them recommending a stay in the PA region to their family and friends, no significant differences between both the parks occurred. Between 78.9 (Jasmund) and 81.7% (WPLA) of the respondents provided the answer of "highly probable", while 13.8 (WPLA) and 16.4% (Jasmund) chose the answer of "probable". Again, only a marginal 1.1 (Jasmund) to 1.5% (WPLA) of the persons enquired deemed it "improbable" and "highly improbable" to recommend the park region to their family and friends. The arithmetic means were even higher than those for overall satisfaction, with 4.73 for Jasmund and 4.75 for WPLA (see Figure 1.17).

In contrast to these results, the intention to revisit varied significantly between both national parks (Cramér's V 0.221, $p < 0.001$). While in Jasmund 59.7% of the respondents answered "definitely yes" and 16.0% provided the second highest level of agreement (75.6% top-two box value), the corresponding values for WPLA visitors were 73.3% and 18.6%, respectively (91.9% top-two box value). Also, the arithmetic mean values differed considerably, with 4.23 (Jasmund) vs. 4.62 (WPLA) ($p < 0.001$, based on the Mann-Whitney U-test) (see Figure 1.17).

Next, the correlations between the three variables measuring visitor satisfaction were explored, followed by correlations between visitor satisfaction and

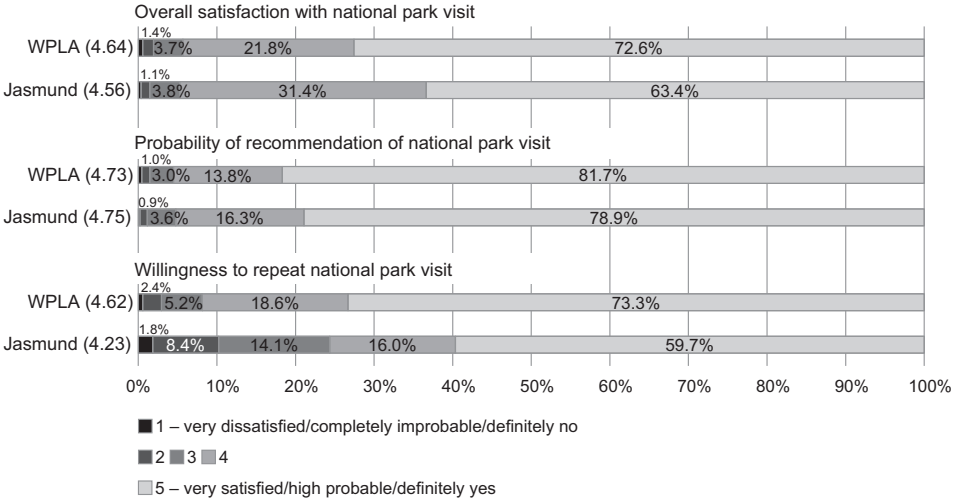

Figure 3.17. Overall visitor satisfaction with Jasmund and WPLA National Parks (first two bars), probability of recommendation of a national park visit (middle bars), and willingness to revisit the national park (last two bars).
Notes: Jasmund n = 816, WPLA n = 882
Source: own elaboration.

trip-related socio-demographic variables. Table 3.14 reveals that the three variables measuring visitor satisfaction were positively correlated at the highest level of statistical significance, but the strength of the correlations was relatively weak. However, the higher the overall satisfaction of Jasmund and WPLA National Park visitors, the higher also their probability to recommend a visit to the park region to their friends and relatives and the higher their own intention to revisit the respective national park. The highest, almost medium, correlation strength occurred between the probability of recommendation and the intention to revisit the parks (R_S 0.370***). Only two further variables were significantly correlated to the overall satisfaction: visitation frequency and the role of the PA for the trip decision. However, these correlations were very weak. In contrast, the correlations were stronger for the intention to repeat the national park visit: the higher the visitation frequency and the more important the national park status for trip decision, the higher the intention to revisit the national parks. The visitation frequency was also positively related to the role of the national parks' status, although the correlation was very weak.

Regarding the visitor types, overnight guests were significantly more satisfied compared to day-trippers (4.62 vs. 4.44, $p < 0.1$ based on the Mann-Whitney U-test), while, in contrast, day-trippers were more likely to revisit the national parks (4.59 vs 4.42, $p < 0.05$ based on the Mann-Whitney U-test). This somewhat contradictory result might explain why the correlation strength between both variables was not higher. As could be expected, the respondents who felt restricted by the PAs' nature protection measures answered less positively for all

Table 3.14. Spearman Rho correlations between visitor satisfaction measures and other variables

	Probability of recommendation of park region visit	Intention to revisit the PA	Visitation frequency	Role of PA for trip decision	Group size	Number of children in group	Number of overnight stays intended in the PA region	Sum of information sources about the PA
Overall satisfaction	0.301 ***	0.250 ***	0.069 **	0.104 ***	0.011	0.029	0.046	0.028
Probability of recommendation of park region visit		0.370 ***	0.051 *	0.052 *	–0.048 *	–0.047	0.023	–0.015
Intention to revisit the PA			0.260 ***	0.161 ***	–0.054 *	–0.009	0.048 *	–0.096 ***
Visitation frequency				0.124 **	–0.033	0.008	0.085 ***	–0.170 ***
Role of PA for trip decision					–0.067 **	0.023	0.059 *	0.030
Group size						0.650 ***	–0.028	0.065 **
Number of children in group							–0.057 *	0.007
Number of overnight stays intended in the PA region								0.061 **

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$
Source: own elaboration.

three satisfaction variables (overall satisfaction 4.20 vs. 4.62, $p < 0.001$; recommendation probability 4.45 vs. 4.75, $p < 0.05$; intention to revisit 3.86 vs. 4.44, t, $p < 0.01$, all based on the Mann-Whitney U-tests).

The socio-demographic variables were not statistically related to the visitor satisfaction measures, except the education level, which showed a very weak, negative relation with the intention to revisit the park (R_S –0.095***, which indicates that the higher the education level, the lower the intention to revisit the parks).

Related to the questions about overall satisfaction, the probability of recommendation and the willingness to revisit, was the question that enquired about perceived restrictions in relation to the visitors' stay in the PA. When asked: "Do you feel personally restricted in your current stay here in the National Park by the regulations to protect nature?", between 96.3 (Jasmund) and 98.8% (WPLA)

of the respondents provided a negative answer (Cramér's V 0.078, $p < 0.01$). The respondents stating "yes" were asked openly about which regulations actually restricted their stay in the park. Out of the 33 answers provided in Jasmund, nine referred to excessively high entry fees to the visitor centre, seven criticised the biking infrastructure (too few biking trails, poor signage) while seven others mentioned accessibility issues such as too high a distance from the parking lot and the impossibility to reach the visitor centre by car. The eight open answers for WPLA National Park were rather diverse and difficult to group, as they ranged from missing toilets, to parking restrictions, to too few and too narrow trails.

Finally, we also asked the national park visitors for suggestions to improve the visitor experience and their satisfaction. Nine out of 46 suggestions for Jasmund National Park dealt with better signage and information boards, while seven suggestions focused on more and cost-free public toilets, as well as prevention of littering and better waste disposal. Three suggestions referred to better biking trails. For WPLA National Park, 14 of the 39 suggestions were centred around the topic of encounters between hikers and bikers and included separation of cycle paths and footpaths or prevention of disturbance by bikers. Five suggestions named parking fees, four addressed better waste disposal, and three mentioned overcrowding.

3.6. Comparison between Polish and German protected areas

This section is devoted to the comparison of visitor satisfaction results between the Polish and the German PAs. Here, the focus is on the three measurements of visitor satisfaction, overall satisfaction with the PA visit, the probability of recommending the PA visit to family and friends, and the intention to revisit the PA (see Table 3.15).

Regarding overall satisfaction with the PA visit, there were statistically significant differences on the country level, as visitors to German PAs (4.60) were more satisfied with their visits compared to their counterparts in the Polish PAs (4.46). When it comes to the PA category, no statistically significant differences between national parks (4.54) and landscape parks (4.50) could be found.

Visitors to German PAs (4.74) were even more inclined to recommend the park visit to their family and friends than visitors to the Polish PAs were (4.42). Given that the German sites under investigation were all national parks, it is not surprising that national park visitors (4.61) reported a significantly higher propensity to recommend the park visit than visitors to landscape parks did (4.46).

In contrast to the first two visitor satisfaction indicators, the intention to revisit the parks was higher in the case of the Polish parks (4.51 vs. 4.43), although it was not significant in all the tests. Also deviating from the results of the probability of recommendation, the intention to revisit landscape parks (4.58) was significantly higher than that related to national parks (4.41).

Table 3.15. Visitor satisfaction indicators compared between Polish and German PAs and protected area categories.

	Polish PA	German PA	Test of significance
Overall satisfaction with park visit	4.46	4.60	Mann-Whitney U-test: standardised test statistic 6.658, $p < 0.001$
Probability of recommendation of park region visit	4.42	4.74	Mann-Whitney U-test: standardised test statistic 13.465, $p < 0.001$
Probability of recommendation of park region visit	4.51	4.43	Mann-Whitney U-test: standardised test statistic –0.875, $p = 0.382$
	National parks	Landscape parks	
Overall satisfaction with park visit	4.54	4.50	Mann-Whitney U-test: standardised test statistic –1.432, $p = 0.152$
Probability of recommendation of park region visit	4.61	4.46	Mann-Whitney U-test: standardised test statistic –5.528, $p < 0.001$
Probability of recommendation of park region visit	4.41	4.58	Mann-Whitney U-test: standardised test statistic 5.315, $p < 0.001$

Source: own elaboration.

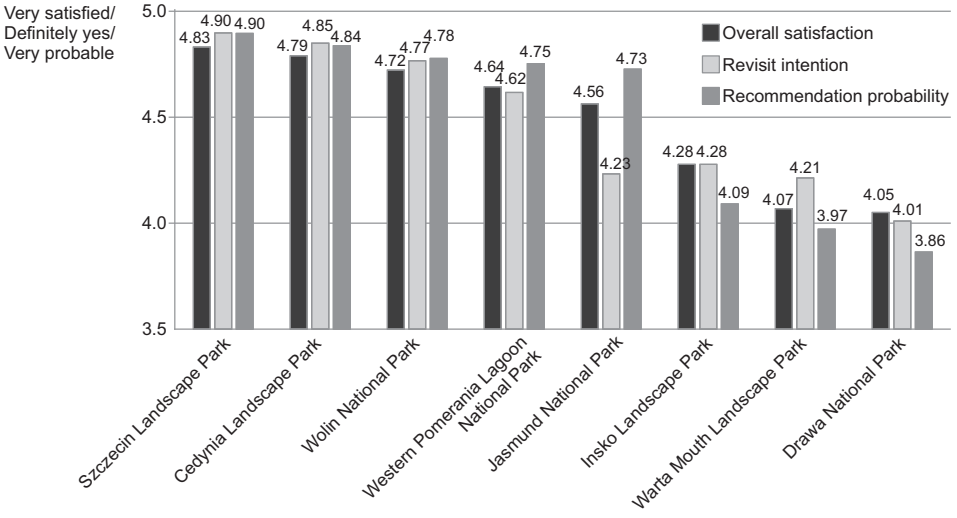

Figure 3.18. Overall visitor satisfaction, willingness to repeat a PA visit, and the probability of recommendation of PA visit compared between all the PAs analysed.
Source: own elaboration.

Figure 3.18 illustrates the satisfaction indicators for all the parks analysed. The ranking of the three indicators is very similar between the parks: the visitors to Szczecin Landscape Park were the most satisfied with the highest recommendation probability and the highest intention to revisit, followed by visitors to Cedynia Landscape Park, Wolin National Park, WPLA National Park and Jasmund National Park. The latter park had a notable gap between recommendation probability and revisit intention. The least satisfied visitors were found in Ińsko Landscape Park, Warta Mouth National Park and Drawa National Park. These notable differences between the PAs analysed with regard to overall visitor satisfaction and the other two satisfaction indicators were often statistically significant, according to the Kruskal-Wallis test.

Finally, Table 3.16 illustrates the correlations between the three visitor satisfaction indicators. While it was obvious that all the indicators were significantly correlated with medium strength, it was still interesting to observe that the correlation strength for the Polish PAs was considerably higher than for the German PAs. In any case, as expected, the higher the overall satisfaction with the PA visit, the higher also the probability to recommend a park visit and the higher the intention to revisit the PA.

Table 3.16. Spearman Rho correlations between visitor satisfaction measures for all the PAs, both Polish and German.

	Probability of recommendation of park region visit	Intention to revisit the PA
All PA		
Overall satisfaction	.507***	.441***
Probability of recommendation of park region visit		.546***
Polish PA		
Overall satisfaction	.601***	.589***
Probability of recommendation of park region visit		.693***
German PA		
Overall satisfaction	.301***	.250***
Probability of recommendation of park region visit		.370***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$
Source: own elaboration.

3.7. Discussion

Based on the state of research (see section 3.2), visitor satisfaction studies appear to be more commonly and more systematically done for the Polish national parks compared to their German counterparts. However, due to the low international visibility of these studies they are only accessible for scientists mastering the Polish language. Nevertheless, for the Polish landscape parks and for nature parks

and biosphere reserves in Germany, which include often heavily used recreational areas, there are no publicly available visitor satisfaction studies.

Regarding the general level of satisfaction, the conducted visitor satisfaction surveys amongst visitors to Polish national and landscape parks in the Euroregion Pomerania were in line with the high scores that were obtained in earlier studies for national parks. The study shows that the visitors to Wolin National Park, Cedynia Landscape Park, and Szczecin Landscape Park, were the most satisfied with their visit. The particularly high level of overall satisfaction from visits to these areas may be a derivative of the above-average attractiveness of these areas, in particular the attractive infrastructure there. Wolin National Park features a park museum and a European bison show enclosure, which are visited in large numbers. The other two national parks – Drawa and Warta Mouth – did not have such highly attractive facilities during the study period. It was not until 2021 that a modern museum and educational centre was opened in Słońsk for Warta Mouth National Park (OME, 2022), the Education and Tourism Centre in Drawno was opened for Drawa National Park (DPN, 2022), and an exhibition entitled "Water world" was opened in the tourist information point in Głusk just before the COVID-19 restrictions were imposed. Thus, these two national parks should likely be able to improve their levels of overall visitor satisfaction in subsequent repetitions of the study. The high level of satisfaction in Cedynia Landscape Park may also have been due to their new, above-average tourist attractions in comparison to other landscape parks of the West Pomeranian Voivodship, which are: a bridge suitable for hiking and cycling connecting Siekierki on the Polish side with Neurüdnitz on the German side of the Oder River, and an observation deck in Widuchowa. Among the protected areas surveyed on the Polish side of the Euroregion, Szczecin Landscape Park "Puszcza Bukowa" was also distinguished by a high level of general satisfaction. It seems that the explanation for this phenomenon is also to be found in the investments made in tourist infrastructure in recent years, i.e. the completion in 2019 of the renovation works on the bridge and stairs over the Emerald Lake that is traditionally visited in large numbers by the inhabitants of Szczecin, and the renovation of the nearby Emerald Forest Education Centre, which had been closed for many years. The high level of satisfaction with the stay in these protected areas shows the high management competence of the administration of these protected areas and indicates that their actions, especially in the field of tourist infrastructure, were justified.

The results for the general level of visitor satisfaction corresponded with the assessment of the probability of recommending a visit in the analysed protected areas to family members/acquaintances and with the assessment of the respondents' intention of revisiting these areas. The highest average probability of recommendation was also reported among the visitors to Wolin National Park and Cedynia and Szczecin Landscape Parks. The phenomenon of high values for these protected areas can also be explained by their accessibility, especially for most visitors who come from Zachodniopomorskie Voivodship. It is relatively easy – in comparison to other studied Polish national parks – to get there from the biggest agglomeration, i.e. from Szczecin to Wolin National Park, because it is possible

to reach it fast by train or by the modern road connection, i.e. the S3 express road. As far as landscape parks are concerned, the explanation for the intention to visit these areas again can be sought in their location. Szczecin Landscape Park "Puszcza Bukowa" borders directly on Szczecin agglomeration, while Cedynia Landscape Park is relatively close, lying only 80 km from the centre of Szczecin, which makes the respondents use them for close proximity recreation whenever they are not inclined to substitute these destinations with parks located further away. In this context, the German Lower Oder Valley National Park, located only 60 km from the centre of Szczecin agglomeration, should theoretically gain in importance as a destination for visitors from Poland. So far, it has received only a small number of visits, with only 1.5% of all visitors coming from Poland (Rein & Balas, 2015). However, as Mayer et al. (2019) show, spatial proximity is seemingly overshadowed by other border-related barriers in this context.

Surprisingly, the tourists' satisfaction with nature was the highest not in the national parks under investigation here, but in one of the landscape parks, i.e. in Szczecin Landscape Park "Puszcza Bukowa". This phenomenon can be explained by the fact that in the landscape park, compared to a national park, more human interference is allowed manifesting itself, e.g. in the possibility to walk out of the designated trails, or the possibility to pick mushrooms. This direct experience of unhindered contact with the surrounding nature for visitors to the landscape park was of greater significance especially to those visitors who were mainly residents of the large agglomeration of Szczecin. At the same time, the results confirming above-average visitor satisfaction from being close to nature in Szczecin Landscape Park may strengthen the argument for establishing a Szczecin National Park on its basis. Such an initiative has been repeated in the public debate for many years (Osóch & Zbaraszewski, 2020), with one of the most recent being the initiative by the Natural Heritage Foundation (FDP, 2022).

The results for the two German national parks Jasmund and WPLA were completely in line with the existing visitor satisfaction studies for German national parks: overall visitor satisfaction was very high, which was also the case for the probability of recommendation of a park visit to family and friends. This was a very positive result for the PA and the destination management alike, and should be continuously monitored over time. The only remarkable deviation was the relatively lower revisit intention for Jasmund, which might explain the lower correlations between the visitor satisfaction indicators for the German parks compared to the Polish study sites. This lower revisit intention might have been related to the visitor provenance in both parks. Similar to earlier studies (Mayer & Woltering, 2018; Sinclair et al., 2020a,b), the home regions that the park visitors hailed from where on average located far from the parks, indicating that both parks served as important tourism attractions motivating people from all parts of Germany to come to the Baltic Sea coast. That said, the respondents might have especially regarded Jasmund National Park as a once-in-a-lifetime destination (see also Rivera & Croes, 2010), one that was also costlier than WPLA National Park due to the entrance fees to the visitor centre charged there (which was mentioned several times in the comment section of the questionnaires). Furthermore,

the relatively weak correlations between overall satisfaction, probability of recommendation, and the intention to revisit that were identified for the German parks indicated that repeat visitation was not determined by satisfactory experiences in the parks: the park visitors were very satisfied, yet it seemed that they wanted to explore different sites, PAs, regions, and countries, as well (see Gitelson & Crompton, 1984).

Regarding the visitor structure, the share of foreign visitors in our study was much lower compared to the year-around surveys by Job et al. (2016) which revealed shares of 7.0% of foreign visitors for WPLA and 7.6% for Jasmund. This deviation also hinted at one of the limitations of this study: due to the short survey period after the end of the main season the visitor structure was not representative of the complete season in the PAs. Therefore, visitor satisfaction results too might vary in other parts of the season, for instance during the high season with a much higher likelihood of crowding in some parts of the parks, which in turn might negatively influence visitor experience and visitor satisfaction, as suggested by the literature.

Another limitation of our visitor satisfaction study was that the level of overall visitor satisfaction was measured with a single question only (Needham & Rollins, 2009; Roemer & Vaske, 2014). For future visitor satisfaction studies in Polish and German PAs, we suggest making use of Importance-Performance-Analysis and Importance-Satisfaction-Analysis, which are based on many more items (Tonge & Moore, 2007). This would also allow for an in-depth analysis of the determinants of overall visitor satisfaction, and of recommendation and revisit propensity.

Finally, the very high levels of visitor satisfaction observed throughout our study, and reflected in earlier contributions, raise some doubts about the general meaningfulness of the construct of visitor satisfaction (Roemer & Vaske, 2014), since respondents tend to adjust their expectations based on the actual conditions at the destination to avoid cognitive dissonance (Shelby et al., 1986).

3.8. Interim conclusions

The visitor satisfaction studies carried out in eight PAs of the Pomerania region (six Polish and two German PAs) revealed a very high level of satisfied park visitors (for most of the parks), who also expressed a similarly high level of visitor loyalty to the parks, as operationalised by their stated probability of recommending them and their stated intention to revisit the parks. These positive results should encourage the PAs and destination managers to continue their good work, respectively, to make an in-depth analysis of the reasons for the less positive results. The PAs should continue our visitor satisfaction measurements by including them in a regular socio-economic visitor monitoring system, where the relevant questions could be combined with other research topics such as crowding experiences or spending behaviour.

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4. Analysis of park–people relationships

4.1. Introduction

Since at least the end of the twentieth century, initiatives have been undertaken globally to create a favourable social climate for protected areas. One example of such action is the International Union for Conservation of Nature and Natural Resources' initiative called "Parks for Life", which explains, among other things, how to create the social support needed to ensure an adequate, efficient, and well-managed network of protected areas. The essence of this approach lies in the belief that protected areas will only fulfil their aspirations if their operation is linked to socio-economic development, accounting for the often-ignored needs of the local communities (IUCN, 1994).

Analysing the attitudes of local populations towards large-scale protected areas has become increasingly important in recent decades (Walpole & Goodwin, 2001; Cardozo, 2011; Allendorf, 2020, 2022), related to the paradigmatic shift in the understanding of nature conservation from the protection of nature "from people" to its conservation "with people" (Mose & Weixlbaumer, 2007). There is a general consensus that socio-cultural issues related to protected areas (PAs) are a decisive precondition for successful nature and biodiversity protection (Beltrán, 2000; Hough, 1988; Zube & Busch, 1990) and that strict protection measures such as those in the core zones of national parks can only be implemented if these measures are supported by the population of the adjacent areas (Pimbert & Pretty, 1995). Otherwise, there is a high probability that protection measures would be undermined by the flouting of regulations (e.g. poaching of rare and/or endangered species). Furthermore, political pressures fuelled by negative local attitudes towards PAs could lead to the softening or delaying of protection policies (see for example the postponing of the 75%-goal of park area without any human interferences in the German Bavarian Forest National Park from 2017 to 2027, see Mayer, 2013) or even stop the designation of new PAs (for instance, a third Bavarian national park in the Steigerwald is rejected by the Bavarian federal state government in regard to the alleged negative attitude of the local people, see Sacher & Mayer, 2019; Job et al., 2021). In any case, the often-heated conflicts weaken the PAs' reputation (Stoll-Kleemann, 2001a-c), often overshadowing much more positive overall attitudes of the population at the supra-regional and national levels. However, positive, constructive and fair-minded park–people relationships (PPR) go way beyond a mere adherence to regulations. PA categories such as biosphere reserves in particular, which aim rather at sustainable regional development, require for them to work successfully that the local population is

aware of these aims, shares them to the highest possible degree and, at best, lives up to these high expectations (van Cuong et al., 2017).

While "park–people relationships" seems to be the most common term in the international literature (von Ruschkowski & Mayer, 2011), studies from the German-speaking countries most commonly refer to the "acceptance" of PAs by local people – this might be related to the fact that the term "park–people relationships" has no clear equivalent in the German language – and thus focus on opposition and resistance to nature conservation measures (see Mose, 2009; Schenk et al., 2007). Consequently, "acceptance" is usually equated with the sociological term "(positive) attitude" (Beckmann, 2003; Stoll, 1999). However, there is no uniform definition of the concept of "acceptance", either (Job et al., 2021). Von Ruschkowski and Nienaber (2016, p. 526 f.) define it as:

> - "a latent variable operationalised sociologically as an attitude that, in contrast to values and norms, can be spatially and temporally volatile (that is, depending on events such as large-scale bark beetle infestation in a forest national park).
> - a continuum on a scale ranging from rejection through neutrality to agreement.
> - a symptomatic expression of (dis)satisfaction based on a complex network of causal factors of the protected area as the object of park–people relationships (including formal legal foundations and actions by the decision-makers responsible) that are weighed individually by actors in a park region in the light of their sociocultural reference system".

In contrast, Fienitz et al. (2022, p. 2) refer to the concept of "acceptability", which can include "attitudes (value-oriented assessments without taking actions) or actions resulting from attitudes (such as visiting the national park or activities in the national park)", while they understand "acceptance only as a (more or less) positive attitude". However, although attitudes and actions are related to a certain degree, they are not identical, which calls for a clear analytical distinction, given that it is rather the local people's actual actions that are relevant for PA management and nature protection and not what the people think, which they might as well keep to themselves. For this reason, we base our empirical studies on a comprehensive conceptual framework proposed by Mayer and Stoll-Kleemann (2016) which tries to understand the behaviour of local people towards protected areas (Figure 4.1) and which is inspired by Ajzen's (2005) Theory of Planned Behaviour (1985). This framework is based on the Theory of Psychological Reactance, the Theory of Social Identity, the Theory of Communication Behaviour, the Theory of Symbolic Interaction (Stoll, 1999; Schenk et al., 2007; Stern, 2008), as well as the explanatory approach of the German Advisory Council on the Environment (SRU, 2002) for lack of support for nature conservation. This framework is also a reaction to the fact that, despite the large body of literature about PPR, no general model has yet been developed that would explain all interactions between protected areas and the people living in or around them (Schenk et al., 2007).

This chapter is structured as follows: in the next section (4.2), we give an overview of the state of research about park–people relationships in Polish and

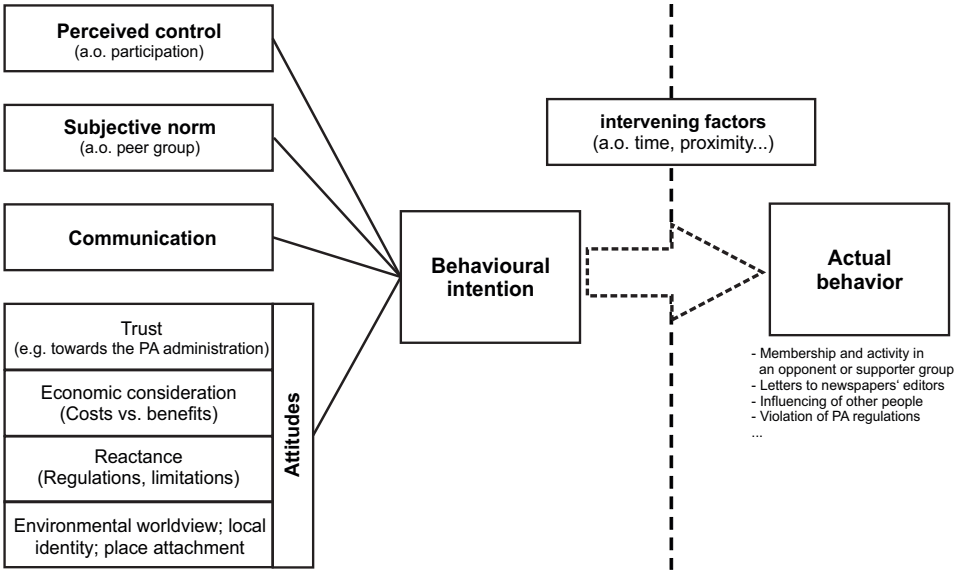

Figure 4.1. Explanatory model for attitudes and behaviour of local people towards protected areas

Source: Mayer & Stoll-Kleemann, 2016, p. 21 slightly changed, based on Stoll-Kleemann, 2001a, Ajzen, 2005, Schenk et al., 2007, Stern, 2008, von Ruschkowski & Mayer, 2011.

German PAs, while section 4.3 presents the methods used to assess park–people relationships in PAs of the Pomerania region. In Section 4.4 we show the results of these analyses for the Polish and the German PAs, respectively, followed by a discussion (4.5) of these results. A short interim summary (4.6) wraps up this chapter.

4.2. State of research of park–people relationships in Poland and Germany

The following sub-chapters present the state of research about park–people relationships in Poland (4.2.1) and Germany (4.2.2).

4.2.1. Poland

In the Polish literature on PPR, social issues around the functioning of protected areas have been considered ever since the first national parks were established on Polish territory[10]. As early as 1922, J. G. Pawlikowski stressed that "no legislation, no state organisation will be able to effectively fulfil nature conservation tasks – without a broad social base" (Pawlikowski, 1922, p. 5).

[10] The oldest national parks in Poland are Pieniny National Park and Białowieża National Park, both established in 1932 (GUS, 2020, p. 115).

Since the 1980s and 1990s, Polish authors have started to explore social issues in the context of protected areas more widely than before. Social research in protected areas has fallen into several thematic categories, such as social conflicts, the relationships between PAs and local governments, and the relationships between PAs and local communities. In Poland, as in other parts of the world, a need for maintaining the existing and creating new protected areas is widely recognised (KPZK, 2011). However, despite the generally acknowledged importance of protected areas, social conflicts occur at the interface between protected areas and the local communities. They happen between different groups of stakeholders who seek to satisfy their conflicting needs regarding the natural resources (Breiby et al., 2022; Lee, 2022; White et al., 2013; Young et al., 2010).

Conflicts in protected areas have been widely discussed in the Polish literature. The discussions have largely taken the form of case studies focused on a single protected area, usually a national park (Bożętka, 1995; Domański & Partyka, 1992; Felczak, 2019; Hibszer, 2008; Kistowski, 1996, 2005; Piwowarczyk & Wróbel, 2016; Rechciński, 2012; Witkowski, 2017). Less frequently, Polish authors have explored conflicts in more than a single national park at a time (Hibszer, 2013; Hibszer & Partyka, 2005; Królikowska, 2007; Matuszewska, 2003; Wiśniewski & Gwiazdowicz, 2004).

Among the Polish publications, contributions discussing cooperation between the administrations of national parks and the local authorities are worth noting (Fiedeń & Listwan-Franczak, 2019; Kasprzak, 1994; Łuczyńska-Bruzda, 1996; Miemiec & Pest, 2017). In the new millennium, a valuable initiative was undertaken in this context by the Association of Polish Local Authorities Collaborating with National Parks. One comprehensive study of the relationships between national park and local authorities (Prałat, 2002) presented issues related to the conditions for the development of national park municipalities, the formal and legal correlations at the interface between municipalities and national parks, the conflicts between and opportunities for the local authorities and the national parks working together, and the role to be played by the local community, also through local organizations and associations. The problems of evaluating the relationships between national parks and local governments, including the local authorities' opinions on the role of a national park, were addressed in a study presenting the model of economic relations between national parks and the local economy (Mika et al., 2015). An attempt has also been made to evaluate partnership-based collaboration between a national park and the stakeholders active in its socio-economic environment, including the local government (Walas, 2019). The survey in which the respondents indicated the direction their municipality should follow in the future helped identify, among other things, their expectations and the elements of their vision for their municipality and its national park.

Another extensive research area in the Polish literature directly related to social issues has been the relationships between the national park and the local inhabitants. Many such studies, as is the case with conflicts, have concentrated on case studies regarding single national parks (Table 4.1).

Table 4.1. Overview of studies on the relationships between protected areas and local communities in Poland.

Protected Area	Author	Method, sample size, study objective
Tatra NP	Grabowski & Marmuszewski, 1985	A survey (predominantly open questions) was carried out on a sample of 312 people in July 1983. The aim of the survey was to determine the level of environmental awareness of the respondents and their attitude towards the park. Almost half of the respondents answered affirmatively to the question "Is the Tatra National Park necessary?", while about one third answered negatively. As many as 85% of the respondents assessed the activities of the National Park administration negatively.
Kazimierz LP	Haczek, 1992	The survey conducted in twelve localities within the protected area (n = 400) aimed to increase knowledge about the ecological awareness of the protected area's inhabitants. The sum of points earned in the questionnaire allowed the respondents to be classified into one of five classes of ecological sensitivity and knowledge (from very low to very high).
Drawa NP	Bożętka, 1997	The study included an assessment of the inhabitants' opinions on the need for a park, their response to the park's creation, their associations with the park, their expectations of the park, and the disadvantages and advantages of living close to the park. The study was based on 75 respondents in six villages closest to the park.
Tatra NP	Komorowska, 2000	The method applied drew from the Grabowski & Marmuszewski (1985) study and included n = 400, of whom 200 were tourists and 200 were local inhabitants (highlanders). The survey aimed to determine their level of ecological awareness and attitudes towards the park. It assessed the respondents' ecological knowledge and sensitivity, which, in combination, allowed determining their ecological awareness.
Pieniny NP	Górecki et al., 2002	The study assessed the impact of human activities on the natural environment, the inhabitants' living conditions and their immediate environment, the image of the park, the activities of the park's authority, the attitudes towards the restrictions imposed within the park, and the measures aimed at improving nature conservation. Sample size n = 320, of whom 263 were people living in areas adjacent to the park and 57 were members of the surrounding municipalities' councils.
Babia Góra NP	Jabłońska & Jędrej, 2007	The aim of this study was to assess the inhabitants' ecological awareness and their understanding of the protection measures that were being undertaken. The survey included randomly selected inhabitants of the park municipalities, n = 289.
Ojców NP Babia Góra NP Bieszczady NP, Magura NP	Górecki et al., 2007	The aim of the study was to identify the ecological awareness of young people participating in the parks' educational programs and compare it with the ecological awareness of young people from other schools not participating in these programs. The aspects evaluated were the students' knowledge of the environment and its protection, the state of the natural environment as assessed by the respondents, and the respondents' attitudes towards the environment and its protection. The survey included (n = 789) junior high school students living in the national parks.

Table 4.1. cont.

Protected Area	Author	Method, sample size, study objective
Polesie NP	Kozieł & Kozieł, 2008	The aim of the survey was to analyse how the residents living in the neighbourhood of Polesie National Park viewed the condition of the natural environment in their immediate vicinity, the activities undertaken by the park, the difficulties at the interface between the local community and the park, and the opportunities to overcome them. The survey included six localities close to the park (n = 133).
All (23) Polish national parks	Hibszer, 2013	The aim of the study was to determine the structure of the relationships between local communities and the national parks by: 1) identifying the varying degrees of ecological awareness in national park communities and its influencing factors, 2) assessing and comparing the opinions of different respondent groups on the relationships between parks and the local communities, 3) measuring and comparing the opinions of different respondent groups on the instruments for shaping the relationships between national parks and local communities. The sample included 3,027 questionnaires from young people and 2,917 from adults, as well as 135 from national park directors, local authorities, and park municipality authorities.
Babia Góra NP	Zawilińska, 2016	The survey was conducted in five localities in the immediate vicinity of the park (n = 397). The aim of the study was to identify the local communities' attitudes towards the national park and their perception of its impact on local development, and to examine their views on the development of tourism. The aspects evaluated here were the inhabitants' awareness of the condition of the natural environment, their degree of satisfaction with the park's existence, and the activities undertaken by the park's authorities.
All (23) Polish national parks	Walas, 2019	The study was based on a diagnostic survey among the staff of the national park authorities and the representatives of the parks' environment, including the residents (n = 230). The respondents rated the quality of life in park communities highly, at 7.52 (on a scale from 0 to 10). When asked about the advantages of a national park, the respondents most often (45%) pointed to the natural values and least often to the park as a source of income for the municipality (2%). As disadvantages of national parks, the residents most often mentioned the existence of restrictions for them (37%) and least often (1% each) the large number of tourists and the presence of waste.
Eleven landscape parks of Małopolskie Voivodship	Utila sp. z o.o. & EU-Consult sp. z o.o, 2019	The PAPI study included 2,000 inhabitants, 1,077 tourists, 550 businesses, and 31 representatives of the local government. The study was conducted to evaluate the inhabitants' environmental awareness, their attitudes towards the landscape parks, and the collaboration between the landscape parks and the park users.

National park = NP; Landscape park = LP.
Source: own elaboration based on the references indicated.

Our overeview of the Polish literature exploring the relationships between national parks and local communities suggests that the studies have drawn from research into ecological awareness in the form popularised by Grabowski and Marmuszewski (1985) and Haczek (1992). Two aspects of ecological awareness have been evaluated – sensitivity to ecological considerations and ecological knowledge. Such sensitivity has usually been construed as the respondents' emotional and intuitive attitudes towards the natural environment, in particular the protected area. In order to determine the intensity of these attitudes, the studies have sought to assess the residents' emotional relationships with the given protected area, their ability to notice any changes to it, the degree of the intuitively perceived impact of the environment on human health, the level of the respondents' perception of risks to the protected area (environment) posed by industry, agriculture and households, and their perceived need for the existence of protected areas. In turn, ecological knowledge has been defined as knowledge about the conditions of the environment, the types of risks, and the ways to protect it. In order to establish their ecological knowledge, the respondents have been questioned about their degree of knowledge of the concept of "the environment", the main types of environmental risks, the ways of ensuring nature conservation, the institutions designed for nature conservation, and the issues relating to the existence and functioning of a protected area.

Only more recently have comprehensive studies been carried out that accounted for the relationships between local communities and protected areas for all Polish national parks (Hibszer, 2013; Utila sp. z o.o. & EU-Consult sp. z o.o, 2019; Walas, 2019). However, cooperation between the communities and the park administrations for the conservation of nature remains the least frequently addressed issue (Hibszer, 2013, p. 31).

Studies of the inhabitants' awareness have so far focused on the national parks in the south-eastern part of Poland. Research conducted in north-western Poland, namely for Wolin National Park, Drawa National Park and Warta Mouth National Park, have had a marginal share in the entire research effort.

In Poland, social science research regarding PPR has been largely limited to national parks (and not even included all of them). There are no research results available for other PA categories, which as for 2019 included in Poland 126 landscape parks, 387 protected landscape areas, and 327 landscape-nature complexes (GUS, 2020, p. 120). The one existing study of the local communities' environmental awareness and attitudes towards the eleven landscape parks in Małopolskie Voivodship should be considered an exception (Utila sp. z o.o. & EU-Consult sp. z o.o, 2019).

In Germany, as elsewhere in the world, a growing role is being attributed to participatory environmental management, which is strongly geared towards working out practical solutions (von Ruschkowski, 2009; von Ruschkowski & Mayer, 2011). Although modern solutions for participatory protected area management have been developed globally, research in Poland has paid the least attention to the collaboration between the communities and the protected area administrations for the sake of nature conservation. This gap has now been, at least

partially, bridged by more recent studies by Hibszer (2013) and Utila sp. z o.o. & EU-Consult sp. z o.o (2019). However, Poland continues to face low public participation in the management of protected areas, which has been invoked during the 2021–2022 legislative work on a new bill on national parks (Horbaczewski, 2022).

Poland's example is part of a wider phenomenon common throughout Europe, where despite the existence of a multitude of various protected areas there is very limited scientific evidence available that captures the social impact of such areas (Solbrig et al., 2013c, p. 1; Jones et al., 2020). This study seeks to address the identified research gaps.

4.2.2. Germany

Research about park–people relationships regarding PAs in Germany began in earnest in the second half of the 1980s, in a time when there were only two national parks already designated and only a few biosphere reserves established in Western Germany, mainly as additions to the existing national parks. Consequently, the first study about PPR for a German PA was conducted by Rentsch (1988) for the first German national park in the Bavarian Forest and the second study, by Rentsch and Kuhn (1990) for the second national park, Berchtesgaden. Based on this pioneering work of the social geographers from Munich, PPR studies have been undertaken up to now for most German national parks (twelve parks; for nine parks there is more than one study) and also for some biosphere reserves (six out of 16), as well as at least one nature park (see Job et al., 2021, von Ruschkowski & Nienaber, 2016, von Ruschkowski & Mayer, 2011 for literature reviews). The first PPR studies for German biosphere reserves were conducted until 2001 in Schorfheide-Chorin (Hofinger, 2001) and in 2002 for the Rhön (Hansen, 2004; Pokorny, 2013). Table 4.2 provides an overview of accessible PPR studies about German PAs. While only six studies were conducted before the millennium, twelve studies were completed in the first decade and 15 in the second decade of the 21st century. This points to the non-existence of a systematic, centrally planned PPR monitoring regarding German PAs. If PPR studies are indeed carried out, it is either due to the motivations of PA administrations or research groups and individual researchers working on their graduate theses or dissertations.

> "Many pertain to the 'grey' literature; published only in excerpts or long after the data is collected or are only available as graduate theses. Others are judged unscientific because they lack data or are methodologically inadequate and, therefore, unreliable. In addition, they can be extremely diverse in research design and have only a modest empirical basis impeding comparisons or their use in benchmarking. Their content varies widely depending on regional situations: some studies focus on nature tourism, while elsewhere this issue is not addressed at all in terms of its perception by locals or even the acceptance of the park by tourists themselves. This impacts their value for park management and for rural tourism development." (Job et al. 2021, p. 4)

Table 4.2. Studies about park–people relationships in German large-scale protected areas

National Park	Year	Author	Methodology
Bavarian Forest	1988	Rentsch	quantitative survey (direct)
	2008 2011	Mayer/Woltering; von Ruschkowski/Mayer	quantitative survey (postal) with local (tourism) entrepreneurs
	2008, 2009, 2011	Liebecke et al.	expert interviews + quantitative survey (by telephone)
	2019, 2021	Job et al.	quantitative survey (postal)
Berchtesgaden	1990	Rentsch/Kuhn	expert interviews + quantitative survey (direct)
	2019, 2021	Job et al.	quantitative survey (postal)
Black Forest	2015	Blinkert	quantitative survey (by telephone)
	2022	Fienitz et al.	quantitative survey (direct)
Eifel	2007	Sieberath	expert interviews + standardised written survey (postal)
	2015	Hillebrand/Erdmann	expert interviews + quantitative survey (postal)
Hainich	2003	Hendel	–
Harz	1996	Job	quantitative survey (direct)
	2010	von Ruschkowski	quantitative survey (without interviewer present) + participatory observation
	2011	von Ruschkowski/Mayer	
Jasmund	1998	Lichtenberg/Wolf	quantitative survey (direct)
Lower Oder Valley	2001	Müller	–
Lower Saxony Wadden Sea	1996	Meemken	–
	2003	Beckmann	expert interviews + quantitative survey (direct)
Saxon Switzerland	2000	Leipzig Student Agency Initiative	–
	2006		–
	2012		–
Schleswig-Holstein Wadden Sea	Since 2002	Nationalpark Schleswig-Holsteinisches Wattenmeer 2019	quantitative surveys (by telephone)
Western Pomeranian Lagoon Area	1998	Krieger	quantitative survey (direct)
	2001	Katzenberger	–
Biosphere Reserve	**Year**	**Author**	**Methodology**
Bliesgau	2012	Nienaber/Lübke	qualitative survey
	2013	Spellerberg et al.	quantitative survey (postal)
Mittelelbe	2013a	Solbrig et al.	quantitative survey (by telephone)

Table 4.2. cont.

Biosphere Reserve	Year	Author	Methodology
Rhön	2004	Hansen	quantitative survey (by telephone)
	2013	Pokorny	quantitative survey (by telephone)
Schaalsee	2013b	Solbrig et al.	quantitative survey (by telephone)
Schorfheide-Chorin	2001	Hofinger	qualitative survey
	2013	Stoll-Kleemann et al.	quantitative survey (by telephone)
Southeast Rügen	2013c	Solbrig et al.	quantitative survey (by telephone)
Nature Park	Year	Author	Methodology
Barnim	2015	Meyer	quantitative survey (direct)

Note: the years in the 2nd column refer to the year of publication, not the year of the empirical fieldwork.
Source: own compilation based on Job et al., 2021, p. 4 and the references included.

Mose (2009) had already pointed out more than ten years earlier that the differing methodological approaches were hardly compatible, thus making comparability and generalisability of the results difficult. A rather rare positive exception are the studies about Eifel National Park by Sieberath (2007) and its later replication by Hillebrand and Erdmann (2015), which allow direct comparisons and the analysis of temporal trends in a longitudinal perspective. Even better is the socio-economic monitoring system established by the administration of Schleswig-Holsteinisches Wadden Sea National Park: Since 2002, they have asked the local population in annual (except for 2003 and 2016) representative surveys about their attitude towards the park. The proportion of respondents who are proud of the Nationa Park or find it important to have one on their doorstep ranges from 77% (2005) to 91% (2013) in the period 2002–2018. Since 2006, at least 85% of the respondents have always voted positively. This shows that the acceptance of the National Park among the inhabitants has remained high over the years (Nationalpark Schleswig-Holsteinisches Wattenmeer, 2019).

Furthermore, except for Fienitz et al. (2022), Job et al. (2021) and von Ruschkowski & Mayer (2011), all PPR studies about German PAs are only published in German, which hampers the international recognition of this field of research – Bachert's early work from 1991 does not contain substantial own empirical fieldwork comparable to the other cited contributions.

Maybe because PPR research about German PAs was not only initiated but also mostly carried out by human geographers, a specific spatio-temporal focus is evident in many German PPR studies. This dates back to Rentsch's (1988) pioneering study about the Bavarian Forest National Park, where she identified a "crater" in PPR, indicating a "significantly worse level of relationships in areas adjacent to the Bavarian Forest National Park compared to communities located

only a few kilometres further away." (Job et al., 2021, p. 5). Thirty years later, in their study conducted in 2018, Job et al. (2019, 2021) could still show the existence of this spatial variation in PPR. This "crater" also does not emerge only after the foundation of a PA, as several examples of failed national park projects underline. Linking this spatial perspective, which von Ruschkowski and Mayer (2011) have related to the thematically similar NIMBY phenomenon (Wexler, 1996), to a temporal one, Job et al. (2021, p. 6) hypothesise that "the farther away people live from the protected area and the longer a protected area exists, the lower the issue salience of conflicts, the lower the perceived disadvantages and the better the habituation and thus, performance of the park–people relationships".

In their review paper, Mayer and Stoll-Kleemann (2016) analysed the role of nature-based tourism in German PAs for PPR. These authors concluded that, depending on the local context, tourism could be of importance for a positive attitude towards PAs. However, income from nature-based tourism does not determine positive PPR as most of the population in the analysed case studies were not directly involved in tourism operations and, consequently, did not directly profit from them from an economic point of view. Nevertheless, also those local respondents who did not directly profit reported some strengthening of the local/regional identity due to the interest of external PA visitors which, in turn, improved the PPR.

According to Table 4.2, there have been no (published) PPR studies for the three national parks Jasmund, Western Pomeranian Lagoon Area, and Lower Oder Valley since 1998 and 2001, respectively; this means it has been more than or almost two decades without any updated information about PPR in these PAs. This underlines the urgency of our German case studies in this project. For Southeast Rügen Biosphere Reserve, the situation is somewhat different, given that in 2010 Solbrig et al. conducted a PPR study (published in 2013).

> "To sum up, several studies have been conducted to analyse park–people relationships in German national parks and other protected areas. However, their results are mostly not comparable due to widely differing methodological approaches". (Job et al., 2021, p. 8).

We fully support the notion of Job et al. (2021, p. 8) to work with a "broadly applicable methodological approach that covers the majority of potential sources of park–people conflicts and that allows intertemporal comparisons with earlier studies." For this very reason, the survey instrument used in our studies in the PAs of the Pomerania region draws a lot of inspiration from Job et al. (2019, 2021).

4.3. Methods

To analyse park–people relationships in protected areas in the Pomerania region, we conducted extensive quantitative surveys with the inhabitants or neighbours of fourteen protected areas (for the questionnaire please see Appendix C, https://doi.org/10.12657/9788379864201-apps):

- in the Polish part of the Euroregion Pomerania:
  - Barlinek-Gorzów Landscape Park (Pol.: *Barlinecko-Gorzowski Park Krajobrazowy*),
  - Cedynia Landscape Park (Pol.: *Cedyński Park Krajobrazowy*),
  - Drawa National Park (Pol.: *Drawieński Park Narodowy*),
  - Drawsko Landscape Park (Pol.: *Drawski Park Krajobrazowy*),
  - Ińsko Landscape Park (Pol.: *Iński Park Krajobrazowy*),
  - Lower Oder Valley Landscape Park (Pol.: *Park Krajobrazowy Doliny Dolnej Odry*),
  - Szczecin Landscape Park (Pol.: *Szczeciński Park Krajobrazowy Puszcza Bukowa*),
  - Warta Mouth Landscape Park (Pol.: *Park Krajobrazowy Ujście Warty*),
  - Warta Mouth National Park (Pol.: *Park Narodowy "Ujście Warty"*),
  - Wolin National Park (Pol.: *Woliński Park Narodowy*),
- and in the German part of the Euroregion Pomerania (Appendix D, https://doi.org/10.12657/9788379864201-apps):
  - Jasmund National Park (Ger.: *Nationalpark Jasmund)*,
  - Lower Oder Valley National Park (Ger.: *Nationalpark Unteres Odertal*),
  - Southeast Rügen Biosphere Reserve (Ger.: *Biosphärenreservat Südostrügen*),
  - Western Pomerania Lagoon Area National Park (Ger.: *Nationalpark Vorpommersche Boddenlandschaft*).

The survey areas consist of the environs[11] of six national parks (three in Poland and three in Germany), seven landscape parks (all of them in Poland), and one biosphere reserve (in Germany). The surveys were conducted using the CATI (computer-assisted telephone interviewing) method by experienced market research companies. We opted for the CATI approach for mostly practical reasons: first, the market researchers informed us that representative online panels would not be available for the peripheral, rural environs of our PAs (in contrast to Garms, 2021 for the Bavarian Forest and the Bavarian Alps). Second, a postal survey covering the complete PA regions, such as the ones done by Job et al. (2019, 2021), would have required much more financial and manpower resources than were available in our project.

The random digit dialling method was used to create the sample for the survey. In this procedure, at least a part of the telephone number is randomly generated. In this way, telephone interviews can also be conducted if no list of telephone numbers is available for the study area. In addition, with this procedure, households without a publicly recorded telephone number also have the chance to participate in the survey (Glasser & Metzger, 1972, p. 52). The person to be interviewed was the person in the randomly selected household who was over 18 years old and had the last birthday.

[11] The survey areas for the telephone interviews were defined based on the definition of protected area municipalities by Hannemann and Job (2003). That means a municipality which is completely or partly situated inside the respective PA or which directly borders the PA. An exception is Wolin National Park, where people from Golczewo and Świerzno municipalities, which are adjacent to the park communities, were also interviewed.

For every PA, between 385 and 400 completed questionnaires[12] were collected to ensure the confidence level of 95% and 5% of precision. In total, our sample consisted of 5547 cases. To improve the representativity of the results, we weighted the data based on location-specific quotas for gender and age. The timeline of the Polish surveys covered two periods: September and October 2019 for Drawa National Park, Szczecin and Ińsko Landscape parks, and September and October 2020 for the remaining PAs. In the three PAs of Mecklenburg-Vorpommern, the survey took place between 08/07/2019 and 23/08/2019, while for Lower Oder Valley National Park the timeframe was between 18/11/2019 and 14/01/2020.

The conception of the questionnaire was inspired by the aim of developing a survey instrument based on existing PPR studies to ensure comparability, which covered the theoretically identified influencing factors on PPR (see Figure 4.1) for the different PAs analysed. The operationalisation and the wording of the questions were mostly taken from the PPR studies by Job et al. (2019, 2021), Liebecke et al. (2008, 2009, 2011), von Ruschkowski (2010), Sieberath (2007), Hillebrand and Erdmann (2015), Krieger (1998), and Lichtenberg and Wolf (1998). The item battery about environmental worldviews was taken from Farjon et al. (2016).

The final questionnaire contained 25 main questions divided into three parts: general attitude towards the protected areas, attitudes towards the protected area analysed, and socio-demographic questions. However, some questions were filter ones, therefore the actual number was higher – 43. To ensure comparability with previous PPR studies and to provide PA managers and political decision makers with an easily accessible and comprehensible measurement, we analysed the respondents' general attitude towards the respective PAs by using the so-called "Sunday Question" (referring to the identically named regular national election polls in Germany). It read as follows: "Let us assume that next Sunday there will be a vote on the continued existence of the protected area XY. Would you be in favour or against?" (see also Rentsch, 1988; Liebecke et al., 2008, 2009, 2011; Job et al., 2019, 2021). However, being well aware of the limitations of this dichotomous question, we further asked the respondents about the changes of their attitude towards the respective PA since its designation, and since they started living in the PA region (yes, more positive/negative, unchanged). As we deemed actions to be much more important than mere attitudes, we wanted to know from the respondents if, and if yes, how they (ever) acted in favour or against the PA they live in/nearby (yes, in favour/against; no actions). These three dependant variables were combined with several independent variables covering most of the influencing factors on PPR outlined in the literature and presented in Section 4.1 and Figure 4.1. The analysis intended to show how each of these influencing factors

[12] To give an impression of the CATI fieldwork, we provide information for the three PAs in Mecklenburg-Vorpommern, the National Parks Jasmund and Western Pomeranian Lagoon Area as well as the Biosphere Reserve Southeast Rügen. To complete 1140 interviews, the market researchers made 8664 calls. Among the gross contacted sample without sample-neutral dropouts (n = 5953) 38.1% rejected to take part in the survey. All in all, the net sample share is 13.16% of the contacted gross contacted sample, respectively 19.15% of the gross contacted sample without sample-neutral dropouts (Bröcking, 2020, p. 35 f.).

was related to the dependent variables. The influencing factors were measured using different Likert-type scales, mostly from 1 to 5 (1 mostly indicating high values/agreement, 5 the opposite).

Our analysis first presents the socio-demographic structure of respondents, then their attitudes towards protected areas in general, and finally the specific relations towards the local protected area. In general, the analysis aimed at detecting differences in attitudes between inhabitants of various PAs. We assessed the differences by analysing associations between the nationality or type of PAs and the responses to the questions. Because the dataset contained mostly nominal- or ordinal-scaled data, we used Cramer's V association coefficient (Cleff, 2019, p. 81f.). The coefficient has already been described in Chapter three.

4.4. Results

4.4.1. Socio-demographic characteristics of respondents

The first step of the PPR analysis was a presentation of the socio-demographic structure of our respondents. Table 4.3 presents the structure of the respondents with respect to age.

Table 4.3. Structure of respondents with respect to age [years]

Protected area	mean	median	SD	Share of the oldest age group
Barlinek-Gorzów Landscape Park	46.81	47	16.21	20.50%
Cedynia Landscape Park	46.42	44	12.55	10.03%
Drawa National Park	46.09	46	16.61	21.00%
Drawsko Landscape Park	47.61	48	16.44	22.25%
Ińsko Landscape Park	46.56	46	16.41	19.25%
Jasmund National Park	61.19	63	15.66	45.05%
Lower Oder Valley Landscape Park	48.53	47	14.81	19.10%
Lower Oder Valley National Park	65.99	68	14.25	61.66%
Southeast Rügen Biosphere Reserve	59.59	61	16.22	41.42%
Szczecin Landscape Park	48.08	48	16.51	24.25%
Warta Mouth Landscape Park	46.12	45	16.29	18.75%
Warta Mouth National Park	45.95	45	16.11	18.75%
Western Pomerania Lagoon Area National Park	58.96	61	14.86	38.04%
Wolin National Park	48.51	49	15.81	23.50%

Source: own elaboration.

The first thing that catches the eye is that the respondents in the German PA regions (Jasmund National Park, Lower Oder Valley National Park, Southeast Rügen Biosphere Reserve and Western Pomerania Lagoon Area National Park)

are much older than those in Poland. The group of respondents aged 65 years and older had a share of between 38% (Western Pomerania Lagoon Area National Park) and more than 61% (Lower Oder Valley National Park). In the neighbourhood of the Polish PAs, the share of this oldest age group hardly exceeded 24% (in Szczecin Landscape Park). On average, the respondents living in the neighbourhood of Warta Mouth National Park were the youngest (the average age being just less than 46 years), while the respondents from the neighbourhood of Lower Oder Valley National Park were the oldest (average age 65 years). Thus, the age structure of the respondents underlined the importance of weighting the results based on age group and gender.

In the next step we analysed the structure of respondents with respect to gender. Among the German respondents, the fraction of women was much higher (over 60% in the neighbourhood of Jasmund National Park, Lower Oder Valley National Park, and Southeast Rügen Biosphere Reserve and over 55% in the area of Western Pomerania Lagoon Area National Park). In the neighbourhood of the Polish PAs, the fraction of women was on average 51%. There were some exceptions – for Drawa National Park and Lower Oder Valley Landscape Park. In their neighbourhoods, the fraction of men was slightly higher than the fraction of women. The reason behind these results might be sought in the mostly rural structure of these park regions. In Poland's Zachodniopomorskie and Lubuskie Voivodships, more men live in rural areas than women (Statistics Poland, 2022).

Another interesting sociodemographic question was the length of time living in the PA region (see Figure 4.2).

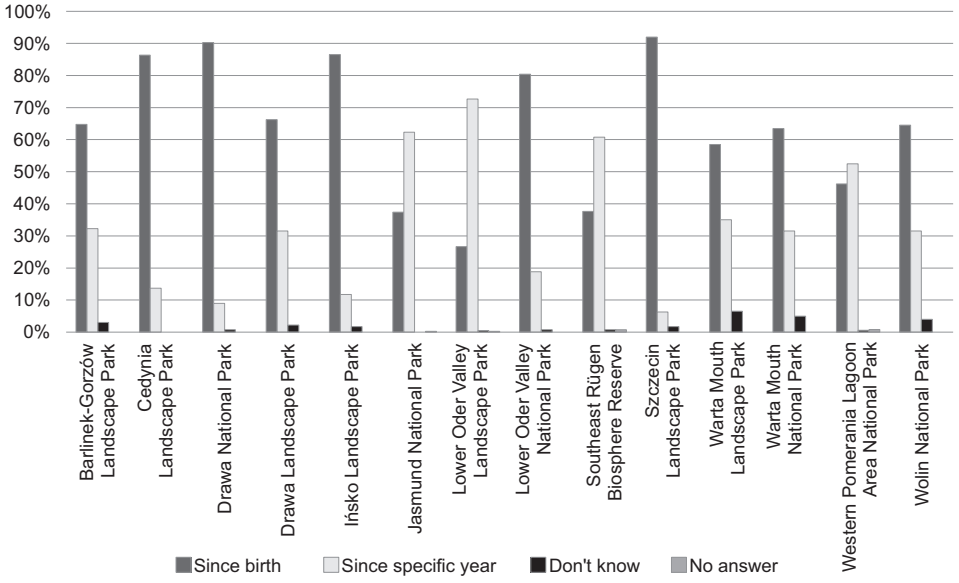

Figure 4.2. Structure of respondents with respect to length of time living in the neighbourhood of the protected areas.
Source: own elaboration.

Again, we can see pronounced differences between the respondents from the German and the Polish PA regions. In all Polish PA regions, the majority of the respondents had been living there since birth. The percentage of those that had moved there did not exceed 35% (for the Warta Mouth Landscape Park). The opposite situation was apparent for the German PA regions – in their case this fraction was not less than 52% (for Western Pomerania Lagoon Area National Park). Most of the respondents had moved there. Figure 4.3 presents the structure of those respondents that had moved to the analysed PA regions.

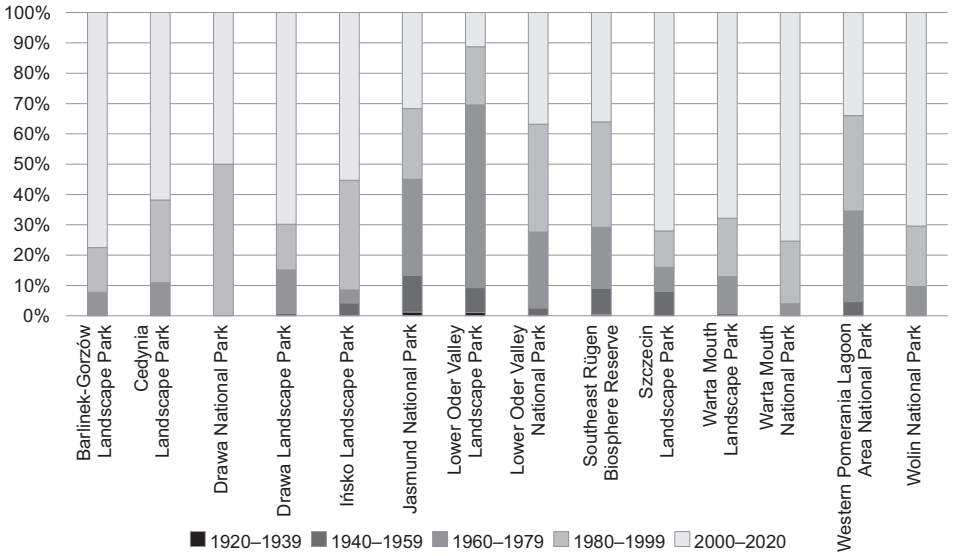

Figure 4.3. Time periods in which the respondents moved to the protected area region.
Source: own elaboration.

The time since the respondents had moved into the PA regions was highly varied. For the Polish PA regions, the highest fraction of the respondents had moved there during the last 20 years. In most cases (with the exception of Lower Oder Valley Landscape Park) this fraction exceeded 50%. For the German PA regions, in the case of two parks (Southeast Rügen Biosphere Reserve and Western Pomerania Lagoon Area National Park) this fraction was also the highest, although much smaller than for the Polish ones. The largest share of the inhabitants of the neighbourhood of Jasmund National Park and Lower Oder Valley National Park had moved there between 1960 and 1979.

The last part of the comparison of the socio-demographics dealt with the respondents' professional situation (see Figure 4.4). However, we only had data available for nine protected areas[13].

[13] Cedynia Landscape Park, Drawa National Park, Ińsko Landscape Park, Jasmund National Park, Lower Oder Valley National Park, Lower Oder Valley Landscape Park, Southeast Rügen Biosphere Reserve, Szczecin Landscape Park and Western Pomerania Lagoon Area National Park.

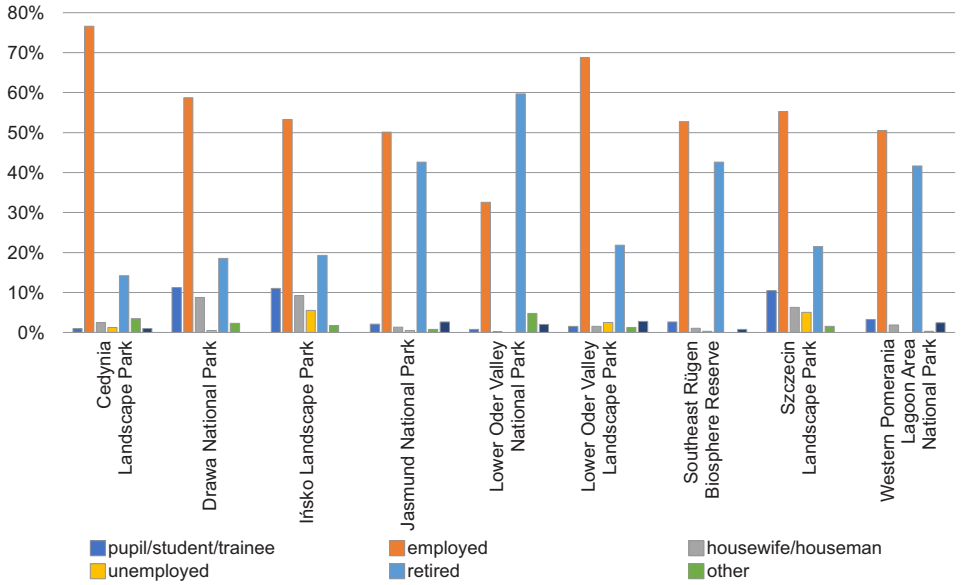

Figure 4.4. Professional situation of the respondents.
Source: own elaboration.

The professional structure of the respondents corresponds to their age structure (see Table 4.3). As the inhabitants of the Polish PA regions were generally younger, most of them had various forms of employment, while in the German PA regions there was a higher share of retired persons. Generally, amongst Polish inhabitants there was a much higher share of learning/studying people.

4.4.2. Environmental worldview and knowledge about protected areas

4.4.2.1. Level of knowledge about and interest in protected areas in the neighbourhood

The respondents were asked about their knowledge concerning the existence of protected areas in their neighbourhood (Figure 4.5).

The level of knowledge about the existence of protected areas varied with respect to the country, but also with respect to the PA type. The inhabitants of the German PA regions usually had a much higher knowledge about the existence of PAs compared to their Polish counterparts (for the two-proportions test p-value < 0.001). Most of the German respondents (at least 89.5% in the case of WPLA National Park) were aware of the existence of a PA in their neighbourhood. In their case, it did not depend on the park type. If we look at the inhabitants of Polish PA regions it turns out that their knowledge did not significantly differ between national park and landscape park regions (for the two-proportions test p-value $= 0.57$). Some of the respondents were convinced that there were no protected areas in the neighbourhood. In general (except for Drawa National Park), the inhabitants of the landscape parks gave this answer more often. In the case of

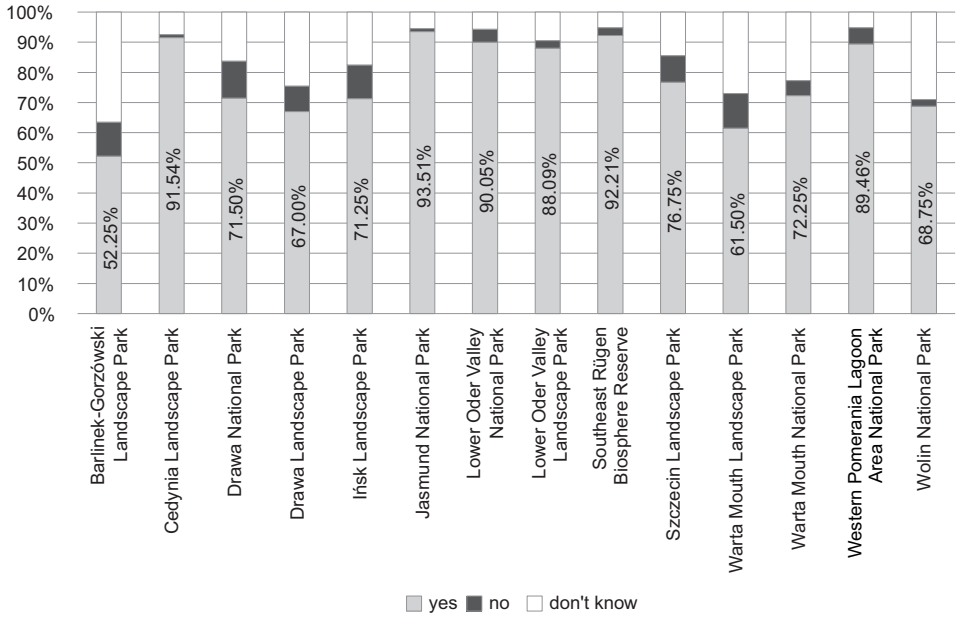

Figure 4.5. Knowledge of the respondents about the existence of protected areas in their neighbourhood.
Source: own elaboration.

Barlinek-Gorzów Landscape Park, Drawsko Landscape Park, Warta Mouth Landscape Park, and Wolin National Park, considerable proportions of the respondents (at least 24%) did not know that the protected area in their neighbourhood even existed.

Furthermore, we asked the respondents about their general interest in PAs. Overall, the interviewees were interested in PAs (41.2%), though they were not enthusiastic (only 7.6% were very interested), while nearly the same share indicating not being interested at all (7.4%). The remaining 40.3% answered that they did not care much about PAs. That means that approx. half of the sample were interested in PAs and the other half were not. However, there were considerable differences between the parks (Cramer's V 0.216, $p < 0.001$): The interest (top-two box values) was the highest in Jasmund (77.6%), WPLA (71.1%) National Parks, BR Southeast Rügen (68.3%) and Lower Oder Valley National Park (65.5%), (all Germany) and the lowest in Barlinecko-Gorzowski Landscape Park (26.3%) and Lower Oder Valley Landscape Park (34.7%). Consequently, the respondents in the German part of the Pomerania region were significantly more interested in PAs than the Polish respondents (2.15 vs. 2.59, $p < 0.001$).

4.4.2.2. Environmental worldview of the respondents

The next questions referred to general attitudes towards nature (protection/use). The following statements were analysed:

1. Particularly valuable natural areas should be closed to recreation and leisure activities.
2. We should use nature in such a way as to achieve the greatest possible economic benefit.
3. Too much importance has so far been given to nature conservation.
4. In the wild, wild animals starve or are injured by other wild animals.

The first statement was to explore the respondents' ecocentrism, the next two anthropocentrism, and the last one their holism. We present the basic descriptive statistics for these statements in Table 4.4. Some of the respondents had no

Table 4.4. Respondents' attitudes towards nature protection/use

Protected area	Mean	Median	SD
Particularly valuable natural areas should be closed to recreation and leisure activities			
Barlinek-Gorzów Landscape Park	2.42	2	1.36
Cedynia Landscape Park	3.04	3	1.47
Drawa National Park	3.20	3	1.44
Drawsko Landscape Park	2.50	2	1.42
Ińsko Landscape Park	3.03	3	1.46
Jasmund National Park	2.25	2	1.45
Lower Oder Valley Landscape Park	3.06	3	1.33
Lower Oder Valley National Park	2.84	3	1.54
Southeast Rügen Biosphere Reserve	2.09	2	1.34
Szczecin Landscape Park	3.20	3	1.45
Warta Mouth Landscape Park	2.38	2	1.41
Warta Mouth National Park	2.52	2	1.40
Western Pomerania Lagoon Area National Park	2.12	2	1.35
Wolin National Park	2.63	2	1.46
We should use nature in such a way as to achieve the greatest possible economic benefit			
Barlinek-Gorzów Landscape Park	3.17	3	1.46
Cedynia Landscape Park	3.39	4	1.47
Drawa National Park	3.74	4	1.38
Drawsko Landscape Park	3.27	3	1.57
Ińsko Landscape Park	3.52	4	1.50
Jasmund National Park	3.11	3	1.52
Lower Oder Valley Landscape Park	3.70	4	1.27
Lower Oder Valley National Park	2.91	3	1.54
Southeast Rügen Biosphere Reserve	3.53	4	1.48
Szczecin Landscape Park	3.61	4	1.39
Warta Mouth Landscape Park	2.96	3	1.41
Warta Mouth National Park	3.25	3	1.52
Western Pomerania Lagoon Area National Park	3.31	3	1.38
Wolin National Park	3.13	3	1.56

Table 4.4. cont.

Protected area	Mean	Median	SD
Too much importance has so far been given to nature conservation			
Barlinek-Gorzów Landscape Park	3.80	4	1.35
Cedynia Landscape Park	3.79	4	1.41
Drawa National Park	3.67	4	1.32
Drawsko Landscape Park	4.23	5	1.24
Ińsko Landscape Park	3.47	4	1.46
Jasmund National Park	3.63	4	1.51
Lower Oder Valley Landscape Park	3.88	4	1.22
Lower Oder Valley National Park	3.23	4	1.46
Southeast Rügen Biosphere Reserve	3.92	5	1.39
Szczecin Landscape Park	3.96	5	1.27
Warta Mouth Landscape Park	3.74	4	1.43
Warta Mouth National Park	3.96	5	1.44
Western Pomerania Lagoon Area National Park	3.88	4.5	1.39
Wolin National Park	3.77	5	1.50
In the wild, wild animals starve or are injured by other wild animals			
Barlinek-Gorzów Landscape Park	2.72	2	1.45
Cedynia Landscape Park	2.96	2	1.49
Drawa National Park	3.17	3	1.43
Drawsko Landscape Park	2.52	2	1.44
Ińsko Landscape Park	2.89	3	1.43
Jasmund National Park	1.93	1	1.28
Lower Oder Valley Landscape Park	3.28	3	1.42
Lower Oder Valley National Park	1.74	1	1.28
Southeast Rügen Biosphere Reserve	1.89	1	1.19
Szczecin Landscape Park	3.01	3	1.49
Warta Mouth Landscape Park	2.56	2	1.36
Warta Mouth National Park	2.78	3	1.40
Western Pomerania Lagoon Area National Park	1.83	1	1.14
Wolin National Park	2.56	2	1.39

Source: own elaboration.

opinion on these statements, while some others did not provide any answer at all. Therefore, we took into consideration only these answers where the statements were specified.

Generally, the inhabitants of the PA regions in Germany agreed with the statement that particularly valuable natural areas should be closed to recreation and leisure activities to a higher degree than their counterparts in the Polish PA regions. This difference was statistically significant (p-value < 0.001 according to Mann-Whitney U-test). Therefore, the German respondents were more

ecocentric than the Polish ones. The distributions of the responses did not differ significantly between the Polish park types ($p = 0.585$). The differences between the German protected areas were statistically significant ($p < 0.01$) – the inhabitants of the biosphere reserve were more ecocentric than those living near the national parks.

The degree of agreement with the next two statements – we should use nature in such a way as to achieve the greatest possible economic benefit (statement 2) and too much importance has so far been given to nature conservation (statement 3) – was slightly higher and significant in Germany ($p < 0.001$ for both statements); the German respondents were more anthropocentric. The differences between the responses of inhabitants of the neighbourhood of Polish PAs were not significant ($p = 0.792$ for statement 2 and $p = 0.521$ for statement 3). When we compare the types of German PAs, the differences were significant ($p < 0.001$ for both statements) – the inhabitants of the Biosphere Reserve were more anthropocentric. Because these two statements presented similar attitudes, we analysed the consistency of the responses, which however failed to bring meaningful results (Cronbach alpha coefficient of 0.36).

The degree of agreement with the last statement – in the wild, wild animals starve or are injured by other wild animals – was much higher in Germany than in Poland. The differences between answers were statistically significant ($p < 0.001$). This means that the environmental worldview of the German respondents was more holistic compared to the Polish respondents. When we analyse the differences within each country, it turns out that they were not significant ($p = 0.744$ for Polish park types and $p = 0.187$ for German park types).

To sum up, the Polish respondents were less ecocentric compared to the Germans, but also less anthropocentric (use of nature for human benefits, too much emphasis on nature protection in the past) and less holistically oriented (nature has its cruel elements). That is, in all the three dimensions of the environmental worldview, the respondents from the Polish PA regions of the Pomerania region showed fewer extreme positions.

4.4.3. Analyses of park–people relationships

The analyses of park–people relationships consisted of dependent variables (4.4.3.1.), independent variables (4.4.3.2.), and their connections (4.4.3.3.).

4.4.3.1. Dependent variables

The most important dependant variable was the respondents' overall attitude towards the respective PAs operationalised by the "Sunday question" which hypothetically questioned a further existence of the PAs.

The respondents were asked how they would respond if there were to be a vote on the future existence of the protected area next Sunday (Figure 4.6).

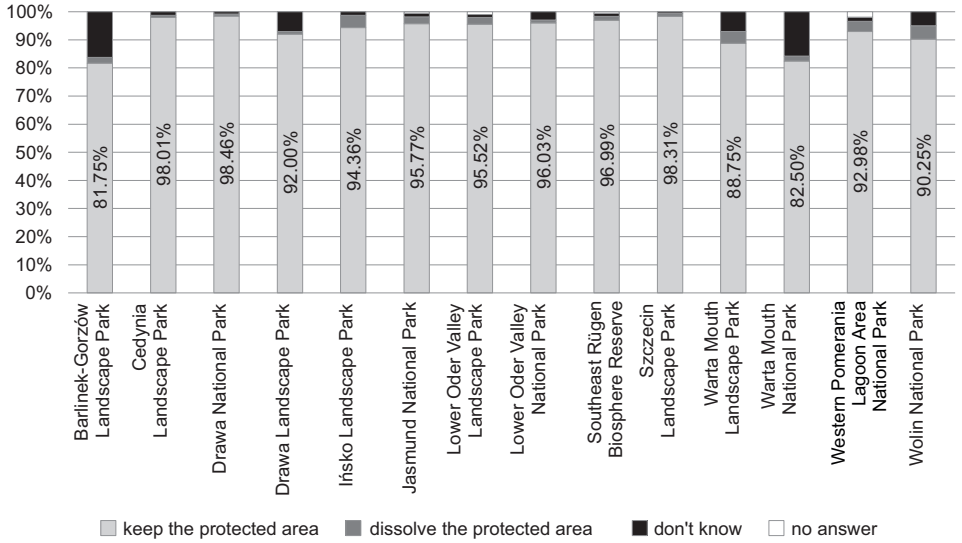

Figure 4.6. Overall attitude towards the protected areas in the Pomerania region based on the "Sunday question".
Source: own elaboration.

The vast majority of the respondents in each PA region would answer the "Sunday question" positively, which means that they were opting for keeping the PA. While in seven out of 14 PA regions the share of positive answers was >95%, this share was below 90% in only three PA regions. The highest shares of negative votes (i.e. against any further existence of the parks) were recorded in the environs of Wolin National Park (4.8%), Warta Mouth Landscape Park (4.3%) and Lower Oder Valley National Park (4.0%). Interestingly, about 16% of the respondents in/near Barlinek-Gorzów Landscape Park and Warta Mouth National Park answered indifferently, stating "don't know". We also analysed associations between responses to this question and types of protected areas (Table 4.5):

Table 4.5. Associations between responses to the "Sunday question" and types of protected areas

Types of protected areas	Cramér's V	p-value
Polish park types	0.0334	0.2558
Polish/German national parks	0.0991	0.0000
German park types	0.0197	0.2747
Polish/German parks in general	0.0741	0.0000

Source: own elaboration.

The values of all coefficients are below 0.1. This means that the responses did not depend on the PA types and countries. Even if in two cases – for the Polish/German national parks and Polish/German parks in general – they are statistically significant, their values are so small that we cannot interpret any association.

The small *p*-values result mostly likely from the large number of observations. The differences between the answers are too small to differentiate between the PA categories.

The second dependant variable is the change in personal attitudes towards the protected area since its designation or the respondents' move to the region (see Figure 4.7). In general, 16% of respondents report improved attitudes, only 3.3% indicate more negative attitudes, but more than three quarters (76.1%) did not change their attitudes towards their region's PA. However, there are considerable differences between the parks (Cramérs V 0.248, $p < 0.001$): While 32.0% of the interviewed local people in the Wolin National Park region report more positive attitudes this is only the case for 2.0% of the respondents in the Drawa National Park region. With regard to the PA categories, Southeast Rügen Biosphere Reserve has the highest share of respondents with more positive attitudes (29.2%), followed by the national parks (19.6%) and the landscape parks (11.8%) (Cramérs V 0.126, $p < 0.001$) – the latter also report the highest shares of respondents with stable attitudes. If we differentiate between Polish and German respondents, it is evident that the attitudes towards the PAs significantly stronger improved for the German PAs (26% more positive vs. 13% for Polish parks), whereas attitudes are more stable in the Polish survey areas (80.1% vs. 62.8%) and also got more negative over time (8.2% vs 1.8%) (Cramérs V 0.239, $p < 0.001$).

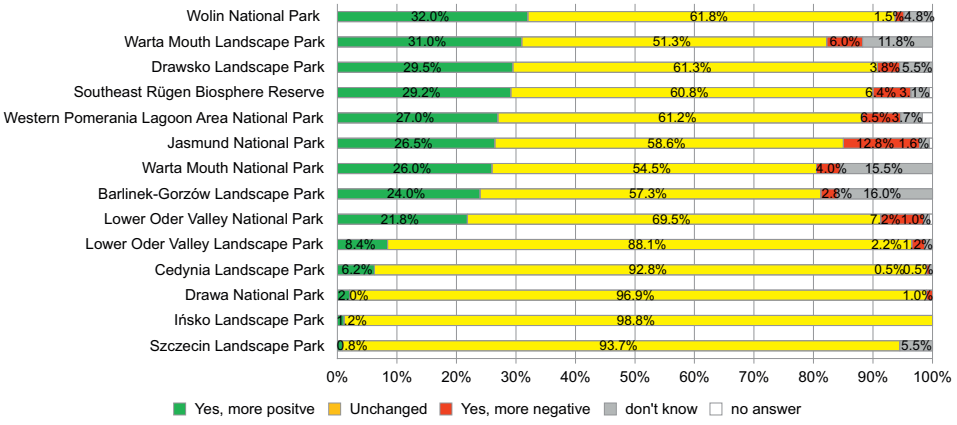

Figure 4.7. Change in personal attitudes towards the protected area since its designation or the move to the region.
Source: own elaboration.

The third dependent variable refers to the actual behaviour of the respondents regarding the PAs in their region (see Figure 4.8) which reveals clear differences between the PAs (Cramérs V 0.224, $p < 0.001$). First, it is obvious that most of the respondents neither act in favour nor against the PAs (between 61.3% and 99.1%). Second, for all analysed PAs, the share of the respondents acting in favour of the PA is always larger than the share of those working against the parks (between 0.9% and 29.2%). Furthermore, we can distinguish three groups of parks: a) Passive PAs, where nearly anybody acts in favour or against them (Landscape

Parks Inski, Cedynia. Lower Oder Valley, Szczecin and Drawa National Park); b) Active in favour-PAs, where relatively large shares of the respondents actively engage themselves for the parks (National Parks Jasmund, WPLA, Warta Mouth, Lower Oder Valley and Biosphere Reserve Southeast-Rügen); c) Polarizing PAs, where significant shares of the interviewees either work for or against them (Wolin National Park, Landscape Parks Warta Mouth, Drawa and Barlinecko). If we differentiate between the PA categories, we arrive at a similar result as for the changes in attitudes towards the PA: the largest group of the respondents actively in favour of a PA were found for the Biosphere Reserve (22.8%), followed by national parks (14.6%) and landscape parks (6.1%), which also recorded the highest non-active group (88.2%). However, the statistical differences were of a very low strength (Cramérs V 0.130, $p < 0.001$). Again, the differences between the Polish and the German part of the Euroregion were more prominent: while 22.3% of the German respondents indicated to act in favour of PAs, the share of their Polish neighbours only amounted to 7.1%. Both a passive stance (87.3% vs. 73.6%) and active work against PAs (3.0% vs. 0.7%) were more pronounced for the Polish PA regions (Cramérs V 0.242, $p < 0.001$).

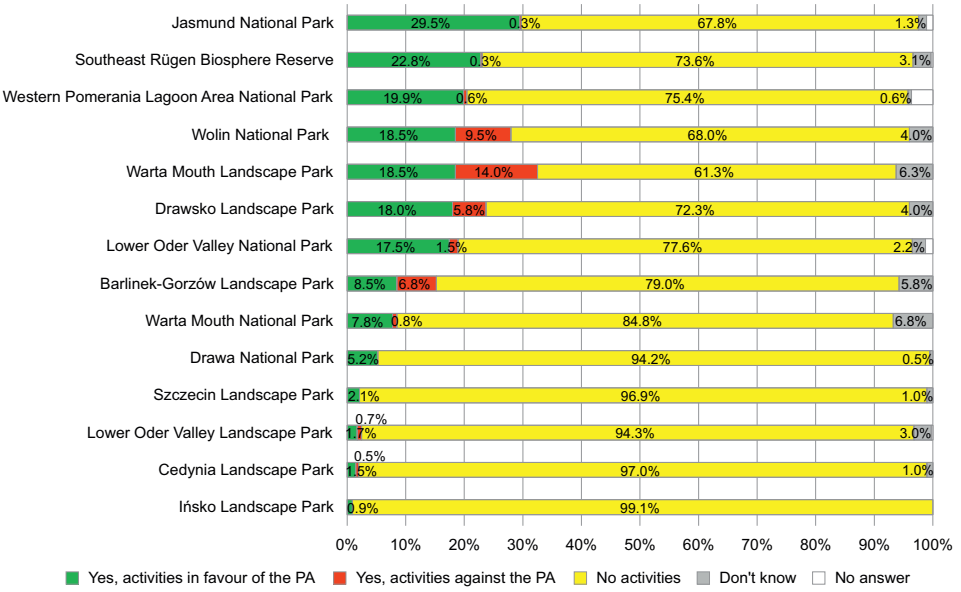

Figure 4.8. Have you ever taken any action for or against the protected area.
Source: own elaboration.

4.4.3.2. Independent variables

Our analysis of the independent variables began with the respondents' views on communication with and trust towards the PA administrations. The first variable was the assessment of the degree of information about the work of the PA administration (Figure 4.9).

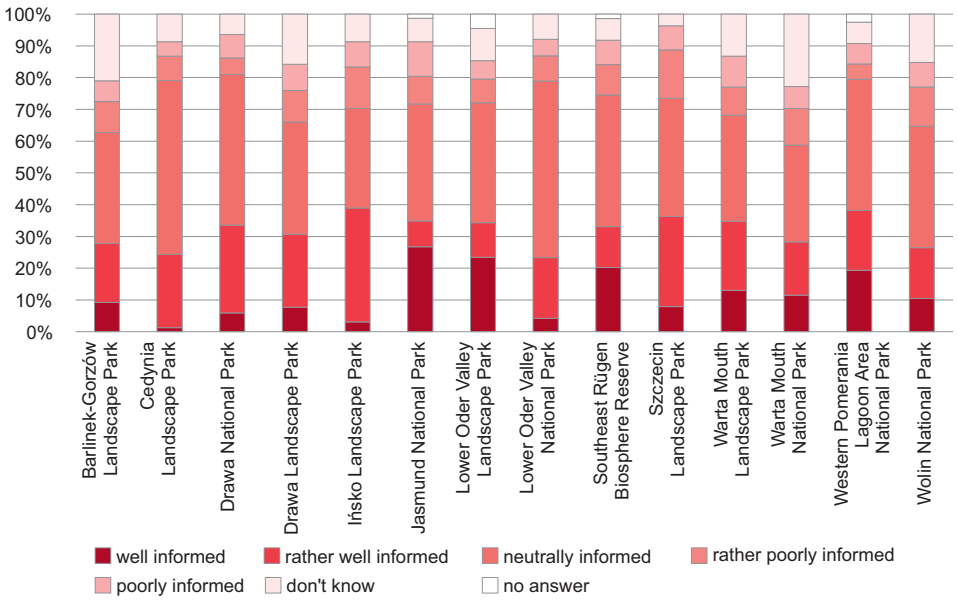

Figure 4.9. Degree of self-assessed information about the work of the protected area administration.
Source: own elaboration.

For most protected areas, the most frequently selected answer to the question about the degree of information about the work of the PA administration was "neutrally informed" (39.0%). The only exception was Ińsko Landscape Park, for which the most frequently selected answer was "rather well-informed". The inhabitants of the German PA regions more frequently felt they were well-informed about the work of the PA administrations (2.61 vs. 2.85, $p < 0.001$). The Polish respondents more often had no opinion on the subject.

The associations between protected area categories and the self-assessment of the level of information about the work of the PA administration are shown in Table 4.6.

Table 4.6. Associations between the responses to the question about assessment of the degree of information about the work of the protected area administration and the types of protected areas

Types of protected areas	Cramér's V	p-value
Polish park types	0.0000	1.0000
Polish/German national parks	0.2285	0.0000
German park types	0.0603	0.1768
Polish/German parks in general	0.3289	0.0000

Source: own elaboration.

There was no association between the assessed degree of information about the work of the PA and the types of protected areas within each country. There

was, however, a weak association between the responses of the inhabitants of the Polish and German national park regions and a moderate association between the responses of the inhabitants of the Polish and German park regions in general.

Related to the communication with the park administrations was the aggregated number of information sources about the PA used by the local people. On average, the respondents in our overall sample used 0.88 information sources. Interviewees in the three German national parks of Jasmund (1.23), WPLA (1.20) and Lower Oder Valley (1.19) use by far the most information sources, while the respondents from Cedynia Landscape Park (0.68) use the lowest number. The locals living in or adjacent to landscape parks used significantly less information sources compared to those living near national parks or in the Biosphere Reserve. This also contributed to the result that the Polish respondents used significantly fewer information sources when compared to their German neighbours (0.80 vs. 1.14, $p < 0.001$).

The next topic regarding the relations between locals and the PA administration explored the level of trust towards the work of the administration (Figure 4.10).

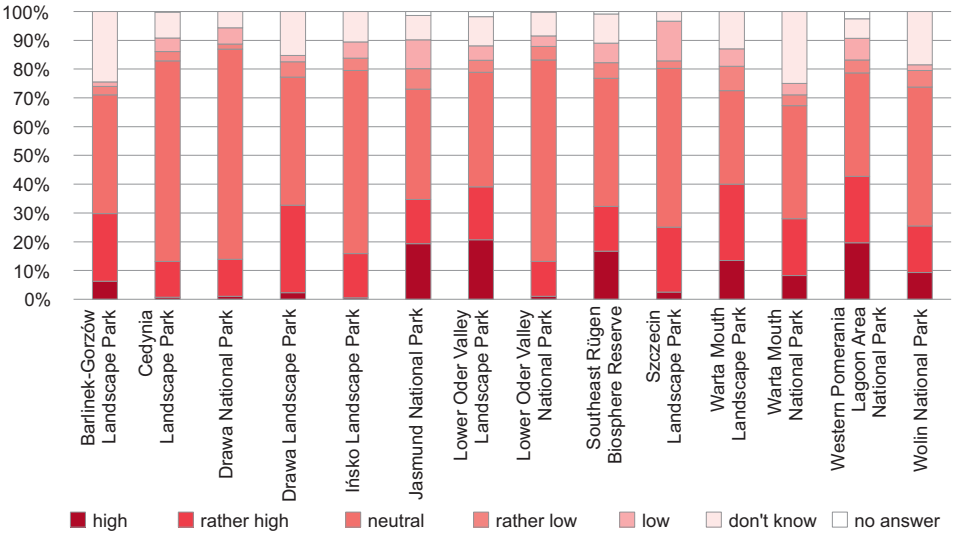

Figure 4.10. Structure of the respondents with respect to the level of trust towards the protected area administration.
Source: own elaboration.

The most often selected answer was the neutral assessment of trust towards the work of the protected area administration (48.9%). The German respondents had higher trust towards the administration of protected areas than their Polish neighbours (2.59 vs. 2.83, $p < 0.001$). The inhabitants of Polish PA regions more often had no opinion on the subject. The associations between the types of PA and level of trust towards the park administrations are presented in Table 4.7.

Table 4.7. Associations between the level of trust towards the protected area administration and types of protected areas

Types of protected areas	Cramér's V	p-value
Polish park types	0.0000	1.0000
Polish/German national parks	0.2779	0.0000
German park types	0.0295	0.9192
Polish/German parks in general	0.3374	0.0000

Source: own elaboration.

The situation was similar to the case of the previous question, as there was no association between the level of trust towards the PA administrations and the park category within each country. There were associations between the countries – in the case of national parks they were weak and in the case of all parks they were moderate.

Related to this trust variable was the respondents' assessment of the PA administrations' work. The respondents from the German PA regions significantly more often agreed with the statement claiming that "the PA administration is doing a good job" compared to the Polish respondents (2.17 vs. 2.40, $p < 0.001$).

The next PPR topic was the reactance towards PA regulations, operationalised through the assessment of restrictions caused by living in the neighbourhood of the PAs. Most respondents (at least 80%) in all the PA regions did not feel any restrictions arising from living in the neighbourhood of the PAs. A low fraction of the respondents (not more than 10.6%) felt there were restrictions and these respondents were more likely to live in the German part of the Pomerania region (10.6% vs. 4.1%). Moreover, the Polish respondents more often had no opinion on the subject.

Although the association between the assessment of restrictions and the types of Polish protected areas was statistically significant (Table 4.8), the value of the coefficient indicated that it was virtually non-existent. Weak and significant associations were visible in the cases of Polish/German national and all parks.

Table 4.8. Associations between the assessment of restrictions caused by living in the neighbourhood of protected areas and the types of protected areas

Types of protected areas	Cramér's V	p-value
Polish park types	0.0615	0.0014
Polish/German national parks	0.1086	0.0000
German park types	0.0238	0.9315
Polish/German parks in general	0.1112	0.0000

Source: own elaboration.

The assessment of the economic costs and benefits of PAs was the next topic of our PPR analysis. The first variable operationalising this construct was the importance of PAs for tourism (Figure 4.11).

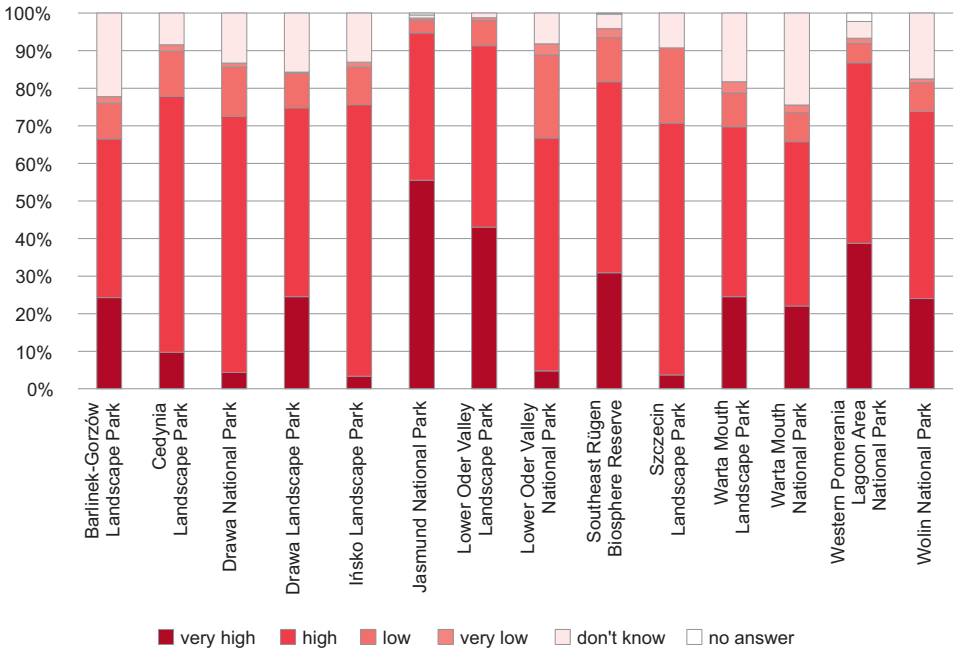

Figure 4.11. Stated importance of protected areas for tourism in the Pomerania region.
Source: own elaboration.

Overall, the respondents in the Pomerania region rated the importance of PAs for tourism in their region as very high (85.5% top-two box values, i.e. they ascribed very high or rather high importance to this statement). The German respondents more often indicated very high importance of protected areas for tourism than the Polish ones (42.8% vs. 17.7%). The Polish respondents more often indicated high importance, or had no opinion on the subject.

There was no association between the assessment of the importance of PAs for tourism and the park category within each country. There are associations between the countries – in the case of national parks they were weak and in the case of all parks they were moderate (Table 4.9).

Table 4.9. Associations between the assessment of the importance of protected areas for tourism and the types of protected areas

Types of protected areas	Cramér's V	p-value
Polish park types	0.0000	1.0000
Polish/German national parks	0.2671	0.0000
German park types	0.0000	1.0000
Polish/German parks in general	0.3251	0.0000

Source: own elaboration.

Further items measuring the economic assessment of the PAs included the following:

- the protected area has a positive impact on the image of the region (S1),
- the protected area hinders the development of the region (S2),
- the quality of tourism increased with the existence of the protected area (S3).

The respondents in general agreed that the PAs had a positive impact on the image of their region (47.3% fully agreed, 34.8% rather agreed, mean value 1.78); they were rather critical of the notion that the PAs hindered regional development (40.7% fully disagreed, 25.7% rather disagreed, mean value 3.81) and mostly agreed that the quality of tourism increased due to the existence of the PAs (25.0% fully agreed, 37.9% rather agreed; mean value 2.28). The German respondents significantly more strongly agreed to the PAs' effects on regional image and on induced quality improvements of regional tourism (1.52 vs. 1.83 respectively 1.96 vs. 2.35, $p < 0.001$). However, as Table 4.10 reveals, the associations between the Polish PA categories were not significant, and were rather small between Polish and German national parks.

Table 4.10. Associations between the degree of agreement with the following statements and the categories of protected areas

	S1		S2	
Types of protected areas	Cramér's V	p-value	Cramér's V	p-value
Polish park types	0.0000	1.0000	0.0000	1.0000
Polish/German national parks	0.1633	0.0000	0.1232	0.0000
	S3		S5	
Types of protected areas	Cramér's V	p-value	Cramér's V	p-value
Polish park types	0.0000	1.0000	0.0000	1.0000
Polish/German national parks	0.2342	0.0000	0.4433	0.0000

Note: Answers to these statements are not available for the Southeast Rügen Biosphere Reserve. Therefore, we only have two comparisons – between Polish park types and Polish/German national parks
Source: own elaboration.

Finally, we also analysed the topic of place attachment and local identity in relation to PPR, operationalised with the statement: "I feel closely connected to nature and the landscape in my region". The respondents, in general, agreed with this statement (31.1% fully agreed, 34.5% rather agreed, mean value 2.18), indicating considerable place attachment. However, there was a clear difference between the responses of the inhabitants of the Polish and German PA regions (1.52 vs. 2.34, $p < 0.001$, see Figure 4.12). The German interviewees much more often agreed strongly with this statement (the share of such responses was at least 65% – for WPLA National Park). For the Polish respondents, the maximum share of the responses showing that the inhabitants strongly agreed with this statement was less than 35% (for Wolin National Park). Also, the Polish respondents more often indicated high importance, or had no opinion on the subject.

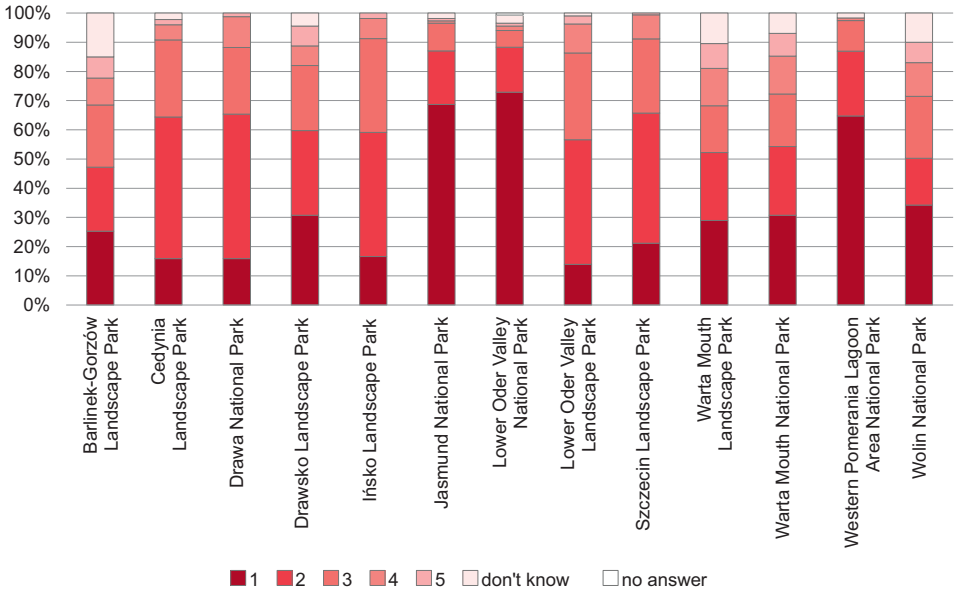

Figure 4.12. Answers to the statement "I feel closely connected to nature and the landscape in my region".
Source: own elaboration.

4.4.3.3. Relations between dependant and independent variables

Finally, we present the results of several association tests between the dependent (4.4.3.1.) and the independent variables (4.4.3.2.), highlighting the factors influencing park–people relationships in the Euroregion Pomerania. Figure 4.13 illustrates which independent variables were related in statistically significant ways to the three dependent variables, mirroring the conceptual framework presented in Figure 4.1 to some extent.

The first influencing factor was termed "communication": the respondents who voted for keeping the PAs in the "Sunday question" felt significantly better-informed about the work of park administrations (2.78 vs. 3.79, $p < 0.001$)[14], while those voting for "dissolve" used significantly fewer sources of information about the parks (0.89 vs. 0.72; t-value 2.605, $p < 0.01$). The respondents whose attitudes towards the PAs improved since their designation/their move to the PA region again felt significantly better-informed about the work of park administrations (2.49 "yes, better", 2.85 "no, unchanged", $p < 0.001$); negative changes were related to the lowest level of information (3.21; $p < 0.001$ to "no, unchanged" and to "yes, better"). The respondents whose attitude had improved used significantly more sources of information (1.05 "yes, better" vs. 0.83 "yes,

[14] Unless otherwise stated, all statistical tests in this sub-chapter refer to Mann-Whitney U-tests (for two comparison groups) or Kruskal-Wallis tests for more than two comparison groups.

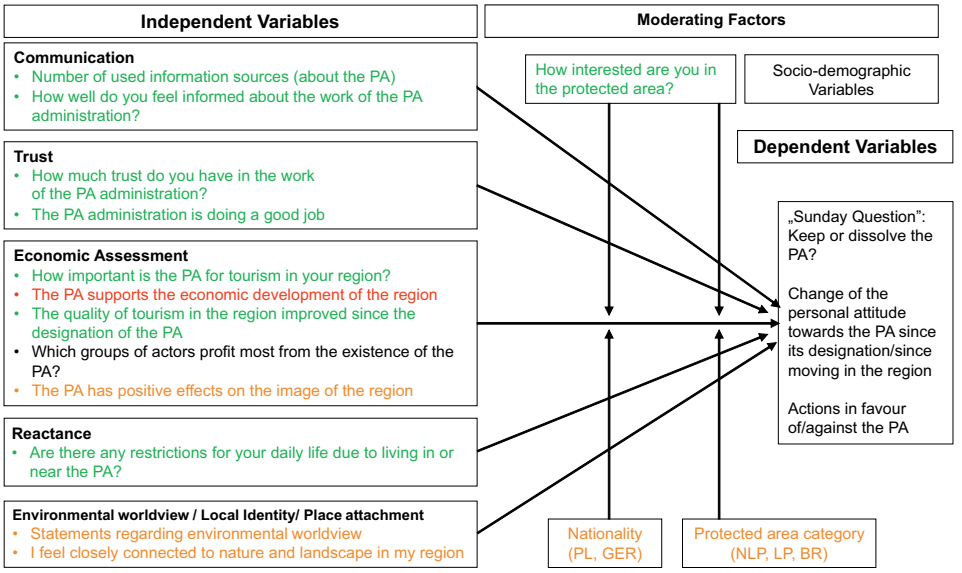

Figure 4.13. Influences on the park–people relationships in the Euroregion Pomerania
Notes: Green: statistically significant positive relations to overall PPR; red: negative relations; orange: mixed; black: not significant
Source: own elaboration.

worse", $p < 0.01$; "yes, better" vs. 0.86 "no, unchanged", $p < 0.001$; "yes, worse" vs. "no, unchanged", n.s.; based on ANOVA and post-hoc test). The interviewees who actively acted in favour of the parks felt significantly better-informed about the work of park administrations (2.45 "yes, in favour", 2.88 "yes, against", 2.85 "no activities", $p < 0.001$ each, "yes, against" vs. "no activities" n.s.). Again, the respondents who actively acted in favour of the PAs used significantly more sources of information compared to those working against the parks and the passive respondents (1.17 "in favour", 0.90 "against", 0.84 "no activities", $p < 0.01$ resp. < 0.001 based on ANOVA).

The construct of "trust" was operationalised by the questions concerning how far the respondents had trust in the work of the PA administrations and their assessment whether these authorities were doing a good job. The respondents who voted for maintaining the PAs trusted the PA administrations significantly more (2.80 vs. 3.37; $p < 0.001$), while those voting for dissolving the PAs were significantly less likely to think that the administrations were doing a good job (2.34 vs. 2.72; $p < 0.001$). The respondents with improved overall attitudes towards the PA significantly trusted PA administrations more (2.46 vs. 2.87 "unchanged", $p < 0.001$), whereas those with a change for the worse also showed the lowest level of trust (3.34; $p < 0.001$). The respondents whose attitudes had improved were also significantly more likely to think that the PA administrations were doing a good job (2.21 "yes, more positive", 2.36 "unchanged", 2.80 "yes, more negative", < 0.001). The respondents who actively acted in favour of the parks trusted the protected area administrations significantly more (2.36 "in favour",

2.87 "against", 2.87 passive; $p < 0.001$). Similarly, those who actively acted in favour of the PAs were also significantly more likely to think that the administrations were doing a good job (2.21 "in favour", 2.68 "against", 2.36 passive; $p < 0.001$ each resp. < 0.05 for "against" vs. passive).

The results of the construct "economic assessment" were less unambiguous: the respondents who voted for keeping the PAs rated their importance for tourism in the region significantly higher (1.94 vs. 2.30; $p < 0.001$). The local inhabitants voting for keeping the PAs were significantly more likely to agree that the PAs had increased the quality of tourism in the region ($p < 0.01$). However, there were no differences regarding the influence of PAs on the image of the region or regarding the statement: "Protected areas support the economic development of the region". Furthermore, there were hardly any relevant differences with regard to the question of who benefited the most from the PAs (overrepresented for "keep" voters: the residents and the tourists benefit equally, nature benefits most).

The respondents whose attitude towards the PAs had improved rated their importance of tourism in the region as significantly higher (1.69 "yes, more positive", 2.10 "yes, more negative", 2.00 "unchanged"; $p < 0.001$ for "yes, more positive" vs. "unchanged" resp. vs. "yes, more negative"; "unchanged" vs. "yes, more negative" n.s.). In this vein, the respondents with a more positive attitude were also significantly more likely to think that PAs improved the image of their region (1.58 "yes, more positive", 2.00 "yes, more negative", 1.81 "unchanged"; $p < 0.001$ for "yes, more positive" vs. "unchanged" resp. vs. "yes, more negative"; "unchanged" vs. "yes, more negative" n.s.). Similarly, the interviewees with a better attitude were significantly more likely to agree that the PAs had improved the quality of tourism in the region. Interestingly, the respondents whose attitude had improved were more likely to reject the statement: "Protected areas support the economic development of the region".

Finally, the respondents who actively acted in favour of the parks rated the importance of the protected areas for tourism in the region significantly higher (1.64 "in favour", 2.00 "against", 1.99 passive, $p < 0.001$ each, "against" vs. passive n.s.), were significantly more likely to believe that the PAs improved the image of the region (1.54 "in favour", 1.87 "against", 1.80 "passive", $p < 0.001$ each, "against" vs. passive n.s.), were significantly more likely to disagree with the statement: "Protected areas support the economic development of the region", and significantly tended to agree that the PAs had increased the quality of tourism in the region.

The construct of "reactance" was measured by referring to the level of perceived restrictions in the daily life of the respondents due to the PAs. Only 5% of the respondents who wanted to keep the PAs perceived there were restrictions in their daily lives caused by the PAs, while 20.8% of those voting for dissolving the PAs did (Cramérs V, 0.107, $p < 0.001$). Similarly, only 8.3% of the interviewees whose PA attitudes had improved over time perceived such restrictions, but 25.2% of those whose attitudes had worsened did (Cramérs V, 0.175, $p < 0.001$). Finally, only 10.5% of the interviewed locals who actively acted in favour of the parks

perceived restrictions vs. 25.5% of those who worked against them (Cramérs V, 0.158, $p < 0.001$). Interesting to note is that the passive group perceived the least restrictions in each case.

The next constructs for which we tested the relations to the dependent PPR variables were local identity, place attachment, and environmental worldviews. The statement of "I feel closely connected to nature and the landscape in my region" did not reveal any significant differences in regard to the "Sunday question". However, the respondents whose attitude towards the PA had improved were significantly more closely connected to nature and the landscape in the region. Interestingly, this also applied to the respondents with a change towards a more negative attitude (1.95 "yes, more positive", 1.96 "yes, more negative" vs. 2.23 "unchanged", $p < 0.001$ each; "yes, more positive" vs. "yes, more negative" n.s.). Likewise, the interviewees who actively acted in favour of the parks were significantly more strongly connected to nature and the landscape of the region (1.90 "in favour" vs. 2.20 passively vs. 2.59 "actively against", $p < 0.001$ each resp. < 0.01 for passive vs. "actively against"). Concerning the respondents' environmental worldview, those who voted for keeping the PAs were more likely to reject anthropocentrism, while those respondents whose attitude towards the PAs had improved were significantly more biocentrically oriented. In accordance with this, the interviewees whose attitude had worsened were significantly more anthropocentrically oriented. Finally, actively acting in favour of the parks coincided with a significantly more biocentric orientation, while acting against the PAs was related to a significantly more anthropocentric worldview.

Next, we had a look at the moderating variables. First, the interest in PAs was related to a positive overall attitude as measured with the "Sunday question" (2.46 "keep" vs. 3.01 "dissolve", $p < 0.001$). In the same vein, the respondents with improved attitudes towards the parks were significantly more interested in the PAs (2.15 "more positive" vs. 2.50 "more negative" resp. 2.55 "has not changed", $p < 0.001$ each; "more negative" vs. "has not changed" n.s.); the same held true for the interviewees actively acting in favour of the PAs (2.11 "in favour" vs. 2.52 "against" resp. 2.53 passive, $p < 0.001$ each; "against" vs. passive n.s.).

Most socio-demographic variables were not significantly related to any of the dependent PPR variables. For instance, the "Sunday question" showed no influence of age, no correlation to the fact that the respondents grew up in the park region or moved there later, no significant role of the number of years the interviewees had lived in the region. There was only an extremely weak association with gender. Regarding the change of attitudes towards PAs, the respondents whose attitudes had improved were significantly older (though this was a very weak correlation); there was again an extremely weak association with gender; those who had moved into the PA region were more likely to have changed their attitude towards PAs, either significantly more positively or somewhat more negatively. The number of years living in the region was again not significant. Finally, regarding the activities in favour or against the parks, there tended to be more pro-park activities of older people, but with a very weak correlation. Newcomers to the PA region showed significantly more often pro-PA activities, while there

were no significant associations with either gender or the number of years people live in the region.

The influences of the nationality (Polish vs. German) and the PA category were already shown in Section 4.4.3.1.

Finally, we examined how the three dependent variables were related to each other. The "Sunday question" measuring the overall attitude towards the PAs was positively related to the attitude change, though with relatively weak strength (Cramers V 0.276, $p < 0.001$). As was to be expected, those respondents who wanted to keep the PAs tended also to have improved their attitude and were less likely to have worsened it. Likewise, there was the expected association between the overall attitude towards the PAs and the activities in favour/against them (Cramers V 0.062, $p < 0.001$); however, this association was very weak. Attitudinal change towards PAs and activities in favour/against the parks were also significantly related (Cramers V 0.163, $p < 0.001$): Those who had improved their attitudes were also more likely to act in favour of PAs; interestingly, this held true also for worsened attitudes.

4.5. Discussion

The results of the park–people relationship studies ($n > 5500$, 14 parks) revealed very positive overall attitudes of the local population in the Euroregion Pomerania towards their protected areas. The overwhelming majority of the respondents would opt in a hypothetical vote for the future existence of the protected areas. This is a very encouraging result for the protected areas, their management, administrations, and staff. The results of the "Sunday question" also did not show any relevant differences between the PA categories. Although national parks are a formally stricter PA category entailing stricter nature protection regulations, this was not reflected in the local populations' overall attitude towards them. These positive results were in line with directly comparable studies, such as Job et al. (2019, 2021) who reported 85.8% and 96.1% yes-votes in the case of the "Sunday question" for the German National Parks of Bavarian Forest and Berchtesgaden, respectively. Also in a global comparison, the positive overall attitude results of our studies were consistent: in her global review of 83 case studies covering 132 PAs, Allendorf (2020) reported positive attitudes towards 84% of the PAs.

The results obtained for the Polish protected areas in the Pomerania region were to a large extent similar to the studies of other authors. According to our study, the level of knowledge of the respondents about the existence of protected areas in the vicinity of their place of residence was high. Most of the respondents, over 70%, knew about the existence of the protected areas. One of the exceptions was Wolin National Park, the existence of which was only known to 69% of the respondents. A lower level of knowledge among the inhabitants of Wolin National Park region compared to the inhabitants of other PA regions was also noted by Hibszer (2013). He found that 30% of respondents indicated that their knowledge of the immediate natural environment was poor and very poor. The lower level of

the residents' knowledge about the existence of a protected area in their neighbourhood may stem from the fact that people from distant places such as Silesia, Wrocław, Poznań, and Warsaw, who did not yet have enough knowledge about their current region of residence, were moving intensively to the analysed region. Furthermore, the respondents from the relatively large city of Świnoujście are separated from the National Park by a river, the Świna. The river can be crossed only by a troublesome ferry crossing. Therefore, some of the respondents may not perceive Wolin National Park as their actual neighbourhood, even when it is not very distant, only aprox. 20 km away.

A key issue is the maintenance of the existing protected areas. The respondents in the current survey were strongly in favour of their continued existence. The share of positive answers to this question for all surveyed Polish protected areas was >80%. Thus, it should be concluded that the results of the current study regarding the general attitude of respondents towards the surveyed protected areas confirmed the results of other studies. Bozêtka (1997) learned about Drawa National Park that about 80% of the inhabitants of the examined region (and 63% of this particular national park) unconditionally accepted the existence of protected areas. Similar results were obtained by Komorska (2000), as 80% of the highlanders accepted the need for Tatra National Park. At the same time, the obtained results corresponded to the results of Hibszer (2013), who showed that for 94% of the respondents of the park communities "the nature of the area is a valuable heritage of the whole nation and therefore it should be protected in the national park".

Our study showed that the majority, at least 80% of the respondents, did not feel any constraints associated with living in a protected area region. At the same time, this generally optimistic outcome contrasted with Hibszer's (2013) results. In his research, only 10% of the respondents indicated that there were no impediments. The respondents cited building restrictions (about 43%), lack of freedom to move around the park area except in designated places (35%–40% depending on the group of respondents), communication difficulties (about 28%), and many other impediments (about 17%), as imposed by the vicinity of the national park. Such a large discrepancy in the results obtained was most likely due to several reasons. One of them was time, as the surveys were separated by a period of ten years (2009 vs 2019), during which there had been transformations in the perception of and attitudes towards the natural environment and protected areas. The second element that influenced the results of the research was the conservation regime of the study areas. In the case of Hibszer's study, the subject of the research was exclusively national parks, which have a higher protection status and numerous prohibitions resulting from it, among other things. In our study, the subject of research also included landscape parks, which do not enjoy as strong protective regimes as national parks do, which makes the perception of such a protected area more positive. It is worth pointing out that the difference in results may also be due to the use of different wording in the research questions. Hibszer's study asked about obstacles related to the existence of the park, i.e. elements that make living there more difficult. In the case of our study, the

question was about "constraints on daily life", i.e. about something that reduced (limited) the enjoyment of rights and was therefore more restrictive compared to the impediments.

Our PPR studies also showed that over time the overall attitude towards PAs improved, at least slightly, as a relevant share of the respondents stated that their attitude would nowadays be more positive compared to the time of the PA's designation with respect to the time they moved into the PA region. This underlined that fact there was a relevant time effect on PPR as people get used to the PAs and their regulations as time passed – this also held true for the two German national parks mentioned above (Job et al., 2019, 2021). This time effect can be further demonstrated by comparing our results with earlier studies in the same PAs, for instance in the German WPLA National Park. For 1992 and 1993, Krieger (1998, p. 111) reported the following results of the "Sunday question": 84/73% "yes" (i.e. in favour of the park), 10/15% "no" and 11/12% "no opinion" (but often actually negative). In our survey (fieldwork in 2019), 96.5% of the respondents voted in favour of the park, with only 3.5% against it. Thus, the overall attitude towards WPLA National Park seems to have considerably improved since the early 1990s.

Lichtenberg and Wolf (1998, p. 41ff.) similarly reported results from the mid-1990s for Jasmund National Park and Southeast Rügen Biosphere Reserve: in 1996, 26% of the local respondents would have voted against Jasmund National Park, 46% in favour and 27% also in favour but only under certain conditions. Again, our results from 2019 were much more positive, with 97.5% positive and only 2.5% negative hypothetical votes. The PPR in Southeast Rügen were measured slightly differently, using a composite index based on several input variables: 39% of the local sample showed a high and higher acceptance of the Biosphere Reserve, 37% were indifferent, and 24% showed low or little acceptance. A better comparability was given for the study by Solbrig et al. (2013c), who reported 76% of the local respondents voting "certainly yes", further 14% "yes, under certain conditions", 5% indifferent/abstention, and only 4% "certainly no". Even when considering the limited comparability with the older study, we can nevertheless observe an important improvement of PPR also for Southeast Rügen, as our study revealed 98.3% "yes" vs. 1.7% "no" votes.

Even more relevant for the daily practices of PA management might be the actual behaviour of local people towards PAs, i.e. whether they acted in favour/against PAs or were not active at all in this respect. The results showed that the majority of local people in the Pomerania region were passive towards their PAs with only a minority being active. However, the majority of the active respondents were claiming to act in favour of the PAs. In general, the PAs in the Polish part of the Euroregion and the landscape parks had higher shares of passive respondents and the Polish park regions had higher shares of respondents being active against the PAs compared to the German respondents. Liebecke et al. (2011, p. 17) determined the share of active proponents and critics of the German Bavarian Forest National Park to be 11.3% (7.2% in favour, 4.1% against). Compared with our results, this was an average share. However, given the strong conflicts about Bavarian Forest National Park in the past, the share of open opponents of this

park seemed to be surprisingly low. This indicated that it was not the absolute number or relative share of active PA opponents that was decisive for park–people conflicts, but the influence of these active opponents on the public discourses, especially in the media, but also in terms of peer group pressures (Liebecke et al., 2011).

The results of our PPR studies underline the relevance of the conceptual framework used (Figure 4.1), which can be mostly confirmed and which seems to include meaningful influencing factors on the local people's overall attitude towards PAs, as well as on their level of activity regarding the PAs. However, the "economic rationalism" (Stern, 2008), that is that positive economic effects (e.g. from PA tourism) foster positive attitudes towards PAs, seems to be less pronounced in the Euroregion Pomerania compared to the German National Parks Bavarian Forest and Berchtesgaden (Job et al., 2021) given the lower statistical associations of the respective variables to the "Sunday question" in our studies. One potential reason could be the mostly much lower intensity of tourism in large parts of the Pomerania region compared to the two national park regions in south-eastern Germany (see Job et al., 2013). Furthermore, the local people, especially in the Polish part of the Euroregion, might have been less aware of the economic benefits generated by PA tourism given the lack of economic impact studies about park tourism (see Chapter 5 for details).

In contrast to the rather similar level of local people's overall attitude, we found a differing level of PA awareness/knowledge between national and landscape parks. An explanation may be found in the different protection regimes for landscape parks (more lenient and thus less noticeable for the local community) and the definitely greater restrictions on the use of the protected area in the case of national parks, which affected the level of awareness of their existence. This is underlined by the results of Mayer et al. (2019), who analysed the awareness of protected area categories in the Polish-German border region and revealed that national parks were indeed better known as a PA category, but also when it came to the respective PAs.

For a detailed interpretation and explanation, our results require an in-depth knowledge of the protected areas, their management, the local conflicts and issues, the local socio-economic structure etc. This can be underlined by the example of Ińsko Landscape Park. The local respondents indicated here they rather had high levels of information about the park. This may have resulted from the fact that the West Pomeranian Landscape Parks Board was very active in the area of this park, e.g. a new observation tower was erected in the period immediately preceding the survey.

However, the results of our PPR studies are also prone to some limitations. First of all, we were not able to cover all parts of the conceptual framework (Figure 4.1) in the questionnaire. For instance, the constructs of perceived control (e.g. participation) and subjective norm (e.g. peer group processes) could not be tested as no adequate operationalisations were included in the survey instrument. This issue should be avoided in future PPR studies. Second, the suitability of the "Sunday question" as the central measure of overall attitudes towards the

PAs needs to be questioned (see also the discussion in Job et al., 2021). Due to the very high shares of "yes" answers, the number of respondents answering "no" was too low for advanced statistical analyses like, for instance, logit regression models to explain influencing factors on this binary overall attitude variable – even in the case of our PPR studies with more than 5500 observations. On the one hand this might lead to the conclusion that PPR are so positive in the survey areas that there are just too few respondents completely rejecting the parks. On the other hand, the "Sunday question" might be too general to cover the often complex PPR as exemplified perfectly by Allendorf (2022, p. 380):

> "In most cases, people simultaneously perceive both benefits and costs of protected areas, i.e. they are ambivalent. An individual may like a protected area because it conserves habitat and wildlife and provides a healthier environment. At the same time, they may dislike it because they cannot legally extract resources and because wildlife eat their crops and injure people. People may even be ambivalent about the same attribute. For example, while people may dislike not being able to extract resources, such as fuelwood and fodder, from a protected area legally, at the same time, they can appreciate that the restricted access helps to preserve those same resources".

This is very much in line with the important insight of Liebecke et al. (2008, 2011) that something like **the** acceptance of protected areas does not exist – only more or less similar or differing attitudes towards several topics which finally lead or do not lead to actions in favour/against PAs. This implies for future PPR studies that the "Sunday question" might be kept for reasons of comparison, monitoring and communication to practitioners and decision makers, but that it should be complemented by more sophisticated measurement tools to capture the overall attitude towards PAs on a much more differentiated level.

4.6. Interim summary

The results of the PPR studies in the Euroregion Pomerania can be summarised as follows: the large-scale protected areas in the Euroregion analysed enjoy a very high amount of support among the local population, as measured with the very high share of positive votes in favour of the PAs in the "Sunday question". Since the PAs were designated (or the respondents moved into in the PA regions, as the case may be), the overall attitude of the local people towards them had improved considerably, with the highest shares of indifferent interviewees found in the Polish landscape parks. The improved attitude was also obvious when comparing our results with those of earlier PPR studies. Concerning the concrete actions of the respondents regarding the PAs, it is clear that there were significantly more activities in favour of the PAs than against them, with more active opponents and more passivity in the Polish PA regions. In terms of methodologies, our survey instrument worked well also in the international context. However, there is a need for further development, e.g. by incorporating a more sophisticated measurement

of the overall attitude towards PAs, and for including missing constructs of the conceptual framework.

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5. Economic impact analysis of tourism in protected areas of the Pomerania region

5.1. Introduction

Protected areas (PAs) provide important benefits for humankind including conservation of biodiversity, landscape integrity, carbon sequestration, and water and air purification, as well as the possibilities for nature-based recreation (Leung et al., 2018; Naidoo et al., 2019; Juffe-Bignoli et al., 2014; Worboys, 2015). Despite these benefits, PAs are often underfinanced, are under pressure to be converted/opened to conventional land uses, or lack public support, especially among local people living in or nearby them (see Chapter 4). One important reason for this situation is that the economic benefits of PAs are often not recognised or are at least contested, and PAs are consequently regarded as loss-making businesses (Mayer, 2013, p. 28). Eagles (2007, p. 6) put it like this:

> "Any phenomenon that is not measured and reported does not exist politically. Governments, societies, communities and individuals place more value on that which is documented."

This undervaluation, in turn, is based on the public good characteristics of many benefit components of PAs, i.e. there are no market prices available, in contrast to conventional land-uses such as mining, agriculture or forestry (Dixon & Sherman, 1990, p. 24 f., 32). One of the PA benefits that is tangible and rather straightforwardly measurable is the economic impact of tourism activities in PAs generated by visitor expenditure in and around PAs (Hanley & Barbier, 2009).

> "Tourism in protected areas has the potential to generate tangible economic impacts, mainly from the money that visitors spend. Their expenditure … can be substantial. By establishing the level of visitor spending, evidence can be gathered to illustrate the economic contribution and impact of protected area tourism." (Spenceley et al., 2021, p. 18)

To sum up, the economic valuation of PA tourism is worthwhile for the following reasons (Pascual et al., 2010, p. 190; Rommel, 1998, p. 21f.; Flückiger, 2000, p. 18; Hornback & Eagles, 1999; Job, 2008; Job et al., 2021; Mayer & Stoll-Kleemann, 2016; Spenceley et al., 2021): it somewhat compensates for the missing/contested valuation of PAs' public goods; it puts PAs on the economic playing field by providing comparability through monetisation; it closes information gaps, objectifies debates, and therefore contributes to avoiding misallocations of

resources; it makes a strong argument for the existence of PAs, justifies their budgets and argues for their better financial support; its results can be used for self-evaluation and benchmarking, as well as internal and external marketing/communication; finally, its results can contribute to improving the attitudes of local people towards PAs with assumed positive consequences for nature protection outcomes.

However, what exactly is meant by economic impact and how is it measured? Watson et al. (2007) provide two related definitions:

> "Economic impacts are the net changes in new economic activity associated with an industry, event, or policy in an existing regional economy" (p. 142). "Economic impact is the best estimation at what economic activity would likely be lost from the local economy if the event, industry, or policy were removed" (p. 143).

Thus, economic impacts describe the net effects of policies that bring new revenues into the PA region that would otherwise not occur, or policies that keep revenues in a PA region that would otherwise be lost (Spenceley et al., 2021). That means the difference between the analysis of the economic contribution and the impact of tourism lies in the scope of the analysis (overall significance vs. the effect of "shocks"/"changes") and not in the methods (Mayer & Vogt, 2016). In this way, economic impacts of PA tourism are part of the tangible, direct, non-consumptive use values of PAs (Mayer, 2013; Barbier, 1991; Munasinghe, 1992).

Economic impact analyses are most often used to estimate how changes in visitation or visitor spending might affect local economies. Economic impacts describe the economic activities that are either brought into a region because of a PA designation or describe the economic activity that would be lost from the region if the PA designation was removed. Therefore, economic impact studies do not include spending by locals (Spenceley et al., 2021, p. 26) and must account for the visitors' motivation (in contrast to the economic contribution of PA tourism) (Mayer et al., 2010).

An estimation of the regional economic impact of PA tourism requires four main steps (see Spenceley et al., 2021 for details[15]): 1) The number of visitors or visitor days needs to be determined, differentiated between different visitor types with likely deviations regarding their spending patterns such as, for instance, overnight visitors vs. day-trippers, or domestic vs. foreign guests, or combinations of both and other characteristics. Staab et al. (2021) and Job et al. (2021) provide recent literature overviews for visitor counting and monitoring approaches. However, for PAs with required entry fees, such as some of the Polish national parks, there are usually relatively reliable visitation numbers, while for free-access PAs such as all German PAs and the Polish landscape parks, there are not any official visitation data available. 2) The expenditure behaviour of visitors to the PA and the PA region (which often needs to be defined first) needs to be differentiated within the same visitor groups as the visitation data, so that both data sets can

[15] This work is a recently published international guideline (approved by the UNESCO) about measuring the economic impacts of PA tourism.

be combined to calculate the gross turnover of PA tourism. The contribution by Stynes and White (2006) sums up the dos and don'ts in expenditure surveys, while Mayer and Vogt (2016) include a comprehensive review on the factors influencing spending behaviour. 3) An economic model or multipliers to determine how much of the gross turnover (i.e. visitor spending times visitor number) actually stays in the PA region (and does flow out of the region as leakage, e.g. to pay for imports, taxes to the government, transfer of profits) and how much direct, indirect and induced economic impact it generates (depending e.g. on the regional economic structure, the size of the PA region, see Archer & Fletcher, 1996). These models include (see Dwyer et al. 2010, Chap. 7–9 for an overview), for example, regional multipliers (Archer, 1977), input-output-models (Fletcher, 1989), social accounting matrices (Wagner, 1997), and computable general equilibrium models (Zhang et al., 2007). 4) Finally, the PA visitors' motivation needs to be known to be able to attribute the adequate share of regional income to PA tourism, because if visitors were to come to the region regardless of the existence of the PA, their spending cannot be attributed to the PA and should not be treated as part of the economic impact. Küpfer (2000), Job et al. (2003), Wall Reinius and Fredman (2007), Mayer et al. (2010), Arnberger et al. (2012, 2019) and Backhaus et al. (2013) came up with or used slightly differing schemes to assess PA visitors' motivation and to identify so-called visitors with a high PA affinity, i.e. visitors who most likely would not have come if the PA had not existed – Bayer et al. (2017) provide a review of these approaches.

On the international level, a few countries have set up compelling economic impact monitoring systems of PA tourism, especially the USA[16] and Finland (see Huhtala et al., 2010)[17]. For example, the US National Park Service (NPS) has been monitoring the yearly visitor numbers of the NPS units since 1904, on a monthly basis since 1979. Furthermore, there is a high level of consistency and reliability of the data for the NPS units. Since 1988, visitor spending and economic impacts have been measured and reported (Koontz et al., 2017).

This chapter is structured as follows: in the next section (5.2), an overview is provided of the state of research about tourism economic impact analyses in Polish and German PAs, while section 5.3 presents the methods used to assess the economic impact of tourism in the PAs of the Pomerania region. Section 5.4 shows the results of these analyses for the Polish and the German PAs, respectively, followed by a discussion (5.5) of these results. A short interim summary (5.6) closes this chapter.

5.2. State of Research

Below, overviews of tourism economic impact analyses in protected areas in Polish (5.2.1) and German (5.2.2) PAs are presented.

[16] See https://www.nps.gov/subjects/socialscience/vse.htm. (accessed on April 12, 2022).
[17] See https://www.metsa.fi/en/economic-benefits-of-national-parks/ (accessed on April 12, 2022).

5.2.1. Poland

In Poland, as elsewhere globally, an increasingly important role is being attributed to the socio-economic issues of operating PAs. This transformation is a slow process, though. The public opinion perceives Polish national parks as nature conservation areas to which humans and their activities are a threat (Mika et al., 2015, p. 9), while the Polish literature – compared to the multitude and scopes of studies in the USA, Finland and Germany (see 5.2.2.) – suffers from a shortage of publications describing and evaluating economic impacts in PAs. Notably, the situation in Poland corresponds to the situation in the entire Central and Eastern Europe. However, this subject is gradually attracting more interest (Bodnár, 2006; Cihar & Stankova, 2006; Harmáčková et al., 2016; Moraru et al., 2021; Nestorová Dická et al., 2020; Schneider et al., 2021).

Despite these general observations, it is important to stress that the Polish literature on the subject makes several references to the impact generated by PAs on the economy of the region and the country. Multiple studies have dealt with social conflicts, which are frequently caused by economic aspects (as discussed in more detail in subsection 4.2.1.).

A large proportion of publications have been devoted to tourism in all Polish national parks. Research has mainly focused on the effects of the anthropogenic impact (Bożętka, 1995; Macias et al., 1995; Michniak, 2018; Sikorski, 2009; Soltys-Lelek et al., 2010) and the volume of tourism, as well as its structure, spatial and temporal distribution, and intensity (Janowski, 2005; Miazek, 2020; Prędki & Demko, 2021; Rogowski, 2018a, 2019; Semczuk et al., 2014; Zawilińska, 2021).

Issues concerning systems for monitoring tourist traffic in protected areas have been widely discussed in the Polish literature, as well. Tourism intensity is mainly judged by the number of admission tickets sold by Polish national parks[18] (Pociask-Karteczka et al., 2002; Wieniawska-Raj, 2010) or based on pyroelectric detectors in use in most national parks in Poland (Buchwał & Fidelus, 2010; Spychała & Graja-Zwolińska, 2014; Rogowski, 2018b, 2020; Rogowski & Piotrowski, 2022; Rogowski & Rusztecka-Rodziewicz, 2021).

We assume the notion that national parks play a role in the local economy is gaining popularity in Poland. Research implicating a comprehensive role fulfilled by a national park, i.e. that of an employer, contractor, investor and customer, should be mentioned in this context (Bołtromiuk, 2010, 2011; Walas, 2019). The financial aspects of the functioning of Polish national parks have also been examined (Kulczyk-Dynowska, 2015b, 2015a; Pater, 2020; Pater & Zawilińska, 2014; Zbaraszewski, 2013, 2016).

In Poland, in-depth research has been initiated after 2010 into PA visitor expenditure, and the results have been used to estimate the socio-economic effects

[18] Until 2022, the requirement to pay an admission fee in Poland was mostly limited to mountain parks. According to the discussions held at the turn of 2021/22 on a new bill on national parks, plans are being made to charge for admission to all twenty-three Polish national parks.

of tourism on such places. Pilot studies aimed at estimating visitor spending were conducted in, among others, Tatra National Park in 2013 (Urbaniak & Mazur, 2014) and Wolin National Park (Zbaraszewski et al., 2014, p. 95–118). Research carried out in Babia Góra National Park in 2012–2015 (Mika et al., 2015) can be regarded as an extensive study of the economic impact of a Polish national park on the socio-economic development of the park's municipalities (towns). The study helped to identify, among other things, the size and structure of the national park's budget, the financial links that the national park had developed, the extent to which the park exerted economic effects, and the volume and structure of the park's visitor expenditure. It also considered the scope of the economic connections resulting from these expenses flowing into the immediate vicinity of the national park. As for assessing the economic effects of tourism in Babia Góra National Park, an assumption was made that the estimation should cover the entire tourist traffic in the park region regardless of the visitors' motivation for arrival. Thus, a 'wider' approach to defining national park tourism was adopted, one that did not limit tourism to those people whose sole objective was to visit the park (the 'narrow' definition of national park tourism). Studies of the volume and structure of tourist expenditure were carried out in 2012 and 2013. The survey days were chosen so as to match the distribution of tourist traffic within the park, as recorded by the park's administration. The interviews were conducted with 1,215 respondents (N = 1,125), but as some of them spoke for their whole families or groups, conclusions could be drawn for as many as 2,912 people. When asked whether their visit to Babia Góra National Park was their main objective, as many as 82.3% from this group answered that it was, while this figure rose to almost 90% for day-trippers and dropped to 75.4% for those who stayed there for the night (Mika et al., 2015, p. 129). The respondents were asked about their expected costs of the trip, including the expenses they had already incurred. In this way, information was gathered on the volume of both total expenditure and expenditure broken down into the categories of "overnight accommodation", "food", and "other". Verification and supplemental surveys were also carried out among these tourists as soon as they returned home. A *post factum* data analysis was performed based on the information collected from a group of 351 persons (n_2 = 351) who agreed to be involved. Since the value differences between the expenditure declared and the actual spending in our study group were relatively small, it was assumed that the information drawn from the actual tourist expenditure data for the n_2 group reflected the expenditure structure for the whole (N) study population. The total declared expenditure for the whole sample of 2,912 tourists amounted to PLN 435,000, with accommodation costs accounting for 36.3%, food expenses for 41.7%, and other expenditure for 22.0% (Mika et al., 2015, p. 135). The study estimated the economic benefits (as this is the term used in the study) gained by the municipalities from inbound tourism directly and indirectly linked to the national park. These were calculated by adding together the expenses of day-trippers and overnight visitors and then deducting the VAT imposed on the particular types of services and goods purchased (Mika et

al., 2015, p. 147). The following assumptions were made for the purpose of the calculation:

- the annual number of visitors to Babia Góra National Park was 100,000. The authors noted that although an electronic monitoring system (pyroelectric detectors) was in use in the park, the data obtained was so inaccurate that it could not constitute a reliable source of scientific information (Mika et al., 2015, p. 123). Therefore, the number of visitors used to estimate the economic effects was based on data from reports on tickets sold in 2014 (76,000 people) and observations by park staff, who assessed that the actual number of people entering the park was approx. 25–30% higher than the number of tickets sold.
- the results of the research reflected the relationship between day-trippers and overnight visitors visiting the park during the year,
- the 8% VAT on accommodation services was only taken into account in the case of hotel facilities, i.e. hotels, guest houses, tourist shelters, holiday centres, leisure and training facilities, and other so-called group accommodation facilities; the VAT was not accounted for in other categories of accommodation such as guest rooms and agritourism farms; with this assumption, the VAT was taken into account for 42.9% of the expenses incurred for accommodation (Mika et al., 2015, p. 147).

The calculated annual amount of visitor expenditure amounted to PLN 15.952 million (EUR 3.545 million[19]) of which 1.671 million (EUR 371,000) came from day-trippers and PLN 14.280 million (EUR 3.173 million) from overnight visitors. The largest share of the economic benefits generated by tourism in Babia Góra National Park was realised by the accommodation sector (42.9%), followed by catering and retail trade, with 28.2% and 23. 5%, respectively (Mika et al., 2015, p. 149).

An attempt to assess the economic impact on the region's economy was also undertaken for Góry Stołowe National Park in 2018. The studies based on visitation data from pyroelectric automatic counters and on surveys helped estimate the volume of the visitors' gross expenditure at PLN 359 million, or EUR 79.80 million (Rogowski et al., 2019).

The regional economic effects of tourism in a protected area have also been estimated for Drawa National Park. The study used the method for estimating regional economic impacts effects established in Germany by Prof. Hubert Job (Job et al., 2005; Job et al., 2009). The number of visitor days to this national park in 2018 was estimated at 38,200. Visitor days were calculated using a mixed method, i.e. on the basis of two data sources. The main source of information involved counting the visitors at seven locations selected by the park administration staff that could be regarded as unofficial entrances. The counting was carried out on 24 days, i.e. usually on a single weekday and a single day off work between 9 o'clock and the sunset, not later than 6 pm, in every month of 2018. At the

[19] For the purposes of comparison, the following exchange rate was adopted further in this Chapter: PLN 4.50 (PLN) = EUR 1 (EUR).

same time, the visitors were surveyed in order to estimate the size and structure of their expenditure. Visitors from outside the park region were distinguished from locals using postal codes provided by the respondents. Drawa National Park charges fees for using its water areas for amateur angling and for kayaking on the River Drawa. The park's database of tickets sold, adjusted for errors, was the second source of data used to estimate tourist traffic. By comparing the number of tickets sold and the number of visitors on the counting days, discrepancies were identified, in particular in the peak of the season, since it turned out that there were actually approx. 24% kayakers more than indicated by the number of tickets sold. Therefore, the extrapolation of the total number of visitor days used data derived from counting the visitors (for pedestrians, horse riders, and cyclists) and from the number of tickets sold (for kayakers and anglers), which were then adjusted for the identified discrepancies between the number of tickets sold and the number of visitors counted on the survey days.

Based on short (589) and long (394) interviews at seven selected locations within the park, it was concluded that 40.4% of the visitors were day-trippers (59.6% overnight visitors), while as many as 74.6% of the remaining visitors were tourists staying in the park (the park municipalities) for only one or two nights. Tourism in Drawa National Park was characterised by the tourists' high affinity to the place, since as many as 54.7% of the guests were visitors with a high national park affinity, i.e. they were not only familiar with the protected area status of the park but also came to the park as their primary destination. The study estimated value added ratios in the region concerned (broken down into accommodation, catering, retail trade, services, and park charges). According to the method adopted, which employed deducting the VAT from the tourist expenses and taking into account both value added ratios and indirect income generated in the region from intermediate consumption with the average daily expenses (derived from the study) of PLN 48.79 (EUR 10.84) as incurred by day-trippers and PLN 98.08 (EUR 21.80) as incurred by overnight visitors, the total tourist income (the regional economic impact) was estimated at PLN 1.678 million (EUR 372,900). Considering the region's average salary, this value represented an equivalent of 49 people receiving the regional average salary (Zbaraszewski & Pieńkowski, 2022).

In our literature overview, we came across a paper made as part of a Polish-Czech project realised under the Interreg V-A – Czech Republic-Poland programme that included sociometric studies carried out in the two Karkonosze national parks, i.e. both in Poland and Czechia (Kravka et al., 2019). It was found that the average spending per person and day was CZK 749 (EUR 30)[20], with Czech guests spending on average CZK 604 (EUR 24.20), Poles spending CZK 695 (EUR 27.80), and Germans spending CZK 1,280 (EUR 51.20). The study's estimates of visitor expenditure between July 2018 and June 2019 allowed for their gross values to be determined at approx. CZK 4 billion (EUR 160 million)

[20] The 25 CZK (Kč) = EUR 1 (€) exchange rate was adopted (a single fixed exchange rate has been assumed for illustrative purposes).

for the Czech national park and CZK 1.2 billion (EUR 48 million) for the Polish national park (Kravka et al., 2019, p. 35).

Our overview of research about Polish PAs showed that there had been attempts at estimating the economic impacts, although such studies had concentrated on a very limited number of national parks. In addition, the research so far had disregarded other forms of territorial nature conservation. In most of the reviewed studies, the economic impact of tourism in protected areas was – incorrectly – understood as gross expenses incurred by visitors to the given protected area, i.e. expenditure not adjusted for the VAT paid to the State Treasury, and leakages. Moreover, most of such studies failed to translate the economic effects into the hypothetical number of people employed in the protected area region thanks to the expenditure of the visitors in the region. It appears that there is a need for Polish scientists to develop a single method for estimating regional economic impacts of PA tourism, which will allow for the benchmarking of the results obtained over time and between individual protected areas.

5.2.2. Germany

Economic impact studies for protected areas in Germany face several difficulties (Mayer & Woltering, 2017; Job et al., 2021): Firstly, Germany has a free access policy for PAs resulting in a lack of visitation data. Especially in biosphere reserves and nature parks, such figures are even harder to obtain due to locals living inside the PA. Secondly, data on tourism expenditures are rare and those available are not representative of PAs but rather of urban areas, as they are strongly influenced by the retail spending behaviour of the visitors (as a trip to the next largest city is interpreted as a shopping tourism trip). Thus, costly field research including extensive visitor counting and surveying is required. Thirdly, regional economic models do not exist in the form of regionalised input-output-tables but only in the form of regional multipliers. However, these latter ones are not publicly available as they are the product of private consultancy.

Thus, with the notable exception of Kleinhenz' (1982) study about the economic impact of the first German national park in the Bavarian Forest, there were not any economic impact studies of park tourism until the early 2000s. Until then, visitor numbers of national parks were only available as rough estimations without transparent assumptions (see Bibelriether et al., 1997). It was not until a pilot study in Berchtesgaden National Park (2002/03) by Job et al. (2003) and a following larger pilot project 2004/05 in Müritz National Park and the Nature Parks Altmühltal and Hoher Fläming (Job et al., 2005) accompanied by guidelines to estimate the economic impact of tourism in protected areas (Job et al., 2006) that the economic valuation of protected area tourism in Germany took off. Since then, the regional economic impact of tourism has been estimated for 15 out of now 16 German national parks including some replication studies, for nearly all biosphere reserves (to be completed in 2022), and for four of the 104 nature parks. Funded by the German Federal Ministry of Environment, the Federal Agency of Nature Protection (BfN) and several of the PAs, most of these

studies were conducted by the working group of Hubert Job (Job et al., 2003, 2005, 2009, 2013, 2016, 2021), which established a standardised procedure for estimating the economic impact of tourism in large-scale PAs and undertook various case studies in all types of PAs. Meanwhile, other researchers used basically the same approach to estimate these values for other PAs (Rein & Schneider, 2009; Rein & Balas, 2015 for Lower Oder Valley National Park) and in replicated studies (Steingrube & Jeschke, 2011 for Müritz National Park, Rein et al. 2017/18 for Hainich National Park, see Nationalpark-Verwaltung Hainich, 2019), while others used a differing approach, which makes comparisons difficult, especially regarding the size of visitation (Wölfle et al., 2016 for Eifel National Park, Arnberger et al. 2013/14 and Allex et al., 2018 for Bavarian Forest National Park, see Arnberger et al., 2019 and Nationalparkverwaltung Bayerischer Wald & Nationalparkverwaltung Šumava, 2020). Thus, not all economic impact studies in German PAs are completely comparable, due to the differing methodologies adopted, especially regarding the crucial step of visitor day number estimation[21] (Job et al., 2021). To sum up, the degree of knowledge about visitation and the resulting regional economic impact of PA tourism in Germany has improved considerably in the last two decades. However, nothing in the line of a national monitoring program, such as in the USA or Finland, has been established so far.

Table 5.1 gives an overview of the key findings of the available regional economic impact assessments of German PAs. The results show that many large-scale PAs in Germany are important tourism attractions generating considerable regional economic impacts (see Mayer & Woltering, 2017, which is also the basis for the following, updated paragraphs).

The visitor days and structure as key parameters for economic impact studies are influenced by the location of the PAs with regard to the agglomerations: the distance between potential source regions and the PAs is crucial. For example, Bavarian Forest National Park with its long distances to major cities is dominated by overnight visitors, whereas Eifel National Park south of the Rhein-Ruhr megalopolis is highly frequented by day-trippers (Woltering, 2012). In total, for all German NLP there are an estimated 53.1 million visitor days per year (Job et al., 2016). The two Wadden Sea National Parks dominate accounting for approx. 80% of this visitation value. Based on the exactly replicated studies, there is no clear indication that the visitation to German national parks is indeed increasing, as is often suggested in the media – however, this does not include the situation during the COVID-19 crisis. The extrapolated results for all German biosphere reserves total 65.3 million visitor days per year (Job et al., 2013, p. 97; Mayer & Job, 2014, p. 83). For the 104 nature parks there are not even rough estimates of the total visitation volume available.

All German national parks generated a gross turnover of EUR 2.78 billion in 2016, showing huge variability and leading to an income equivalent of around 85,500 persons (Job et al., 2016, p. 24). All German biosphere reserves create an

[21] The study by Allex et al. (2019) also differs regarding the expenditure survey as spending for petrol is included, in contrast to all earlier studies by Job et al.

extrapolated amount of EUR 2.94 billion gross turnover with income equivalents of approximately 86,200 persons (Job et al., 2013, p. 97). The high values of the two Wadden Sea National Parks and Southeast Rügen Biosphere Reserve (part of the Pomerania region) can be explained by the fact that all three are coastal areas with a long tradition as destinations for beach/spa tourism and were designated as PAs only relatively recently. Therefore, it makes sense to assess the importance of the PAs for visitors' travel motivation. Knowledge about the status as a PA and its relevance for visitation is analysed with the help of several successive questions (see Job et al., 2005, 2009; Mayer et al., 2010).

Depending on a region's history of tourism development, the PA status represents the main visiting reason for a certain share of guests. These are usually termed as visitors with a high PA affinity. Among the national parks, Bavarian Forest achieved the highest value with a share of 57.9%, followed by Eifel (48.0%) and Müritz (47.7%), while Lower Saxony Wadden Sea and Black Forest reached only 10.9% and 9.3%, respectively, because of their respective beach/spa and hiking/spa tourism traditions. For the biosphere reserves, these results were a little lower: Schaalsee with its relatively short tourism history showed the highest share of visitors with a high PA affinity (21.5%). Rhön had a share of 13.7%, whereas Southeast Rügen reached only 4.9%. This means that only this small share of visitors would not come to the region if the biosphere reserve did not exist.

Regarding this core segment of visitors with a high PA affinity (who could also be interpreted as nature tourists in a stricter sense because they are motivated by the PA status), the results of the economic impact analysis must be adapted: overall, for all national parks, this segment attracted 9.51 million visitor days and a related gross turnover of EUR 431 million per year. The total economic impact of tourism in the 15 national parks analysed totaled EUR 252.1 million for the visitors with a high PA affinity and EUR 1.445 billion, respectively, for all national park visitors (Job et al., 2016, p. 24 f.).

For the biosphere reserves, the extrapolated results for all German biosphere reserves reduce to 4.2 million the visitor days motivated by the biosphere reserve status, generating a yearly gross turnover of about EUR 181.5 million and 5,261 income equivalents (Job et al., 2013, p. 97). Overall, the large gap in the results for both PA categories indicates that there was still a huge tourism potential, especially looking at those visitors who were attracted mostly by the PA. This also held true for the two nature parks analysed, where the share of visitors with a high PA affinity was very low (only 4.1% in Hoher Fläming) or limited (15.3% for Altmühltal, presumably a rather high value for nature parks).

Table 5.1 also highlights the mostly marginal shares of foreign visitors to German large-scale PAs. Only Berchtesgaden, Black Forest and Eifel National Parks registered more than 10% of incoming guests due to the proximity to Austria, France and Switzerland, and Belgium and the Netherlands. The shares were even lower in BR, potentially due to their limited prominence.

In addition to the economic impact of national park tourism, Mayer and Woltering (2018), as well as Sinclair et al. (2020), estimated the consumer surplus

Table 5.1. Regional economic impact of tourism in selected German protected areas

Name	Area [ha]	Designation Year	Survey Year	Visitor Days [Million]	Share of Day-trippers [%]	Share of Foreign Visitors [%]	Share of Visitors with High PA Affinity [%]	Average Spending per Person and Day [€]	Gross Turnover all visitors [Million €]	Income all visitors [Million €]	Income Equivalent all visitors [Person]
National Park											
1 Bavarian Forest	24 217	1970	2007	0.76	33.0	3.8	45.8	36.57	27.8	13.5	904
			2018	1.36	58.6	–	57.9	38.49	52.4	26.1	–
2 Berchtesgaden	20 804	1978	2002	1.13	23.0	–	10.1	44.27	8.2*	4.6*	206*
			2014	1.58	25.4	15.6	27.7	59.35	93.8	47.5	2103
3 Eifel	10 770	2004	2007	0.45	76.0	11.7	27.3	19.31	8.7	4.3	251
			2014/15	0.87	64.5	10.3	48.0[a]	46.42	30.2	15.2	674
4 Hainich	7 513	1997	2007	0.29	76.0	1.4	40.7	17.25	5.0	2.5	168
			2017/18	0.30	60.0	7.0	40.0	28.83	8.5	5.2	266
5 Harz	24 732	1990/ 1994	2012/13	1.75	49.8	4.9	24.4	42.57	74.3	39.6	2312
6 Kellerwald-Edersee	5 738	2004	2007	0.20	59.0	5.8	25.8	19.48	3.9	1.9	111
7 Lower Oder Valley	10 323	1995	2007/08	0.21	92.0	–	32.1	9.45	1.9	0.9	61
			2013/14	0.14	83.9	3.0	39.0	14.85	2.1	1.0	63
8 Lower Saxony Wadden Sea**	345 000	1986	2007	20.65	15.0	1.5	10.9	50.37	1040.2	525.1	34525
9 Müritz	32 200	1990	2004	0.39	39.0	–	43.7	34.30	13.4	6.9	628
			2010	0.38	9.2	4.0	47.7	53.96	20.2	10.4	768
10 Saxon Switzerland	9 350	1990	2009	1.71	46.0	6.3	28.8	34.30	58.7	29.3	1878
11 Schleswig-Holstein Wadden Sea***	441 500	1985	2012/13	18.80	18.5	1.8	17.1	57.19	1065.6	572.1	30401

Name	Area [ha]	Designation Year	Survey Year	Visitor Days [Million]	Share of Day-trippers [%]	Share of Foreign Visitors [%]	Share of Visitors with High PA Affinity [%]	Average Spending per Person and Day [€]	Gross Turnover all visitors [Million €]	Income all visitors [Million €]	Income Equivalent all visitors [Person]
12 Black Forest	10 062	2014	2014/15	1.04	60.2	14.6	9.3	42.98	44.7	22.8	825
13 Jasmund	5 738	1990	2013/14	0.68	8.2	7.6	27.5	69.97	47.5	24.8	1583
14 Western Pomerania Lagoon Area	78 600	1990	2013/14	4.77	14.0	7.0	31.5	60.86	290.1	150.4	9582
Biosphere Reserves											
I Palatinate Forest	180 969	1992	2011/12	5.72	60.6	3.6	3.5	38.20	229.0	116.2	5271
II Rhön	243 323	1991	2010/11	6.37	68.1	1.0	13.7	45.57	185.6	94.6	4786
III Schaalsee	31 000	2000	2011/12	0.49	82.4	0.7	21.5	22.97	11.6	5.7	336
IV Southeast Rügen	22 800	1991	2011/12	5.29	6.7	2.8	4.9	71.43	379.3	203.9	14281
V Spree Forest	47 509	1991	2011/12	1.94	48.7	1.0	8.7	62.16	90.0	47.4	2971
VI Vessertal-Thuringian Forest	17 081	1979	2010/11	0.49	64.1	6.7	11.1	24.89	12.7	6.4	392
Nature Parks											
A Altmühltal	296 617	1969	2004	0.91	63.0	–	15.3	22.80	20.7	10.3	483
B Hoher Fläming	82 718	1997	2004	0.30	83.0	–	4.1	20.60	6.2	3.0	211

* Data available only for visitors with high national park affinity; only net turnover available; ** About 93.0% water surface; *** About 97.7% water surface; [a] without local visitors.

Source: adapted from Mayer & Woltering, 2017, pp. 140f. and Mayer & Stoll-Kleemann, 2020, pp. 489f., based on Job et al., 2003, 2005, 2009, 2013, 2016; Mayer & Job, 2014; Mayer & Woltering, 2018; Merlin, 2017; Nationalparkverwaltung Bayerischer Wald & Nationalparkverwaltung Šumava, 2020; Nationalpark-Verwaltung Hainich, 2019; Rein & Schneider, 2009; Rein & Baláš, 2015; Steingrube & Jeschke, 2011; Wölfle et al., 2016; Woltering, 2012.

of visitation to the German national parks – these benefits surpass the economic impact considerably, even using conservative assumptions. This indicates that the direct vicinity of national parks does not only bring economic profits from their visitation, but also the German society as a whole benefits from the recreational value of such sites.

5.3. Methods

5.3.1. Polish protected areas

The economic impact of tourism in protected areas (PAs) is analysed by considering the demand generated by visitors to such sites. This demand is satisfied by local companies. To meet the increased final demand (i.e. the demand that is not transferred between industries in the production process), companies need to increase production. As the output from each industry is sent to all other industries, there are multiplier effects in the economy, resulting in increased output in all industries (even if only some of them directly profit from visitor expenditures). We call the transfers of shares of production between industries inter-industry flows. Knowing the production volumes of each industry and their use for intermediate consumption in other industries, we create an input-output table, which is the basis of the input-output model.

Therefore, an assessment of the economic impact of tourism in PAs is conducted by means of the input-output (I/O) model. The basics of this method were proposed by François Quesnay (1759) in his *Tableau économique*, and by Léon Walras (1874). The matrix form of the input-output analysis was proposed by Wassily W. Leontief (1936).

The input-output model exists in two forms: natural and monetary. As production of different industries is measured in different units, the monetary form of the input-output analysis is much more widely used. The I/O table is presented in the monetary form in Table 5.2.

Table 5.2. The I/O table in the monetary form.

		Outputs				
		X_1	X_2	⋯	X_n	y_i
Inputs	X_1	X_{11}	X_{12}	⋯	X_{1n}	y_1
	X_2	X_{21}	X_{22}	⋯	X_{2n}	y_2
	⋮	⋮	⋮		⋮	⋮
	X_n	X_{n1}	X_{n2}	⋯	X_{nn}	y_n
	X_0	X_{01}	X_{02}	⋯	X_{0n}	y_0
	M	m_1	m_2	⋯	m_n	

where:
X_i – value of production (input) in *i*-th industry,
X_{ij} – value of production (input) in *i*-th industry and transferred to the *j*-th one,
X_0 – salaries in the industries,
y_i – final output (demand),
y_0 – salaries in the non-production sectors,
M – profits (value added) in the industries.

Output allocation equation:

$$X_i = \sum_{j=1}^{n} x_{ij} + y_i \quad i = 1,2, \ldots, n$$

Input allocation equation:

$$X_j = \sum_{i=1}^{n} x_{ij} + x_{0j} + m_j \quad j = 1,2, \ldots, n$$

Labour force equation:

$$X_0 = \sum_{j=1}^{n} x_{0j} + y_0$$

National income equation:

$$\sum_{i=1}^{n} y_i = \sum_{j=1}^{n} x_{0j} + \sum_{j=1}^{n} m_j$$

In real-life situations, it is much more convenient to analyse not the total value of production (input) in the *i*-th industry and transferred to the *j*-th one, but the cost coefficients (b_{ij}), denoting the input of resources from the *i*-th industry needed to produce a unit value of output in the *j*-th industry:

$$b_{ij} = \frac{x_{ij}}{X_j}$$

The output allocation equation with the use of cost coefficients is as follows:

$$X_i = \sum_{j=1}^{n} b_{ij} X_j + y_i \quad i = 1,2, \ldots, n$$

The input allocation equation with the use of cost coefficients is as follows:

$$X_j = \sum_{i=1}^{n} b_{ij} X_i + x_{0j} + m_j \quad j = 1,2, \ldots, n$$

We present the matrix of the cost coefficients (B), vectors of the value of global output (X) and final output (Y):

$$B = \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{bmatrix} \quad X = \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_n \end{bmatrix} \quad Y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix}$$

Because the values of vector Y are known and result from social demands, we must find the vector of global output needed to satisfy the final output. The output allocation equation in the matrix form is as follows:

$$X = BX + Y \tag{5.1}$$

Solving equation (5.1) with respect to X, we obtain:

$$X = (I - B)^{-1}Y \tag{5.2}$$

Where $(I - B)^{-1}$ is the matrix of additional input coefficients.

Since the input-output tables are available at the national level, we need to perform a regionalisation procedure in order to obtain the input-output table at the regional level. It is important to do this, because the economic impact of tourism is analysed here only for specific regions, and not for the whole country. Regionalisation is done by means of the *location quotients* (LQs). The simplest method of calculating the LQs is to use shares of regional output or employment in relation to the national share of output or employment in this industry – this way we arrive at the simple LQ (SLQ) (Arnegger, 2014):

$$ELQ_{ir} = \frac{\frac{O_{ir}}{O_r}}{\frac{O_{in}}{O_n}} \tag{5.3}$$

where:
O_{ir} – output (or employment) in the *i*-th industry in the analysed region,
O_r – total regional output (or employment),
O_{in} – national output (or employment) in the *i*-th industry,
O_{jr} – total national output (or employment).

However, formula (5.3) is suitable only for input-output within a given industry. In order to consider the transfers between various industries, we must introduce the *cross-industry location quotients* (CILQs) (Arnegger, 2014):

$$CILQ_{ij} = \frac{\frac{O_{ir}}{O_{in}}}{\frac{O_{jr}}{O_{jn}}} \tag{5.4}$$

where:
i – supplying (selling) industry,
j – purchasing industry,
O_{ir} – output (or employment) in the i-th industry in analysed region,
O_{in} – national output (or employment) in the i-th industry,
O_{jr} – output (or employment) in the j-th industry in analysed region,
O_{jn} – national output (or employment) in the j-th industry.
By means of the equations (5.2) and (5.3) we regionalise the cost coefficients matrix (B). Knowing the final demand in the analysed region, we can calculate the global output (production) for the analysed region needed to satisfy the final demand. When we divide the value of global production by the average wages in the area, we can calculate the equivalent of the additional employment needed to achieve the regional global output, thus, to satisfy the final demand. The global production and its equivalent in employment can be considered as the economic impact of tourism in PAs.

We conducted the analysis for Wolin National Park by using the input-output tables for Poland (OECD, 2022). The latest edition of these tables was available for the year 2015. By using the structure of employment for Poland and the region (Zachodniopomorskie Voivodship) in 2020 (Statistics Poland, 2022) we regionalised the input-output tables by using the formulas (5.2) – (5.4). In order to assess the equivalent of employment, we used the average wages in the industries in the region (Statistics Poland, 2022).

One very important step in the assessment of the economic impact of tourism in PAs is the calculation of visitor days and the assessment of the visitor expenditure in the sites. The visitor days were calculated on mixed bases of information. First, the data from 17 automatic counters (devices used for automatic counting of visitors that entered the park) were obtained. Next, the data was revised by the national park staff to account for dysfunctional devices and, additionally, an estimation was made of visitors entering the park on paths without automatic counters. There are two main entrances where people can enter the park area by different paths, but only one is checked by an automatic counter. These two locations were observed on eleven days by interviewers, who manually counted all the entering people, independent of the method they used for that purpose. This delivered a correction factor for the data from the automatic counting devices – the automatic counters recorded only about 80% of the true number of entrances.

We received the visitor expenditure values by means of 1440 face-to-face interviews at six entrances to the national park (for the questionnaire please see Appendix E, https://doi.org/10.12657/9788379864201-apps). We conducted the surveys on 17 days in the period from 25.01.2020 to 25.09.2021. This period was interrupted several times due to restrictions related to the COVID-19 pandemic, but all seasons were covered over two years. We divided the visitors into day-trippers (those who were in the area for only one day) and overnight visitors (those who stayed in the area for at least one night).

5.3.2. German protected areas

The research in Germany focused on the socio-economic monitoring in the UNESCO Biosphere Reserve Schorfheide-Chorin in the German Federal State of Brandenburg. The aim was to apply the method introduced for biosphere reserves by Job et al. (2013) in order to gain a profound understanding of this method and to identify potential adaptations for an optimised methodological approach applicable to the Pomerania region.

Especially visitor numbers and the specific structure of visitor expenditure were necessary to carry out the economic impact analysis of PA tourism. In order to determine these data, visitor counts as well as interviews were systematically conducted in the Biosphere Reserve at ten predefined locations over a period of 12 months in the years 2020/2021 (for the questionnaire please see Appendix F, https://doi.org/10.12657/9788379864201-apps). The surveys were carried out in the summer season between 10 am and 6 pm and in the low season between 10 am and 4 pm due to the shorter daytime and the reduced leisure behaviour of guests. All the surveys were carried out electronically via mobile phones with the app *mQuest traffic* that allowed for the surveys to be conducted offline.

Due to the COVID-19 pandemic, several methodological adaptations had to be made and will be explained within the following sections.

5.3.2.1. Visitor numbers

As there are no "entrances" to the Biosphere Reserve, there is no reliable information on the visitor numbers in the region. In order to determine the total number of visitors, visitor counts combined with short interviews were carried out throughout the Biosphere Reserve. The locations were identified with the support of the PA's administration and aimed to cover all the main visitor hotspots and other potential points of interests for different visitor types. A similar study with the same methodological approach had already been carried out in 2017/18 by the Institute of Geography and Geology at the University of Würzburg (see Job et al., 2023). The results are expected to be published in 2023, but preliminary results are already available, so that comparisons between our study and the analysis from 2017/18 can be drawn. In accordance with the previous study from 2017/18, five locations were not used during the low season and two other locations were staffed with two interviewers each because of high visitor frequencies. The approach was an attempt to replicate the previous study and aimed to represent the conditions on site in the best possible way.

The short interviews were conducted at a flexible frequency during the counts and provided information about overall visitor characteristics, such as whether they were residents, day-trippers or overnight visitors, as well as further information about overnight visitors. By adhering to a clear frequency, a true random sample was obtained and the representative structure of visitors could be determined.

Residents were identified by local zip-codes within the Biosphere Reserve and additionally by asking the purpose of the visit (leisure or transit/other daily

purposes) in the long interviews. Residents with leisure purposes were classified as day-trippers and included in the economic analyses, but residents that were in the area because of their daily-life routines were excluded (according to the definition of tourism visitors in UNSD, 2010, p. 12). For overnight visitors, the category of accommodation (hotel, camping, etc.) was determined and the range of money spent (e.g. up to EUR 30) was asked in order to be able to weight upcoming extrapolations. The short interviews, which were conducted in combination with the visitor counts, alternated with long interviews every half hour.

As visitor numbers tend to vary both temporally and spatially, and over the week and the single day, the survey days were divided according to specific seasonal periods, as suggested in Job et al. (2013) (Table 5.3):

Table 5.3. Survey days per season

Season	Amount of survey days
Summer season I (18/07/2020–14/09/2020)	6 survey days // 4 weekends, 2 week-days
Low season I (15/09/2020–14/11/2020)	3 survey days (COVID-19 lockdown from 01 November) // 1 weekend, 2 week-days
Winter season (15/11/2020–14/03/2021)	0 survey days (COVID-19 lockdown)
Low season II (01/04/2021–30/04/2021)	1 survey day // 1 weekend (during lockdown)
Low season III (01/05/2021–14/06/2021)	4 survey days (COVID-19 lockdown until 06 May 2021) // 1 weekend, 3 week-days
Summer season II (15/06/2021–17/07/2021)	2 survey days // 1 weekend, 1 week-day

Source: own elaboration.

Due to the COVID-19 pandemic, parts of the low season I (November 2020), the complete winter season, and parts of the low season II (until May 2021), were in lockdown with a total tourism-closure of 197 days, so that no survey days were undertaken during that time. An exception was Easter 2021, with a survey day carried out during the weekend in four main locations of the region which focused on visitor counts and short interviews. Hence, the weekends of April 2021 could be included in the visitor estimations. In total, 16 survey days with an even split between weekends and weekdays could be implemented, covering a period of 187 total days from 18 July 2020 until 17 July 2021.

The counts and short interviews of a survey day normally covered eight half-hour intervals between 10 am and 6 pm in a single day (or six half-hours from 10 am to 4 pm during the low season, respectively). The counted visitors were extrapolated site-specifically by calculating the average value to the minute and then extrapolating it to a full hour. The sum of the hourly values give the number of visitors during the survey period. However, this only covered part of the day, so that the result were extrapolated to an entire day, as per Job et al. (2006, p. 8). By adding up the daily visitor numbers for the individual sites, the total number of visitors in a survey area on a survey day was finally determined. The daily values served as the basis for calculating the annual number of visitors. For this purpose, nine different day types were defined, which considered the season, the day

of the week, and the weather (see Figure 5.1). Average values for the respective day types were then calculated from the daily values. To take the weather into account, weather data from the German Weather Service for the weather station Angermünde was integrated into the calculation on a daily basis. For the calculation of the variables of "good" and "bad" weather, the three parameters of temperature, sunshine duration, and precipitation, were included. These values were transformed and indexed using the moving average of each season. The weather index thus categorised each survey day according to the categories of "good" weather and "bad" weather during a specific season. The three characteristics of "season", "day of the week" and "weather" allowed for assigning each survey day to one of the nine typical day types, which served as the basis for extrapolating the total visitor numbers. The average values for each of these day types were then extrapolated according to the overall number of each day type (see also Staab et al., 2021). For the survey day during Easter 2021, weather categorisation was excluded, as there was no further survey day and because of the uncertain visitor behaviour during the time of a COVID-19 lockdown.

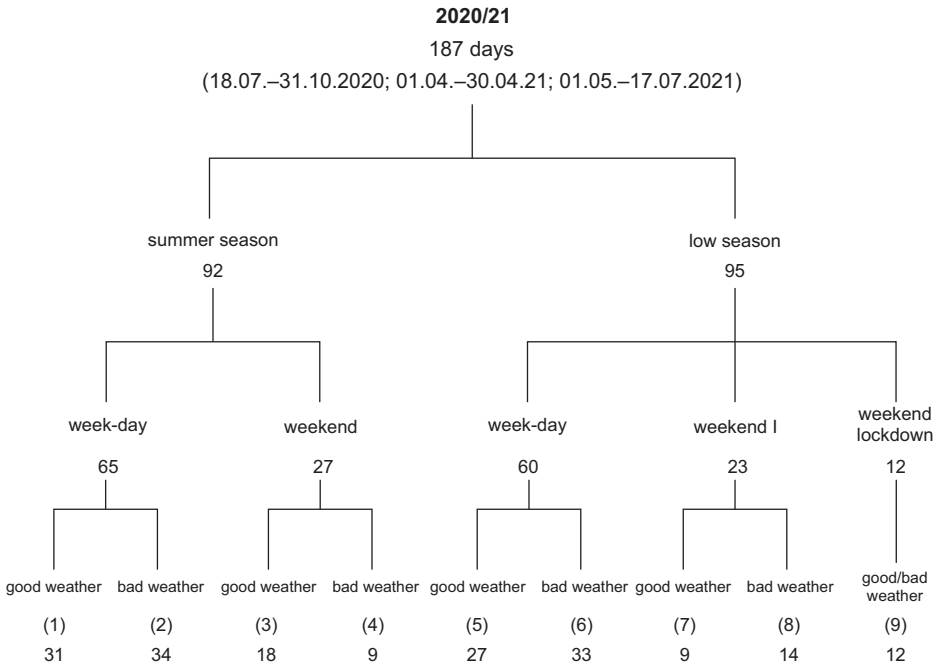

Figure 5.1. Categorisation of day-types (in brackets) and number of days for each category
Source: own elaboration.

The calculated visitor number only corresponds to the representation of visitors at the specific ten sites and during the analysed period. Due to the size, different settlement areas and traffic routes in the biosphere reserve, and the uncertainties around visitor behaviour during the COVID-19 pandemic, these estimations could hardly be a basis for robust conclusions about the total number

of visitor days in the area during one year. Hence, we extrapolated the data with the help of official tourism statistics, as recommended in Job et al. (2013, 2021).

Up to this point, the visitor numbers corresponded to the "extrapolation of the counting" stage and reflected representative ratios of different visitor groups.

To complement the figures, official municipal statistics of the survey-time were used. As the area of the Biosphere Reserve is not entirely coherent with the municipal borders, tourism figures were only calculated proportionally according to the actual area shares of the Biosphere Reserve. This approach prevented an overestimation of values, e.g. the number of overnight stays in tourist centres outside a biosphere reserve is not included in the analysis. We applied the same delineation of the area as in the previous study from 2017/18.

To complement the generated data, ratios of the shares between day-trippers and overnight visitors, as well as the accommodation categories, were used. For this purpose, we used the (extrapolated) shares of visitors staying in accommodation types that are not included in official statistics, such as apartments, visits at friends' and relatives'. This step was an attempt to minimise the inaccuracy of the official tourism statistics with regard to non-commercial overnight stays. Subsequently, the share of day-trippers and residents was added to the number of overnight visitors according to the empirically collected ratios. In total, the number of visitors corresponded to the overnight stays recorded in official statistics, the non-commercial overnight stays, and day-trippers and residents, whereby the proportions were derived from the empirical surveys in the study areas. This methodological procedure aimed to determine a representative, valid and reproducible number of visitors in the biosphere reserve.

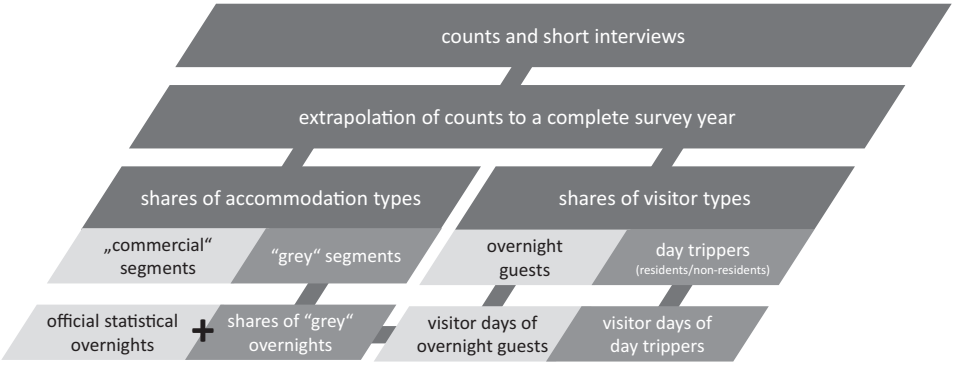

Figure 5.2. Approach of estimating final visitor numbers.
Source: own elaboration, based on Job et al. (2013, p. 52).

5.3.2.2. Economic impact estimation of PA visitation

As discussed previously, the visitors' motivation needs to be known to be able to attribute the adequate share of regional income to tourism because of the existence of the PA. Visitors that make a trip or a day excursion solely because of the biosphere reserve add value that would not exist without the protected area.

This classification is of particular importance. Biosphere reserves pursue the goal of a harmonious combination of nature conservation and economic development (Kraus, 2015; Merlin, 2017). Specific biosphere reserve visitors know the status of the PA and visit it because of its protection status. Accordingly, these visitors have a specific demand behaviour that has to be addressed differently than that of the group referred to as "other biosphere reserve tourists".

For the classification into these groups, a stepwise sequence of three partly redundant questions was run through on the survey instrument, analogous to Job et al. (2003, p. 127 and 2005, p. 61). Only if these three questions were answered positively, were the respondents classified as specific biosphere reserve tourists and included as such in the further economic impact analysis.

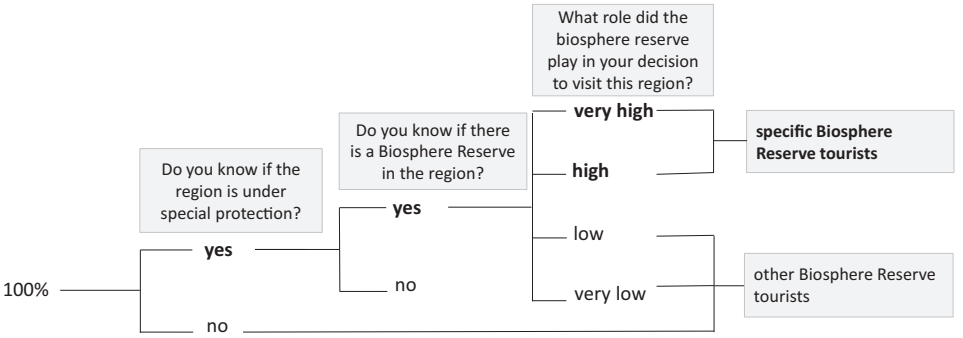

Figure 5.3. Approach of determining visitors with high biosphere reserve affinity.
Source: own elaboration, based on Job et al. (2003, p. 127) and Job et al. (2005, p. 61).

In order to calculate the regional economic impact, the expenditure structure of all relevant visitor groups had to be determined. The expenditure was differentiated according to day-trippers, residents and overnight visitors, and was also segmented into "specific biosphere reserve tourists" and "other biosphere reserve tourists". Expenditures of overnight guests were combined with the results of the short interviews that provided extensive information on different expenditure groups for all accommodation types (e.g. less than EUR 30 per night in a hotel, EUR 30–EUR 60 in a hotel etc.). The long interviews provided information on the average daily expenditures of respondents belonging to these accommodation types. This data was weighted with the average shares of each expenditure group provided in the short interviews. As proposed in Job et al. (2005, p.65), this was done to get as accurate information as possible for the average expenditures of different accommodation types.

Beyond these visitor groups, expenditures were distributed among different sectors. The types of expenditure were asked for in detail in the long interviews, to enable an in-depth breakdown of the data for all further calculations. In total, ten expenditure types were asked for that could be divided into three main expenditure groups:

- Hospitality, which includes expenditures on restaurants and accommodation (weighted results)

- Retail trade, with expenditures on food and other goods
- Services, which include expenditure on transport, sports, leisure and admissions, as well as the visitor's tax and conference fees and others.

The in-depth differentiation of expenditures was maintained throughout the overall calculations of VAT deductions and the calculation of economic impact. For the first multiplier round, all income effects resulting from the direct expenditure of tourists were recorded. The value-added quotas vary considerably from sector to sector. For this study, as in the previous study, average tourism-specific value-added quotas were used, based on national data and according to the type of service (based on data by Harrer & Scherr, 2002; Maschke, 2005). The calculation was done separately for each expenditure category. Therefore, the overall income structure represents the specific spending behaviour of visitors in the Biosphere Reserve. Exact value-added quotas of the companies benefiting from the second multiplier round could not be used in this study. For this reason, the widely used average of 30% was applied as a value-added quota for the indirect income effect. To determine income equivalents, the average primary income of the region was determined (official statistics) and divided by the tourism income contribution. The calculation procedure was based on the method by Job et al. (2003 and 2005) and Mayer et al. (2010), and is summarised by Figure 5.4:

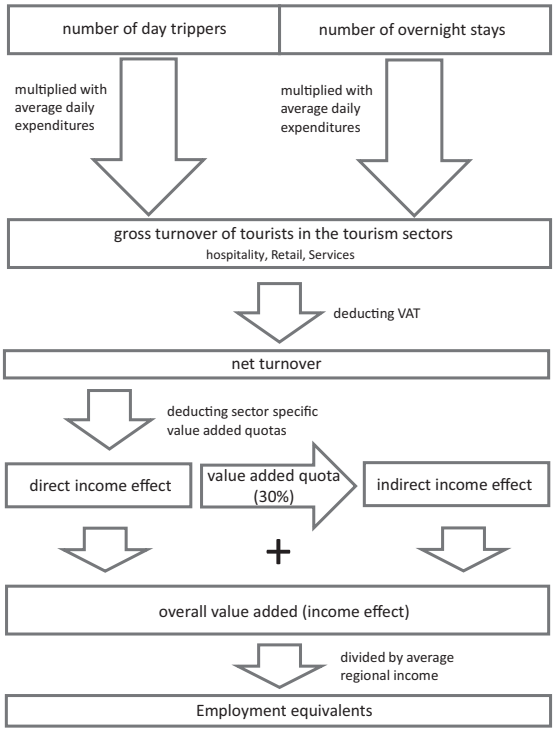

Figure 5.4. Approach of estimating regional economic impacts of PA tourism.
Source: own elaboration, based on Job et al. (2003, p. 127) and Job et al. (2005, p. 61).

Some alterations to the calculations had to be made due to methodological challenges with the mobile questionnaire application. A technical bug excluded the expenditure questions for day-trippers in the summer season I. In order to prevent data skewing, the daily expenditures of day-trippers for the summer season were imputed with the total daily expenditures of the survey days in the summer season II. The calculations showed only slight deviations of the expenditures, which were adjusted in the overall expenditures.

Additionally, VAT rates were reduced from July-December 2020 as measures for supporting the German economy during COVID-19. These reductions were taken into account within the calculations.

5.4. Economic impact of tourism in protected areas in the Pomerania region

5.4.1. Economic impact of tourism in Polish protected areas – the example of Wolin National Park

We present the number of visitor days and the visitors' yearly spendings in Table 5.4.

Table 5.4. The annual number of visitor days and the visitors' total net expenditure.

Groups of visitors	Fraction [%]	Net expenditure per person [PLN]	Annual number of visitor days	Annual total expenditure [PLN]
Day-trippers	8.6	110	59,490	6,543,900
Overnight visitors	91.4	277	632,251	175,133,527
Total	100.0		691,741	181,677,427

Source: own elaboration.

Over 91% of visitor days were generated by overnight visitors. They also contributed the largest part of the total expenditure (over 96%). All the expenditure was net of tax, because the VAT is a tax that flows to the central government and therefore does not contribute to the local economic effects.

The visitor expenditure could be differentiated into four groups of expenses, supplying four industries (Table 5.5).

Table 5.5. Visitor expenditure structure.

Groups of expenses	Day-trippers	Overnight visitors
Accommodation and food services	33.0%	56.5%
Retail trade	55.5%	39.5%
Arts, entertainment, recreation and other service activities	6.5%	2.3%
Transportation and storage	5.0%	1.7%

Source: own elaboration.

The largest share of day-trippers' expenses were the expenses on retail trade, while for overnight visitors the expenses on accommodation and food services were the most important.

We merged the I/O table to obtain the following sections:

- Section A: Agriculture, forestry and fishing,
- Section B+C+D+E: Mining and extraction of energy producing products, electricity, gas, water supply, sewerage, waste and remediation services,
- Section F: Construction,
- Section H: Transportation and storage,
- Section G: Wholesale and retail trade; repair of motor vehicles,
- Section I: Accommodation and food services,
- Section J: Telecommunications, IT and other information services,
- Section K: Financial and insurance activities,
- Section L: Real estate activities,
- Section M+N: Professional, scientific and technical activities; administrative and support service activities,
- Section O: Public administration and defence; compulsory social security,
- Section P: Education,
- Section Q: Human health and social work,
- Section P+R: Arts, entertainment, recreation and other service activities.

The estimated visitors' expenses (final demand) and the global regional production (economic impact) in 2020 are presented in Table 5.6.

Table 5.6. Estimated economic impacts of tourism in Wolin National Park in 2020 (in PLN thousand).

Sections	Day-trippers		Overnight visitors		Total
	Expenses	Production	Expenses	Production	Production
A	0.0	504.7	0.0	15,923.8	16,428.5
B+C+D+E	0.0	3,106.1	0.0	90,486.3	93,592.4
F	0.0	265.2	0.0	6,474.0	6,739.2
G	3,631.9	4,521.3	69,177.7	93,722.7	98,244.0
H	327.2	849.2	2,977.3	14,543.6	15,392.9
I	2,159.5	2,226.4	98,950.4	100,674.6	102,901.0
J	0.0	122.9	0.0	2,880.8	3,003.7
K	0.0	100.1	0.0	2,401.9	2,502.0
L	0.0	188.6	0.0	4,694.1	4,882.7
M+N	0.0	379.8	0.0	9,200.7	9,580.5
O	0.0	7.8	0.0	183.3	191.1
P	0.0	11.2	0.0	267.2	278.4
Q	0.0	166.5	0.0	3852.3	4018.8
R+S	425.4	523.5	4028.1	6369.5	6893.0
Total	6,543.9	12,973.3	175,133.5	351,674.9	364,648.3

Source: own elaboration.

As every sector influences all other sectors in the I/O model, the four groups of expenses caused production in all the other sectors. The visitors' final demand caused the highest increase in production in sectors B+C+D+E (mining and extraction of energy producing products, electricity, gas, water supply, sewerage, waste and remediation services), G (wholesale and retail trade; repair of motor vehicles) and I (accommodation and food services). The estimated number of day-trippers and their expenses brought nearly PLN 13 million (2.78 million Euro) of total value of production in the region. The effect of the overnight visitors' expenses was much higher – over PLN 351 million (over 75 million Euro), which brought the total economic impact to the level of PLN 364.65 million (almost 78 million Euro).

The equivalent number of jobs in Wolin National Park in 2020 is presented in Table 5.7.

Table 5.7. Estimated equivalent number of jobs in Wolin National Park in 2020.

Sections	Mean wages [PLN]		Jobs		
	Monthly	Yearly	Day-trippers	Overnight visitors	Total
A	5,398.38	64,780.56	8	246	254
B+C+D+E	4,877.44	58,529.28	53	1,546	1,599
F	3,729.41	44,752.92	6	145	151
G	3,954.14	47,449.68	95	1,975	2,070
H	4,269.26	51,231.12	17	284	301
I	3,243.33	38,919.96	57	2,587	2,644
J	7,605.96	91,271.52	1	32	33
K	6,090.66	73,087.92	1	33	34
L	5,111.57	61,338.84	3	77	80
M+N	4,606.94	55,283.28	7	166	173
O	6,337.05	76,044.60	0	2	2
P	5,267.10	63,205.20	0	4	4
Q	4,845.95	58,151.40	3	66	69
R+S	4,323.29	51,879.48	10	123	133
Total			261	7,286	7,547

Source: own elaboration.

The equivalent of total production in the number of jobs can be obtained by dividing the estimated total production in every sector by average yearly wages in this sector. We estimated the number income equivalents generated by the expenditures of day-trippers at 261 and for the overnight visitors at 7,286. The total equivalent of production in the region of Wolin National Park in the number of jobs was 7,547. In some sectors (O and P – public administration and defence; compulsory social security and education, respectively), the increase in the number of jobs was hardly visible (these sectors depended on tourism to a very small degree). The highest increase in the number of jobs was visible in the case of the same sectors, as presented in the previous table – B+C+D+E (mining and

extraction of energy producing products, electricity, gas, water supply, sewerage, waste and remediation services), G (wholesale and retail trade; repair of motor vehicles) and I (accommodation and food services).

5.4.2. Economic impact of tourism in Schorfheide-Chorin Biosphere Reserve, Germany

In total, 28,593 persons could be reached by the counts (21,493) and short surveys (7,100) during the 16 survey days in Biosphere Reserve Schorfheide-Chorin. In addition, 1,171 long interviews were conducted, reaching a total sample of 29,764 visitors to the Biosphere Reserve during the survey time.

5.4.2.1. Visitor structure

The empirical results together with the data from official tourism statistics resulted in a total number of 2,540,000 visitor days within the boundaries of Schorfheide-Chorin Biosphere Reserve from July 2020 to June 2021. This marked a decline of 21% in comparison to 2017/18, with overnight visitors reaching 840,000 (–12%), and 1,650,000 day trips (–26%) and 51,000 residents[22].

This decline is explained by the COVID-19 lockdown of almost seven months during the surveyed period of 2020–2021 (197 lockdown days). An estimation of the average number of visitor days per day during the surveyed seasons (187 days) shows that visitor frequentation during that time was higher with 13,600 visitors per day than in the previous survey time of 2017/18 with an average of 8,800 visitors per day. Therefore, the decline in the total visitor number was not necessarily an indicator of a reduced visitor demand in the region; it must be assumed that it resulted in an even higher tourist pressure during times of the officially open days.

Visitor days of people staying overnight accounted for a share of 33%. The Biosphere Reserve received a larger influx of day-trippers, who accounted for a share of 67%. This structure is similar to most other examined biosphere reserves in Germany (Merlin, 2017) and it can be assumed that this biosphere reserve is particularly suitable for local, short-distance recreation.

Not all visitors came to the region because of the Biosphere Reserve. To find out the importance of the Biosphere Reserve for the motivation to visit the region, the affinity of the visitors and the awareness of the protection status were examined. Furthermore, other characteristics and preferences were determined.

For the region, a share of 20.4% of visitors with a high biosphere reserve affinity could be revealed, which was a decrease of 1.1%, compared to the previous study from 2017/18. Still, this percentage was significantly higher than the average of 10.5% of the six biosphere reserves studied in Germany in 2013 (Job et al., 2013, p. 76). A protected area status such as that of a national park can create a significant incentive to visit, especially in new destinations or those

[22] Residents that were in the region because of leisure purposes, were counted as day-trippers, whereas all other residents (just crossing the counting locations) were excluded in further calculations.

that are not very developed in terms of tourism. This is particularly interesting against the background of the COVID-19 pandemic, which was accompanied by a change in the tourism demand structure in many rural tourism regions in Germany (see details in Chapter 6 of this publication).

For Schorfheide-Chorin Biosphere Reserve, the visitor structure in the survey period 2020/21 was as follows: of the approximately 2,540,000 visitor days, approx. 519,100 were due to specific Biosphere Reserve visitors. Of these, approx. 294,600 were day-trippers and approx. 224,500 were visitor days of people staying overnight. The distribution of visitor types was almost identical with the structure in 2017/18, with a slight shift towards overnight visitors for both PA affinity types.

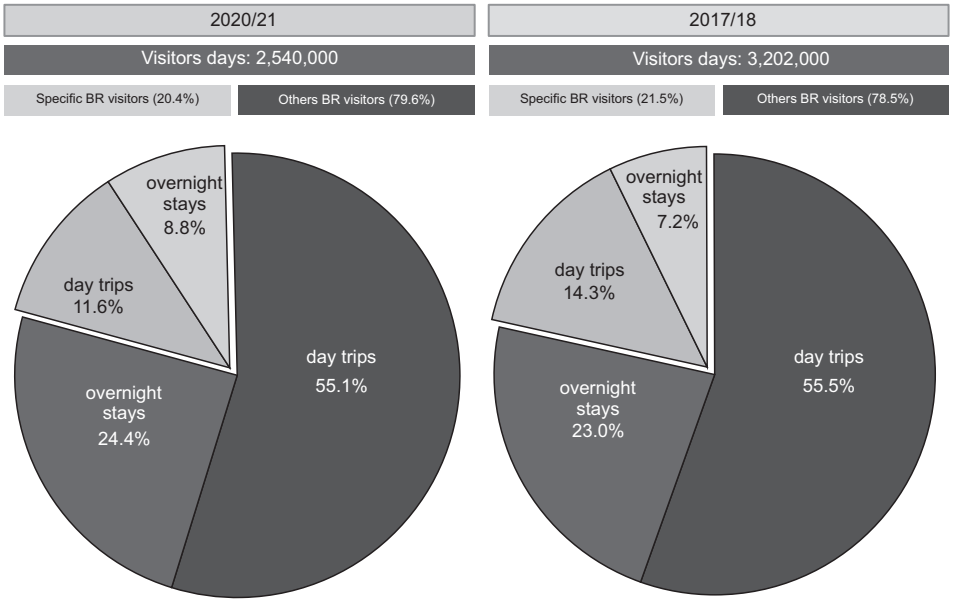

Figure 5.5. Visitor structure in Schorfheide-Chorin Biosphere Reserve 2020/21 in comparison with the previous study from 2017/18.
Source: own elaboration based on Job et al., 2023 (right part of the figure).

Overnight visits were clearly dominated by stays in holiday apartments (38%) followed by camping (19%) and hotel (14%). Compared to 2017/18, there was a shift from hotel stays to holiday apartments, whereas all other shares of accommodation categories were very similar. Only about one fifth of the overnight guests (19%) opted for catering services, especially breakfast – mainly in hotels. Only 3% of the guests who did not stay in hotels took advantage of catering services provided by the accommodation. 35% of overnight guests spent up to EUR 30 per person per night. Approx. another third of overnight guests (31%) spent up to EUR 50 per person for an overnight stay and another quarter (23%) spent between EUR 51 and EUR 75 per overnight stay. These values also reflected an increase in the total daily visitor expenditures compared to 2017/18.

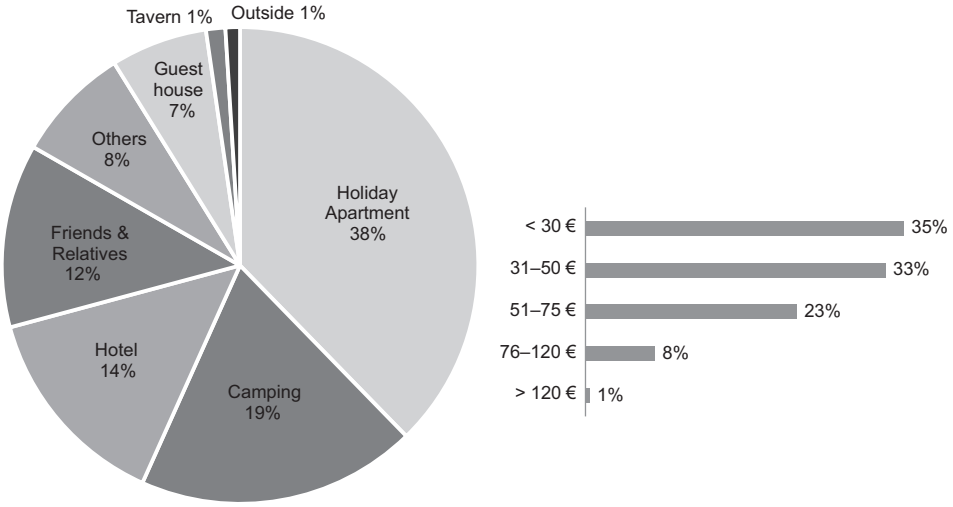

Figure 5.6. Choice of accommodation types and average spending per night in the Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

The majority of guests (90%) came to the region for holidays and leisure. The main reasons for visiting were hiking (47%), cycling (29%), and visiting cultural sites (29%), as well as farm shops (24%). For as many as 27% of the visitors, activities such as sunbathing or water sports were decisive for their visit. Overall, the activities were quite balanced in popularity, which indicates a diverse tourism portfolio; hence, the region is attractive for pursuing various activities.

The majority of tourists arrived by their own or rented car (67.2%) or motorbike (12.2%). The region is especially well known for motorbike trips by Berliners. However, public transport also had quite a relevant significance as a mode of transport to the region, with a share of 12.9%. This is reasonable, as many starting points for hiking and cycling in the Biosphere Reserve are connected to the public transport network – especially for visitors from Berlin. Interestingly, the share of arrivals by train doubled over the last three years (2017/18: 5.7%). Another considerable proportion of visitors arrived on foot as hikers (5.5%). Arrival by bicycle, on the other hand, was extremely low at only 0.4%, although the Biosphere Reserve is crossed by some significant cycle routes. However, visitors also often took their bicycles on the train or car for cycling within the area. The importance of buses can be estimated somewhat higher than reported, especially at the site of the Niederfinow, as participants of group tours were underrepresented in the long interviews.

By asking for the zip-code during the short interviews, the origins of the visitors to the Biosphere Reserve could be mapped very precisely, as presented in Figure 5.8. Overall, visitors from Germany predominated (98%), with a very small proportion of visitors from abroad and no dominant foreign source markets. About two thirds of the visitors came from the Berlin-Brandenburg region (65.4%). Of course, this included a large proportion of day-trippers who came

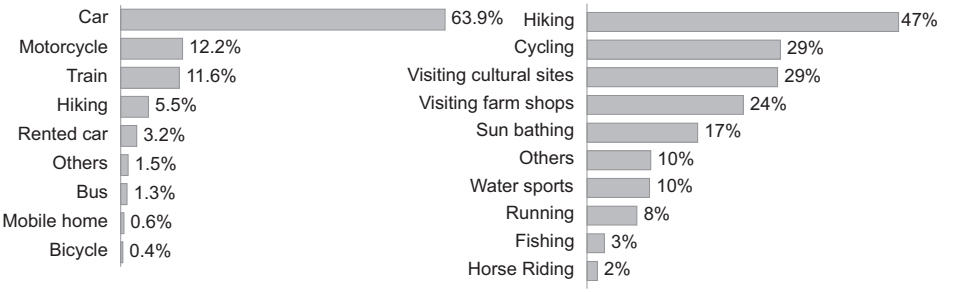

Figure 5.7. Activities (right) and mode of transport (left) for arrivals at Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

mainly from Berlin and the immediate surrounding of the Biosphere Reserve (Barnim county). Besides the surrounding federal states, all other source markets were more regularly distributed among the other federal states, with a surprisingly low proportion of visitors from Mecklenburg-Vorpommern (2.3%).

Visitors between the ages of 31 and 45 were the biggest group with 30%. The 46–65 year old were the second largest age group with 29%. More than half of the visitors were below the age of 50 (56%). About a quarter of visitors (26%) were under 30 years of age, of which 17% were children and young people under 18 years of age. The age category of older adults over 65 years was represented by 15% of the visitors. Compared to the age group structure in Germany, the

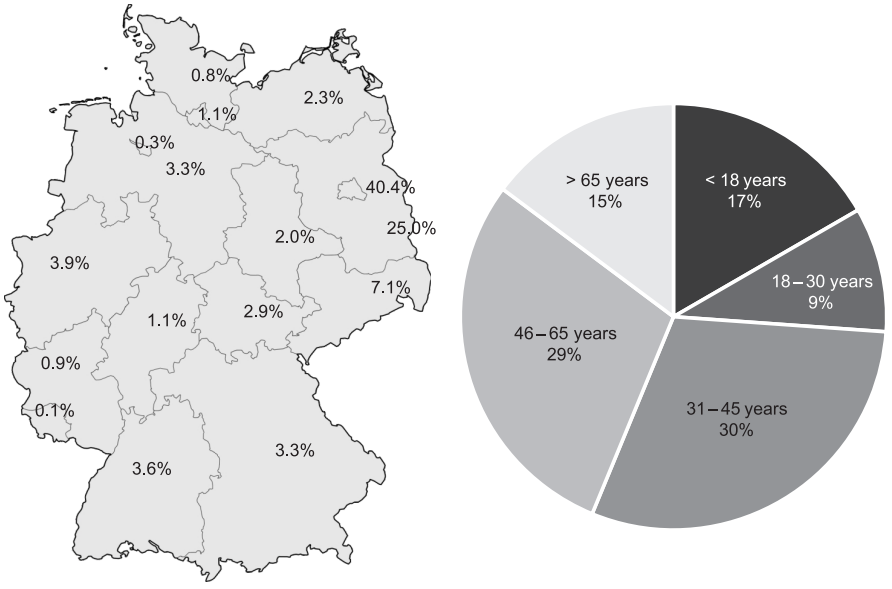

Figure 5.8. Source markets and age-groups of visitors in Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

disproportionate share of visitors aged 31 to 45 was noticeable. The proportion of children and adolescents was also slightly higher than the proportion of this age group at the national level.

Regarding their educational status, the visitors to the Biosphere Reserve had a disproportionately higher educational background than the German average population, with 48% having a University degree and another 20% with A-levels / High-School diploma.

5.4.3.2. Economic impacts

According to a national study (BMWi, 2013), a day-tripper in Germany spends an average of EUR 28.30 per day, whereas the expenditure for day trips in urban areas is considerably higher at up to EUR 34.70 than in rural areas, with day-tripper spendings at an average of EUR 19.0.

The expenditure of day-trippers in Schorfheide-Chorin Biosphere Reserve was significantly above that average with EUR 27.80. This also marks a remarkable increase compared to 2017/18, where day-visitor expenditures were about EUR 18.0. Reasons for this increase might partly be connected to increased prices of the tourism offer and inflation, and a change of the target groups due to COVID-19 (see Chapter 6). When grouping the expenses into the three expenditure types of hospitality, retail and services, it becomes obvious that about one third of the daily expenses were earmarked for the service sector with transport in the region being the highest cost type. About half of the expenses were used for hospitality, in the case of day trips this means gastronomy services. The results also show that visitors with a high biosphere reserve affinity spent less money overall during a day trip. A national study of expenditure structures in German biosphere reserves (Job et al. 2013, p. 77) concluded that biosphere reserve affinity does not influence the level of expenditure. Instead, it states that the average expenditure values in biosphere reserves have a wide range between EUR 23.00 and EUR 71.40 and are very strongly influenced by regional conditions and tourism structures.

On a national average, overnight guests in Germany spend an average of EUR 131.60 per person and day in commercial accommodation establishments (Harrer & Scherr, 2010), with a very wide range of expenditure depending on the type of accommodation (youth hostel, inns, guesthouses, hotels, spas etc.).

The average expenditure of overnight guests visiting Schorfheide-Chorin Biosphere Reserve was EUR 65.50 per day, hence, it was considerably lower than the national average. This essentially depended on the choice of the respective types of accommodation by the visitors and thus also on the accommodation structure in the region. The Biosphere Reserve is located in a rural region, where – compared to cities – rather low-price forms of accommodation prevail, with only a few high-priced hotels. Moreover, the visitors did not only stay in commercial accommodation establishments. Approx. 38% of all guests chose a holiday apartment as the type of accommodation for their visit. In this mostly non-commercial type of establishment, the daily expenditure was also significantly lower than in commercial accommodation establishments nationwide (Harrer & Scherr, 2010,

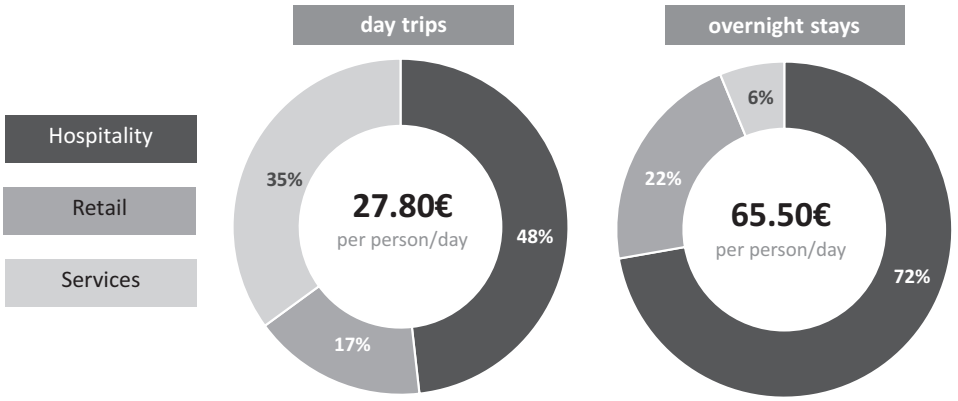

Figure 5.9. Daily expenditures of visitors in the Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

p. 77). In addition, approx. 12% of the guests also visited friends and relatives and thus principally did not have any accommodation costs.

A differentiation of the overnight guests among the Biosphere Reserve visitors showed that visitors with a high biosphere reserve affinity spent less (EUR 53.00 per person and day) than other Biosphere Reserve visitors (EUR 70.00); with almost identical shares amongst the profiting economic sectors (71–72% hospitality, 21–22% retail, 6–7% services).

The gross tourism turnover can be calculated by multiplying the average expenditure per day by the length of stay of the day-trippers and overnight visitors. In 2020/21, a total gross turnover of EUR 101,146,900 was generated by visitors to the Biosphere Reserve. Of this, EUR 19,084,800, or approx. 19%, was generated by visitors with a high biosphere reserve affinity, and EUR 82,062,100, or about 81%, was generated by other biosphere reserve visitors.

As visitors of all types spent significantly more during their visit, the gross turnover compared to 2017/18 increased by 12%. Hence, fortunately the decrease of visitors since 2017/18 (–21%) did not have an impact on the overall gross turnover of tourism in the biosphere region.

The net turnover was calculated by deducting VAT from the gross turnover. The calculations were carried out separately for all relevant target groups (day trips, overnight stays, as well as visitors with a high biosphere reserve affinity and other biosphere reserve visitors). All types of expenditures were considered individually to estimate the VAT rate as precisely as possible. Based on the expenditure structure of the guests, the total average VAT rate was 14.2% with a day-tripper rate of 17.1% and an overnight visitor rate of 11.7%. In total, a tourism-related VAT amount of EUR 14,316,000 was incurred in the Biosphere Reserve. A subtraction of this amount from the gross turnover resulted in a net turnover of EUR 86,822,000.

	Segment	Visitor days		Daily expenses		Turnover (rounded)
Specific Biosphere Reserve visitors	Overnight stays	224,554	x	52.98 €	=	11,896,900€
	Day trips	294,587	x	24.40 €	=	7,187,900 €
		=				=
	TOTAL	519,141				**19,084,800 €**
Other Biosphere Reserve visitors	Overnight stays	621,661	x	70.03 €	=	43,534,900 €
	Day trippers	1,351,359	x	28.51 €	=	38,527,200 €
		=				=
	TOTAL	1,973,020				**82,062,100 €**

Total **101,146,900 €** in 2020/21

Figure 5.10. Tourism turnover in the Schorfheide-Chorin Biosphere Reserve[23].
Source: own elaboration.

In terms of the value added, all income effects resulting from the direct expenditure of tourists were recorded (see section 5.3.2). In this context, income or value added refers to salaries and profits. The value-added ratio in the Biosphere Reserve for day trips was approx. 38.9% and overnight visits approx. 39.6%. These average values were based on the expenditure structures of the visitors and thus corresponded to the individual economic conditions in the Biosphere Reserve.

Linking the value-added ratio with net turnover resulted in a direct income of EUR 34,207,000.

After deducting the direct income effects from the net turnover, an amount of EUR 52,615,000 remained. This sum was spent by the direct suppliers of the tourism services for the purchase of inputs or for the use of these services. Exact value-added ratios of companies profiting from indirect impacts could only be estimated on a regional-specific basis with the help of detailed analyses, which were not yet available at the time of this study. However, such a business study has been undertaken and the results are expected in mid-2022. For this study, an average value of 30% was used. As explained in section 5.3.2, this resulted in an income of EUR 15,784,000 in indirect impacts. This means that input suppliers generated indirect effects of around 15.8 million euros in wages, salaries and profits.

To sum it up, the gross turnover from all visitors (EUR 101,146,900) generated an income of EUR 49,992,000 (first and second levels of turnover). Around

[23] Local inhabitants of the Biosphere Reserve were not included in the economic impact estimations. Therefore, the sum of visitor days varies between Fig. 5.5 and Fig. 5.10.

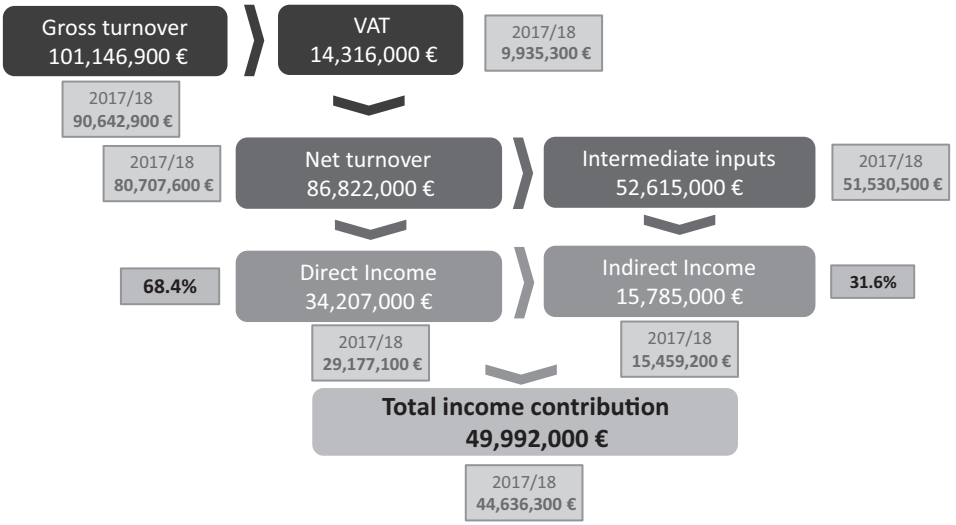

Figure 5.11. Value added of tourism activities in the Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

68% of this was accounted for by the direct income and 32% by the indirect income.

In comparison to 2017/18, the overall income contribution increased by 12%, which was an impressive result, as there was a deep drop in the overall visitor numbers of 21% because of the COVID-19 pandemic. This positive result was derived from the overall higher visitor expenses and a higher value-added quota (39% compared to 36% in 2017/18). In total, the tourism income also increased by 12 per cent, reaching almost 50 million Euros. However, the spending categories were different to the previous study, with higher expenditures for services during the period 2020/21, which resulted in higher VAT rates (14% in comparison to 11% in 2017/18) and therefore a lower increase in the net turnover rate compared to 2017/18 (+8%), despite the VAT cut in mid-2020.

In order to determine income equivalents, the tourism income contribution (EUR 49,992,000) was divided by the average primary income per capita in the Biosphere Reserve (EUR 21,633). Accordingly, this resulted in an income equivalent of 2,311 persons whose income could be financed by tourism and day trips in the Biosphere Reserve. This meant a slight decrease of 0.2% that was due to the increase of the average primary income per capita (from EUR 19,276 in 2016 to EUR 21,633 in 2019). Differentiated according to the visitor types, 432 income equivalents were generated due to visitors with a high biosphere reserve affinity and 1,879 income equivalents due to other biosphere reserve visitors.

The recent economic impact assessment of visitors to Schorfheide-Chorin Biosphere Reserve showed a development clearly characterised by the COVID-19 pandemic with surprising results, compared to the previous study of three years ago:

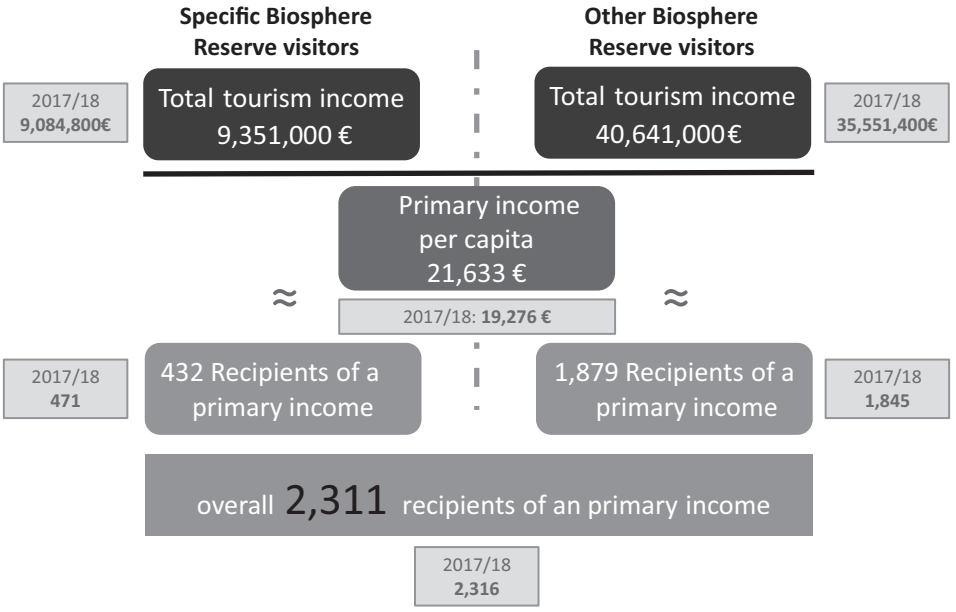

Figure 5.12. Income equivalents by tourism activities in the Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

- The total number of visitors decreased tremendously by 21% since the last survey from 2017/18. This was mainly due to the COVID-19 lockdowns, where no tourism activities were officially allowed. However, the visits per day outside the lockdown increased significantly in comparison to 2017/18. Hence, the visitor pressure in the Biosphere Reserve rather increased in the years of the COVID-19 pandemic. The decrease in visitor numbers also reflected recent studies that showed very similar results for overnight stays (minus 25% and less) for the region (Dwif-Consulting GmbH, 2022).
- The daily expenditure of visitors increased very strongly overall, both for overnight visits and day trips.
- This resulted in an increase in gross turnover (+11.6%), which was due to the significantly increased daily expenditures.
- Therefore, the income effects also increased by 12%, with VAT rates increasing compared to 2017/18. Another positive development was that the value-added ratios increased compared to the previous study. 68% of the tourism income was distributed to direct tourism businesses and 32% to indirect suppliers.
- Out of the total of 2,311 employment equivalents, 432 equivalents could be attributed to the demand of visitors with a high biosphere reserve affinity. This number slightly decreased (by 8%), mainly because of the different expenditure structure of visitors that resulted in different VAT structures.

Table 5.8. Summary of economic impacts effects of visitors to Schorfheide-Chorin Biosphere Reserve in 2020/21 in comparison to 2017/18.

	Total			Specific Biosphere Reserve visitors			Other Biosphere Reserve visits		
	2017/18	2020/21	21/18	2017/18	2020/21	21/18	2017/18	2020/21	21/18
	[euro]	[euro]	[%]	[euro]	[euro]	[%]	[euro]	[euro]	[%]
Daily expenses	28.31	40.58	145	n.a.	36.76	–	n.a.	41.59	–
Daily expenses day-trips	18.63	27.77	149	17.20	24.40	142	19.00	28.51	150
Daily expenses overnight stays	50.68	65.50	129	47.70	52.98	111	51.60	71.03	136
Gross turnover	90,642,900	101,146,900	112	18,818,100	19,084,800	101	71,824,800	82,062,100	114
Gross turnover day trips	41,638,800	45,715,100	110	7,894,800	7,187,900	91	33,744,000	38,527,200	114
Gross turnover overnight stays	49,004,100	55,431,800	113	10,923,300	11,896,900	109	38,080,800	43,534,900	114
Tourism income	44,636,300	49,991,776	1112	n.a.	9,351,125	–	n.a.	27,916,483	–
Direct tourism income	29,177,100	34,207,346	117	n.a.	6,290,864	–	n.a.	12,724,169	–
Indirect tourism income	15,459,200	15,784,430	102	n.a.	3,060,261	–	n.a.	8,354,900	–
Income equivalent	2,316	2,311	100	471	432	92	1,845	1,879	102

Source: own elaboration. based on Job et al., 2023.

Table 5.8 summarises the most important economic impacts in comparison to 2017/18.

5.5. Discussion: Towards a cross-border methodology to assess economic impacts of protected area tourism?

The economic impact of PAs lies at the heart of the global discussion on nature conservation (Phillips, 1998; Emerton et al., 2006; Mayer, 2013). Therefore, one of the aims of the Polish-German REGE project research team was to adapt a methodological approach for estimating the regional economic impact of tourism in protected areas, while keeping in mind that the method should above all be applicable internationally, especially in the Pomerania Euroregion, that it should be simple, affordable, and that the results of studies carried out in different countries based on this method should be comparable. To ensure international comparability of the results, it is necessary to consider global methodological standards, above all those regarding PA visitor counting and economic impact estimation. Global guidelines for this purpose have been published recently by the UNESCO together with the German Federal Agency for Nature Conservation (Spenceley et al., 2021).

A method commonly used in German protected areas was taken as the starting point for our attempt to adapt existing methodological approaches for estimating the regional economic impact of PA tourism. Since 2006, numerous studies on economic impact data collection, estimation and assessment for German large-scale PAs have been carried out during several long-term research projects with strong financial support from ministries and authorities at the national and federal states level but also from the PA administrations. The economic impacts of German national parks (Job et al., 2005, 2009, 2016), biosphere reserves (Job et al., 2013), and some nature parks (Job et al., 2005), have been estimated. This is very comprehensive and utilises an extensive database (as presented in more detail in section 5.3). Overall, the economic impact of tourism can only be estimated using this approach if the number of visitor days and the visitor expenditure structure are known, and as long as for the identified expenditure groups the regional multipliers (in the form of value-added ratios) for businesses handling the visitor flows are available. Such data should be obtained through statistically based visitor counting and surveying throughout the year (due to the seasonal variability of tourism). As such studies are costly (due to the required man power and the necessary acquisition of the regional multipliers), the application of this approach may be beyond the financial capabilities of protected area administrations since PAs typically face the need to finance numerous tasks with severely limited funding (Emerton et al., 2006). At the same time in Poland, in contrast to Germany, no standard method for estimating the economic impact of PA tourism has been established, and any effort undertaken so far should rather be regarded as pilot research (for details see section 5.2.1.).

The methodological approach established in the German PAs was used as the starting point and a reference for the intended adapted regional impact estimation method, also because it was already in widespread use in numerous German PAs and enabled PA stakeholders to easily understand and interpret the results.

One of the key elements affecting the costs of conducting surveys based on the German approach is the need to count visitors. According to the project team, an opportunity to reduce the cost of visitor counting lines in the use of automatic counting devices. In this way, complete visitor-day data could be obtained instead of only acquiring information for selected days on which visitors are counted, as is the case with the German approach. At the same time, the data from automatic counters could be used not only for estimating the economic impacts, but also for an ongoing monitoring of tourist flows. Of course, all automatic counters must be calibrated empirically through observations and manual counts, because correction factors provided by the device manufacturer deliver a first orientation only. Especially where the natural conditions do not allow for leading all visitors past an automatic counter, visitors can often walk right past the devices without being detected. For such locations, the number of people counted by automatic counters must be increased by a correction factor to be determined empirically (see also the deviations Staab et al., 2021 revealed between automatic and manual counting approaches).

However, since not all PAs operate visitor counting devices the project team suggests that – in methodological terms – the counting procedure should have the following characteristics:

- a year-round study period,
- if no data from automatic counters can be obtained, visitor days should be estimated empirically by a combination of sampling and existing secondary data (e.g. overnight statistics from the PA municipalities). For this purpose, sampling days distributed over the whole year and covering all relevant seasons are required.

Another key issue with the German approach is the visitor surveys: the surveys make use of a) an extended questionnaire (the so-called long interviews) and b) the so-called short interviews. In previous research based on this method, the long questionnaire included questions about the structure of the visitor expenditure and educational background or enquired on their environmental awareness, the frequency with which they visited the PA, their reasons for coming, the type of transport means they used, the type of their activity in the PA, and more. Based on our overview of the literature, the experience gained, and an exchange of views and opinions, the project team proposes that the research should be conducted using only one survey template with a modular structure. As the primary objective of this method is to estimate the regional economic impacts of PA tourism, questions about the structure of expenditures are of pivotal significance. The remaining questions may be clustered into modules to be used on an as-needed basis. This structure allows for adding or removing individual modules. Apart from enabling a better adaptation of the questions to the needs of the stakeholders, this allows for reducing the costs of the study as the potentially

smaller number of questions asked makes it possible to reach the aspired sample size in a shorter time.

The third element required by the German approach are the regional multipliers. This project developed a questionnaire to measure these value-added ratios, and a pilot study was conducted in 2021 using the CATI method in the Wolin National Park region using the mentioned questionnaire. The survey included a group of 20 randomly selected enterprises among micro-, small- and medium-sized enterprises which were classified as belonging to one of the characteristic tourism activity types. According to the report of the survey carried out by a professional company specialising in such studies, the respondents indicated, among other things, that the data sought from them were too confidential to share or too intrusive into the situation of their enterprise, and thus the vast majority refused to answer such questions. As a result, the pilot study failed to provide any basis for estimating the value-added ratios in any recognised way and for continuing the study in this regard on a larger scale.

Therefore, the project team proposes that the regionalised input-output method should be applied (for details see section 5.3.1), which makes use of widely available national input-output tables to estimate the multiplier effects of PA tourism instead of using value-added ratios which are obviously very difficult to obtain for Polish PA regions[24]. As a next step, the regionalised input-output approach could also be applied in the future for some parks in the German part of the Euroregion or in Poland's Drawa National Park where the German methodological approach has already been employed. This would allow for comparing both approaches in more detail and assessing the comparability of their results. Majewski (2022) has already showed that input-output approaches are a valuable alternative for German PAs, although not a necessarily more affordable one as regards the costs for obtaining the secondary data.

During our project, the approach presented above could not be tested to its full extent, primarily with regard to the modular construction of the questionnaire, because of the numerous restrictions imposed during the COVID-19 pandemic in 2020 and 2021. It is therefore fully justified that research about the development of a more affordable approach for estimating the regional economic impacts of PA tourism in Poland that will provide internationally comparable results should continue.

5.6. Interim summary

The regional economic impact of protected area tourism is an important indicator of the recreational function of protected areas as well as their contribution to regional development and job creation in the often structurally weak, peripheral,

[24] These negative experiences notwithstanding the results of our business survey in the Biosphere Reserve Schorfheide-Chorin (see Chapter 6) are more promising, reaching a response rate of at least 14%. Similarly, the postal enterprise survey of Mayer and Woltering (2008) in the environs of the Bavarian Forest National Park also turned out satisfactory. However, both surveys required the cooperation of many local stakeholders and lots of organisational and logistical efforts.

rural protected area regions. These economic impacts provide substantial arguments in favour of protected areas and also positively influence the local populations' attitudes towards protected areas. For these reasons, these values are of great relevance for political decision makers and protected area administrations alike. However, due to the complexity of their estimations and the required datasets which mostly need to be generated separately for each protected area the assessment of the regional economic impact of PA tourism is far from straightforward. The state of research concerning these values varies between Poland and Germany: while especially Polish national parks (among other things – due to required entrance fees to some parks) have a relatively good database concerning their visitation, these numbers are usually non-existent for German protected areas. In contrast, these existing visitation data have not yet been used for the estimation of the economic impact of park tourism in Poland, except for a pilot study, while in Germany a standard methodology has been established in the last two decades (mostly by Job et al.), which has been applied to basically all national parks and biosphere reserves and even some nature parks by 2022. Thus, this research adapted the German estimation approach to the conditions in Polish PAs and estimated the regional economic impact of tourism to Wolin National Park for the first time using a regionalised input-output-table for the estimation of the multiplier effects in contrast to the German approach of value-added quotas. In Wolin National Park, we recorded 691,741 visitor days/year, strongly dominated (91.4%) by overnight visitors. Overnight visitors spent 2.5 times more per person and day compared to day-trippers (PLN 270 vs. 110 or EUR 59.2 vs. EUR 23.5). This led to a gross turnover of PLN 181.68 million (EUR 38.85 million), which generated a regional income derived by the input-output estimations of PLN 364.65 million per year (EUR 77.98 million) and which equaled an income equivalent of about 7,500 persons. These results highlight the regional economic importance of visitation in Wolin National Park for its surrounding region.

In the German part of the Euroregion, we estimated the economic impact of visitation to Schorfheide-Chorin Biosphere Reserve. This provided the opportunity to compare these results with a relatively recent assessment from 2017/18 which was done using the same methodological approach. This also allowed for estimating the effects of the COVID-19 pandemic on the visitation structure of the Biosphere Reserve and the economic impact of its visitation (see Chapter 6). Our estimations revealed 2.54 million visitor days for Schorfheide-Chorin Biosphere Reserve. Regarding the visitor types, 33.1% of the visitor days were generated by overnight visitors, 64.0% by day-trippers and 2.0% by local residents living inside the Reserve. Day-trippers spent, on average, EUR 27.80 per person and day in the Biosphere Reserve, while overnight visitors spent EUR 65.50 per person and day. The average daily expenditures of specific biosphere visitors were lower compared to other visitors. The combination of visitor days and visitor-type-specific expenditure patterns led to a total gross turnover of EUR 101.14 million generated by visitors to the Biosphere Reserve and a regional income of EUR 49.99 million per year, which corresponded to an income equivalent of 2,311 persons. These numbers underlined the considerable regional economic relevance

of tourism and recreation in Schorfheide-Chorin Biosphere Reserve, especially as around one fifth of these economic impacts could be attributed to visitors with a high biosphere reserve affinity, i.e. those that would not occur if the protected area did not exist.

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6. Effects of COVID-19 on visitation and tourism in the protected areas of the Pomerania region

6.1. Introduction

There is no doubt that the most important affair in the world in 2020 and 2021 was the outbreak of the novel coronavirus SARS-CoV-2 (COVID-19). It rapidly swept across the world as an unprecedented global pandemic and caused disturbances on many levels of life, societies and economies. In addition to the human tragedies, the coronavirus was an emotional challenge for many people, who had to change their everyday lives.

The COVID-19 pandemic can undoubtedly be described as a black swan, a term which in economic sciences denotes an unexpected, unpredictable event exerting a huge impact on the world, the economy, and societies (Taleb, 2022). The global travel bans, "stay-at-home" policies, and bans on public gatherings affected approximately 90% of the global population, contributing to a widespread reduction in mobility on an unprecedented scale (Gössling et al., 2021). The outbreak of the pandemic also disrupted the implementation of our project "*Cross-border cooperation between universities and large protected areas in the Pomerania Euroregion*". Such restrictions made it impossible for all the planned direct research activities to be carried out, hence the Polish-German research team decided to extend the scope of studies to include the impact of the pandemic on the protected areas (PAs) of the Pomerania Euroregion.

Germany was one of the first countries in Europe to be affected by the new virus. The first case was reported on 27th January 2020 in Bavaria. In Poland, the first case of new virus was confirmed on March 4th, 2020. Both the German and the Polish governments introduced lockdowns in 2020 and 2021. Figures 6.1 and 6.2 show a comparison of basic data related to COVID-19 for Germany and Poland.

In Poland, until the 2nd of May 2022, there had been nearly 6 million confirmed cases of COVID-19 with slightly more than 116,000 deaths. In Germany the absolute number of coronavirus cases and deaths was higher, amounting to more than 24.7 million confirmed cases and nearly 136,000 deaths. However, when referring to the share of the population, there was a lower share of deaths in Germany of 0.16% (in Poland 0.31%). It should be noted that confirmed cases of COVID-19 are associated with testing rates, and therefore the real number of cases can vary per country.

Based on a comparison of the relative number of vaccinated people, Germany had a higher percentage of the population that had received a COVID-19

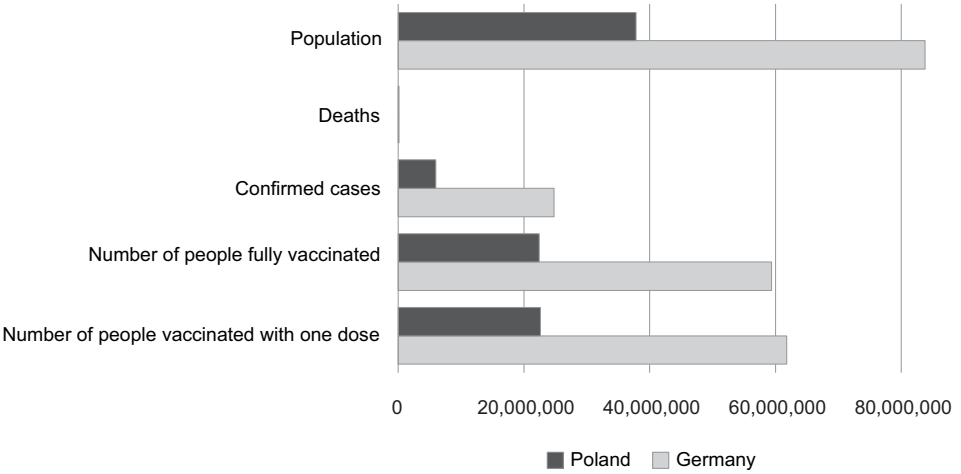

Figure 6.1. Absolute numbers of coronavirus cases, deaths, and vaccinated persons for Poland and Germany until May 2, 2022.
Source: own elaboration, based on data from statista.com.

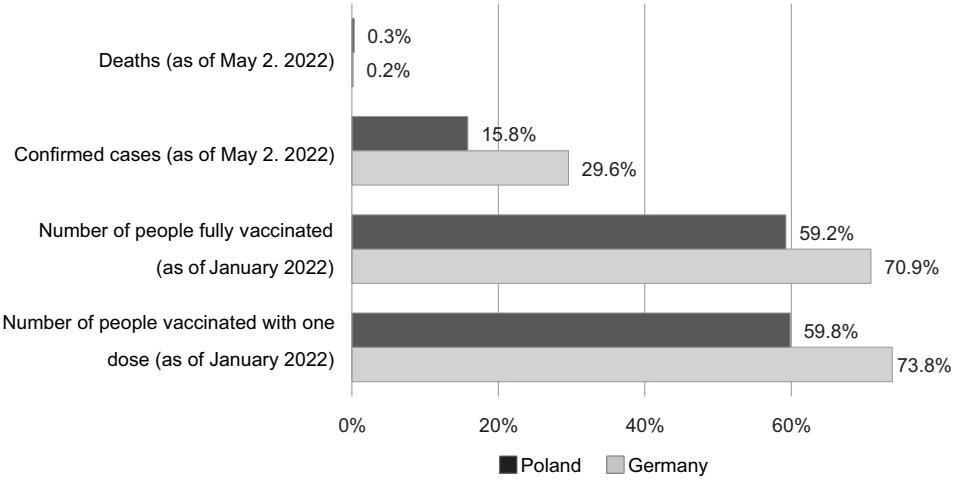

Figure 6.2. Relative shares of coronavirus cases, deaths, and vaccinated persons among the populations of Poland and Germany until May 2, 2022.
Source: own elaboration, based on data from statista.com.

vaccination than Poland did. As of 2 May 2022, approx. 77.5% of the German population had been fully vaccinated, whereas in Poland the figure was approx. 60%. Moreover, a booster dose of a COVID-19 vaccination had been given to 64% of the German population, while in Poland only just over 31% of the population had received the booster dose.

Many restrictions were introduced to protect the population against the spread of the coronavirus. One of them was a mobility restriction with the aim of allowing the population to stay at home to minimise contact rates. Unsurprisingly, these restrictions had also a significant impact on tourism and leisure, including visits to PAs. As Gössling et al. (2021) reported, due to the international travel bans affecting over 90% of the world population and the wide-spread mobility restrictions, global tourism largely ceased in March 2020. It should be noted that the prolonged stays at home may have induced negative impacts both for the global economy and individuals. It can cause higher unemployment, food scarcity, and mental health problems of individuals (Zhang et al., 2020). Therefore, ongoing safe mobility is very important also during a pandemic, not only for economic stability but also for the physical and mental health of a population.

The aim of this chapter is to present the economic impact of COVID-19 on protected area tourism in the Pomerania Euroregion and to examine the attitudes of residents in its PAs towards the pandemic situation, based on quantitative data that was generated during the studies already presented in the previous chapters.

This chapter is structured as follows: in the next section (6.2), we provide an overview of the effects of the coronavirus pandemic on tourism in the global perspective, as well as its general consequences for Germany and Poland, while section 6.3 presents the results for the Polish and the German PAs in the Pomerania Euroregion, respectively, followed by a discussion (6.4) of these results. A short interim summary (6.5) closes this chapter.

6.2. Effects of COVID-19 on tourism

6.2.1. Global perspective

After decades of unprecedented growth despite the several global crises, tourism came to an almost complete standstill in 2020 during the COVID-19 pandemic. Global travel restrictions, stay-at-home orders, and travel bans for approx. 90% of the world population caused a drop in international arrivals by 74% (Gössling et al., 2021) and created a severe disruption of the tourism sector with economic impacts that had never been experienced before. According to the UN World Tourism Organisation (UNWTO, 2021), a global return to pre-COVID tourism levels is not expected until 2023 or later. The main barriers are travel restrictions, slow global containment of the virus, low traveller confidence, and unstable global economic environments.

On 3 April 2020, Google started to publish COVID-19 Community Mobility Reports to see how communities are moving in space during the pandemic (Fitzpatrick & DeSalvo, 2020). Google Maps, which provides aggregated, anonymised data showed how busy certain types of places were. Considering the topic of this study, only the movement of people in parks and outdoor spaces will be discussed. According to Tufan and Kayaaslan (2020), outdoor recreation and park visitation data are very important for understanding compliance with

safer-at-home orders during the time of the pandemic. Furthermore, as Rung at al. (2011) reported already more than ten years ago, access to parks and outdoor recreation sites increases communities' resilience to crises and helps in the coping process. The study conducted by Samuelsson et al. (2020) during the pandemic period confirms that spaces for nature-based leisure experiences are one of the most important places of restoration for those dealing with the crisis. Figure 6.3 presents the changes in the number of visitors to parks and outdoor spaces in Germany and Poland since the beginning of the pandemic. The data includes the following places: local parks, national parks, public beaches, marinas, dog parks, plazas and public gardens.

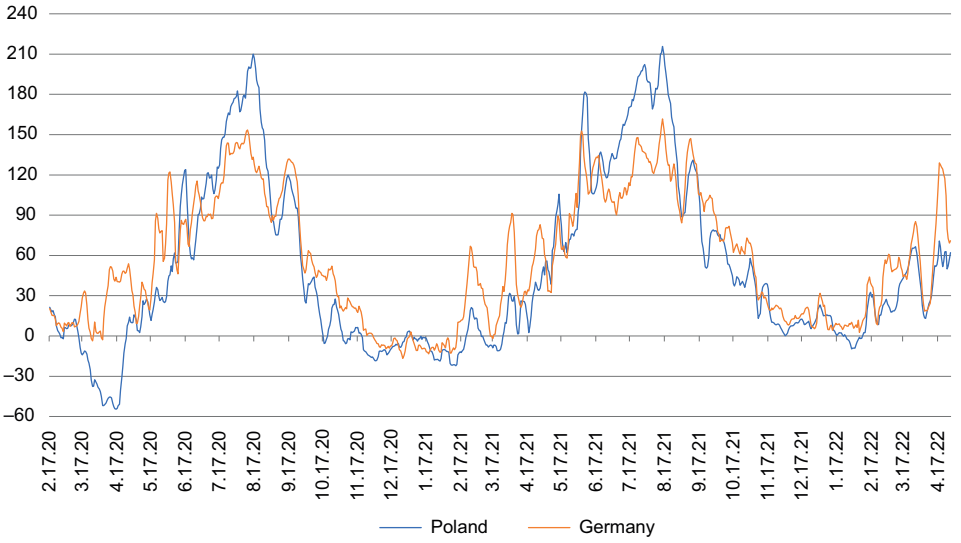

Figure 6.3. The changes in the number of visitors in parks and outdoor spaces in Germany and Poland during the pandemic (in %).
Source: own elaboration, based on data from Google LLC "Google COVID-19 Community Mobility Reports".

Figure 6.3 shows how the number of visitors to parks and outdoor spaces has changed relative to the period before the pandemic. The basis has been set by Google as the median value for the five-week period from 3 January to 6 February 2020.

Early in the pandemic, many parks and open spaces for recreation were closed entirely. This was particularly evident in Poland at the beginning of the pandemic, with the largest drop compared to the reference period. The decrease in the number of park visitors was higher than 50%. The reason was that there were some difficulties in purchasing personal protective equipment, while the risks of spreading COVID-19 among visitors, staff, and gateway communities were yet unknown.

According to the general trend, there is a clear seasonality in the number of visitors to the parks, both in Poland and Germany. The summertime promotes

visitation and physical activity, whereas park visitation significantly declines during winter. This was also observed during the pandemic. It is worth mentioning that for Germany, both the decreases and increases in the number of park visitors were smaller than for Poland. Interestingly, the highest growth in visitation was recorded on the 15th of August 2021, for both Poland and Germany. This may have been influenced by the Assumption of Mary holiday, which is a major Christian holiday celebrated in Poland and in parts of Germany.

Rice and Pan (2021) indicate that COVID-19 only accounts for parts of the change in park visitation reported by Google. In the guidance on understanding the dataset provided by Google we can find the note that in many regions, the data for parks and outdoor spaces are spiky – this represents large day-to-day variations. This is because park visitation is heavily influenced by the weather, weekends/weekdays, and holidays. Moreover, after the lockdown period caused by COVID-19, people wanted to stay in a green environment and have direct contact with nature, which made them calmer and more enriched. Many studies point out that park visitation is robustly linked with wellbeing indicators across the lifespan (Thomsen et al., 2013; Holland et al., 2018; Dzhambov et al., 2020).

The tourism and travel industry had to adapt to the impact of COVID particularly in terms of international travel restrictions since 2020 (UNCTAD, 2021). This mainly led to an increase in domestic travel in 2021, and an ongoing challenge for international tourism. Overall, international tourism rebounded moderately during the second half of 2021, with international arrivals being 62% lower in comparison to pre-pandemic levels and a global 44% decline in the economic contribution of tourism (UNWTO, 2022). Nevertheless, longer lengths of stays and higher spending per trip resulted in an increased overall tourism receipt in 2021, compared to 2020.

International organisations, such as the UNWTO (2021), expect that hesitation to undertake long-distance travel will remain for mid-term, with travellers preferring destinations in closer proximity that have high vaccination levels. Hence, tourism in countries with a high share of vaccinated people are expected to rebound faster than others.

In addition, domestic tourism drives the current tourism recovery in an increasing number of destinations, particularly those with large domestic markets, such as Germany and Poland. According to experts, domestic tourism and travel close to home, as well as open-air activities, nature-based products, and rural and sustainable tourism are among the major travel trends that will continue shaping tourism in 2022 and the coming years (UNWTO, 2022).

6.2.2. Germany

The consequences of the coronavirus pandemic on tourism in Germany have remained clearly apparent until the time of this publication. According to the German Federal Statistical Office, the number of overnight stays in hotels, guesthouses, and holiday homes in 2021 was 310.3 million, which was 37.4% below the level of the pre-crisis year of 2019. Compared to the first coronavirus crisis

year of 2020, there was just a slight increase of 2.7% (DESTATIS, 2022a). Especially in the winter months of 2020 and 2021, there were drastic collapses in tourism numbers due to temporary accommodation bans and restrictions (Schmude et al., 2021; Filimon et al., 2021).

In 2021, the gastronomy and accommodation businesses in Germany were unable to recover from the drop in turnover in the first year of the coronavirus crisis 2020: The hospitality industry achieved 2.2% less turnover in real terms (price-adjusted) in 2021 than in the previous year. In nominal terms (not price-adjusted), turnover increased by only 0.1% (DESTATIS, 2022b). This means that the years 2020 and 2021, which were characterised by the coronavirus-related restrictions, were the weakest for the hospitality industry since modern statistical data collection of tourism began in 1994. Compared to the pre-crisis year of 2019, the hospitality industry achieved 40.3% less turnover in real terms and 36.4% less in nominal terms in 2021.

The restrictions did also affect day-trips, even though the reductions in day-visitor frequentations were not as dramatic as in the overnight-stay segment, with 17% fewer visitors in 2021 and 19% fewer in 2020, compared to the pre-crisis year of 2019 (dwif-Consulting, 2021, 2022). Interestingly, the speed of visitor regeneration was enormous in both summer seasons, reaching almost a regular high with even increased visitor numbers for nature-based activities.

In general, the booking and expenditure behaviour also changed tremendously in the pandemic years: whereas a polarisation between short-term and long-term planning arose, the spending behaviour increased in general, complemented by a longer duration of stays (dwif-Consulting, 2021). Furthermore, in 2021 tourists acted more self-confidently in regard to coronavirus risks compared to the first year of the crisis, resulting in higher international bookings for the summer months of 2021 (dwif-Consulting, 2022).

Tourism in Germany in 2022 is expected to bounce back to a certain level of the pre-coronavirus times. In March 2022, overnight stays in commercial accommodations tripled in comparison to March 2021 (+175.7%). Also compared to March 2020, when the first coronavirus-related lockdown began, overnight stays in March 2022 were 58.8% higher. However, they were still almost a quarter (–23.7%) lower than in March of the pre-crisis year of 2019. All in all, on the demand side, there is more of a reverse trend towards usual behavioural patterns compared to the time before the coronavirus pandemic.

On the supply-side, the coronavirus pandemic also intensified the lack of trained personnel, which is becoming a major factor for economic stagnation (dwif-Consulting, 2022). In addition, rising energy, food, and raw material prices could cause further price adjustments in the short and mid-term perspective. However, experts do not fear a substantial market shakeout, also because of the effective economic coronavirus aids by the German government.

In consequence, the initial shock suffered by the tourism industry has been followed by the disillusionment that a rapid recovery to the pre-pandemic business logic is less realistic, as the containment measures of the virus, such as restricted mobility and social distancing, will continuously affect tourism activities.

In addition, the pandemic has revealed that tourism also serves as an indirect supporter of pandemics and has therefore been brought to higher political attention (see the public discourses about superspreader destinations in Mayer et al., 2021), also when combating pandemics in general in the mid- and long-term (Hall et al., 2020).

The severe impacts of the COVID-19 crisis have led to a strong critical reflection of the overall tourism model and its potential perspectives in post-COVID times. It has started a fundamental discussion amongst tourism stakeholders worldwide from all disciplines about what "desirable tourism" is and what it should not be anymore (Lew et al., 2020). Thus, the status quo of tourism is being generally challenged and new conditions for a shift towards a future-oriented tourism are being critically evaluated. Recovery is being connected with terms such as sustainability, digital transformation, innovations, stronger cooperation between tourism authorities and upmost resilient structures (Balas et al., 2020). Even so, international studies point out two different possible developments: on the one hand, "building tourism back better" with an offer based on sustainability standards that reconcile higher sensitivity and demand for sustainable tourism with a decreased interest in mass tourism, and on the other hand a return to the "old normal" after the crisis is over (Balas, 2021).

6.2.3. Poland

As in other parts of the world, tourism in Poland is one of the sectors directly affected by the coronavirus pandemic. In March 2020, according to Statistics Poland, the number of accommodated tourists was approximately 65% lower compared to March 2019. In April 2020, the decrease in the number of overnight stays compared to the same month of the previous year was already over 90%. A slow increase in tourist numbers began to be observed from May onwards, when some accommodation facilities reopened. During the summer months, i.e. July, August and September, the number of tourists decreased by 31%, 24% and 33%, respectively, and the number of overnight stays by 29%, 19% and 27% compared to the previous year's values. The operation of accommodation facilities was again limited from November 2020 onwards. The introduction of these restrictions again resulted in a decrease of over 70% in both the number of visitors and the number of nights provided to them compared to November 2019. In December 2020, this decrease reached almost 80% (Statistics Poland, 2021).

The restrictions imposed due to SARS-CoV-2 also resulted in a decrease in travel expenditures by Polish residents. In 2020 compared to 2019, expenditure relating to travel was down by nearly 40%.

The restrictions imposed in Poland in 2021 in connection with the pandemic in terms of the operation of accommodation establishments and the mobility of tourists were less stringent than in the previous year. This resulted in an increase in the number of tourists accommodated in tourist accommodation establishments of over 24% compared to 2020. Table 6.1 presents the participation of Polish residents aged 15 and older in tourist trips during the pandemic.

Table 6.1. Participation of Polish residents aged >15 in tourist trips in 2020 and 2021

	2020	2021
	% of the population	
Travellers*:	44	53
in the country for a period of 2–4 days	29	35
5 days and more	23	29
abroad	9	13
Not travelling	56	47

*In a further subdivision, a participant may be shown more than once
Source: Statistics Poland, Polska w liczbach 2022, GUS, Warszawa 2022.

The majority of foreign tourists accommodated across all the establishments were from Germany (835,500). According to Statistics Poland (2022a), the largest number of foreign tourists in Poland were accommodated in Mazowieckie (527,500), followed by Zachodniopomorskie (434,300) Voivodships. This indicates the high importance of the Pomerania region regarding incoming tourism. To sum up, the outbreak of the COVID-19 pandemic and the restrictions associated with the coronavirus, significantly affected the whole tourism sector. This was the result of both government restrictions, crisis-related household savings, and the fear of contracting the diseases.

The size of tourist traffic and the use of tourist accommodation facilities during the pandemic were mainly determined by the freedom of movement, the closure of borders, and constraints on the availability of accommodation for tourists. In contrast to previous years, seasonal factors (such as weather, the period of holidays, etc.) and willingness to travel were not the main reason for the increase in tourism. This was primarily the result of a change in travel conditions due to the spread of the COVID-19 virus. Nowadays, the most important issues are using preventive measures to minimise the risk of transmissions and monitoring the spread of COVID-19.

6.3. Effects of COVID-19 on the economic situation of tourism in protected areas of the Pomerania Euroregion

All analyses for this part of our study were conducted during the time of the coronavirus pandemic. Hence, it was possible to include aspects that contextualise the results within the scope of the pandemic. The following chapter will focus on specific PAs of the Euroregion Pomerania, as shown in Table 6.2.

6.3.1. Methodological approach

In Germany the research is based on three major surveys covering the perspective of the inhabitants (analysis of park–people relationships, see Chapter 4), the demand-side (visitor-surveys and socio-economic monitoring, see Chapter 5) and the tourism industry (business survey in Schorfheide-Chorin Biosphere Reserve).

Table 6.2. Conducted surveys that cover aspects of the COVID-19 impacts

Type of research	Target group	Covered protected areas	Distribution mode	Sample
Analysis of park–people relationships	Inhabitants	6 national parks, 7 landscape parks, 1 biosphere reserve	CATI	~400 per PA
Demand-side survey	Tourists	3 national parks, 2 biosphere reserves	Personal interviews	400 in national parks & one biosphere reserve, 1.171 in one biosphere reserve
Tourism-industry survey	Tourism businesses	1 biosphere reserve	Postal, CATI, online	120 businesses

Source: own elaboration.

Our analysis focused on the demand-side surveys in Jasmund National Park, Western Pomeranian Lagoon Area National Park, Southeast Rügen Biosphere Reserve and Schorfheide-Chorin Biosphere Reserve (all in Germany). Also, the analysis was complemented with a business survey in Schorfheide-Chorin Biosphere Reserve. The results from these PAs reflected the impacts of COVID-19 throughout the period of the pandemic until the end of 2021 and gave detailed information from the demand and industry perspectives of tourism. In addition, we highlighted the results of the analysis in Schorfheide-Chorin Biosphere Reserve, because it presented the influence on the overall economic impacts from both perspectives (see details of the demand-side analysis in Chapter 5).

In Poland, the research covering the COVID-19 impact on the PAs focused on surveys in the five PAs of Wolin National Park, Warta Mouth National Park, Warta Mouth Landscape Park, Barlinek-Gorzów Landscape Park, and Drawsko Landscape Park.

These PAs were examined as part of the park–people relationships studies (see Subchapter 4.3). Additionally, as the studies were performed at the very specific time of a global pandemic (2020), elements of the impact of COVID-19 on these sites were included. Therefore, the research method and sample were consistent with those presented in Chapter 4.

The timeline of the surveys covered the period between September and October 2020. Importantly, as some of the PPR research was carried out prior to 2020, certain PAs were not covered by this study.

6.3.2. Effects of COVID-19 on tourism in selected German protected areas

6.3.2.1. Impacts on visitation

As presented in Chapter 5, the coronavirus pandemic led to a considerable decrease in the overall visitation of Schorfheide-Chorin Biosphere Reserve by –21%,

but created higher visitor frequentation during the days without lockdown, which resulted in a higher visitor pressure on this PA.

When asked about the influence of the pandemic on their travel plans, approx. one quarter (Western Pomerania Lagoon Valley National Park, Jasmund National Park) to almost one third of the visitors (Biosphere Reserve Southeast-Rügen, Biosphere Reserve Schorfheide-Chorin) stated that the coronavirus influenced their choice of travel to a specific destination. Consequently, the majority of the visitors did not change their travel plans due to the pandemic.

Most of the visitors that changed their travel plans chose an alternative to the originally planned journey. Most tourists originally planned to travel to another European destination. Hence, the PAs were alternatives to the main holiday for many tourists. Details can be found in Figure 6.4.

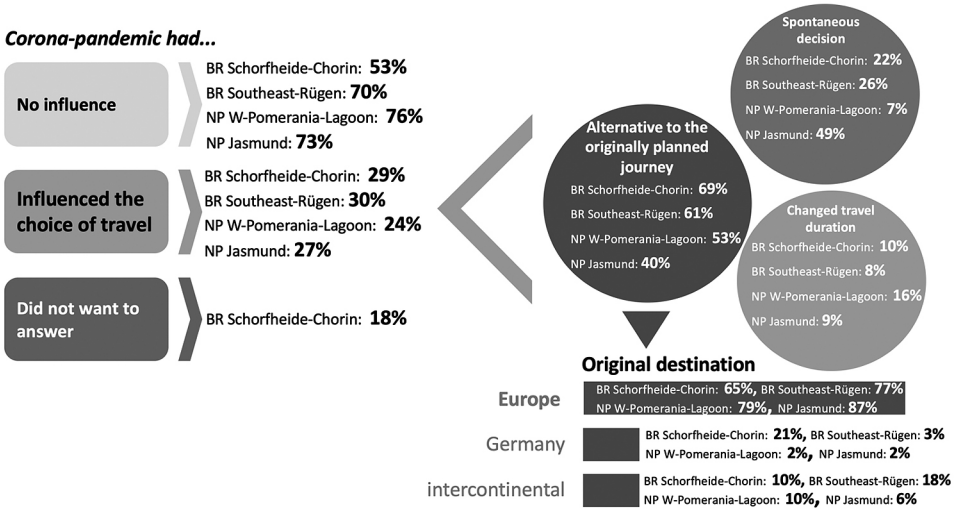

Figure 6.4. Influence of travel plans due to the coronavirus pandemic.
Source: own elaboration.

The reasons for changed travel plans varied between the respective PAs. Most of the visitors to the biosphere reserves expected a lower risk of infection in these destinations (Southeast-Rügen Biosphere Reserve: 41%, Schorfheide-Chorin Biosphere Reserve: 55%), whereas visitors to the national parks came to the region chiefly because they could not travel abroad (Western-Pomerania Lagoon Valley National Park: 26%, Jasmund National Park: 55%). Reasons such as lower financial resources or less time to travel did not play a role for the adjusted travel plans.

The pandemic also exerted an influence on tourism activities. Approx. one third of the visitors to Schorfheide-Chorin Biosphere Reserve (37%) were reluctant to visit events, concerts and theatres in closed spaces, while approx. one quarter (23%) had concerns in regard to cultural activities such as visiting museums or exhibitions. Still, 45% of the visitors were not concerned at all and would have pursued all activities, without any reservations.

This was also reflected by the personal concern of the visitors about the pandemic (Figure 6.5). Most visitors to the analysed PAs were not concerned about their own health because of COVID-19. However, the situation was different regarding concerns about coronavirus impacts in general: of the visitors to Schorfheide-Chorin Biosphere Reserve (65%) and WesternPomerania Lagoon Valley National Park (60%) were more concerned than of the visitors to Southeast-Rügen Biosphere Reserve (38%) and Jasmund National Park (48%).

A similar situation could be observed regarding the personal affectedness due to COVID-19: Most visitors did not see themselves as being affected personally or jobwise by the coronavirus pandemic.

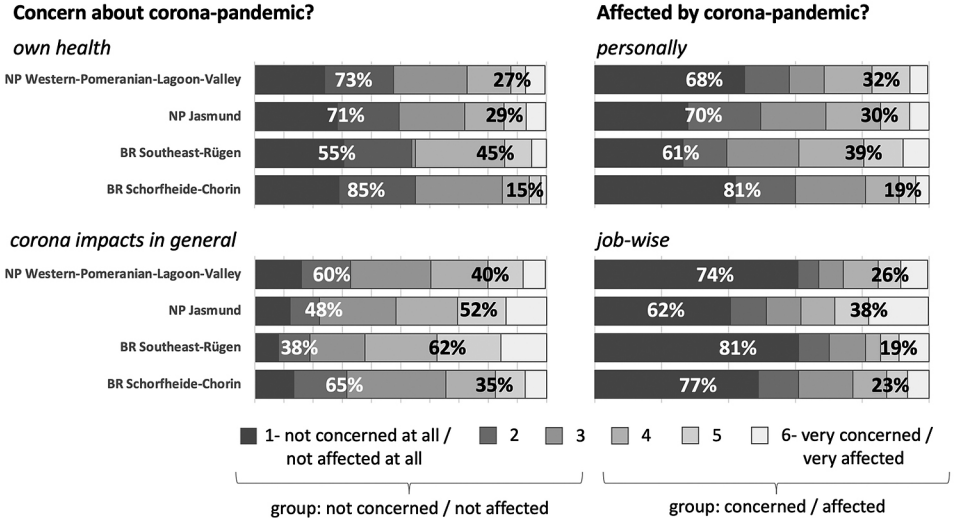

Figure 6.5. Visitor-specific concern and affectedness of the coronavirus pandemic.
Source: own elaboration.

A detailed look at Schorfheide-Chorin Biosphere Reserve revealed that the visitors whose visit was influenced by the virus spent on average 16% more money on their holiday than those who were not affected by it. This was also represented by the overall turnover and the economic impact: even though the number of visitors decreased in comparison to the study conducted in 2017/18, the gross turnover increased by 12%, which also resulted in an increase of 12% in the overall tourism income.

Further positive visitor effects in Schorfheide-Chorin Biosphere Reserve could be observed in terms of PA affinity: the status of the PA was more important to those visitors that were influenced by the coronavirus (25%) than to those who were not affected by it (22%). Likewise, the knowledge about the status of the protected area was also distinct (Figure 6.6): more coronavirus-affected visitors knew about the protected area (61%) than those who were not influenced by the pandemic (56%).

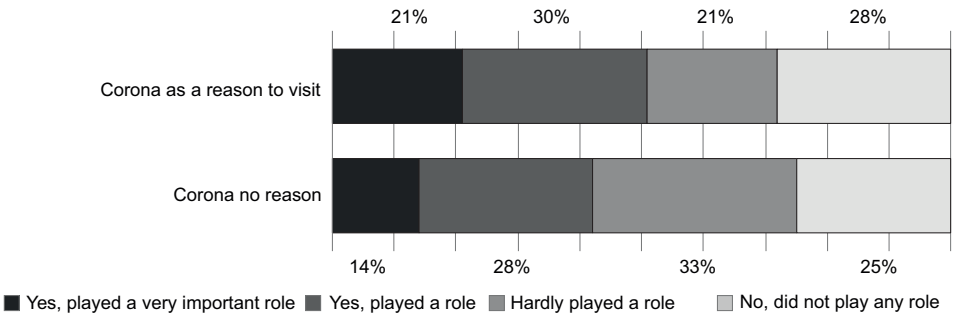

Figure 6.6. PA affinity in Schorfheide-Chorin Biosphere Reserve in relation to the COVID-19 influence.
Source: own elaboration.

Another interesting aspect is that the coronavirus-influenced visitors were, overall, more active than others. Especially cycling was the activity chosen most often by those of the visitors who came to the region as a result of the pandemic (55%) (see Figure 6.7).

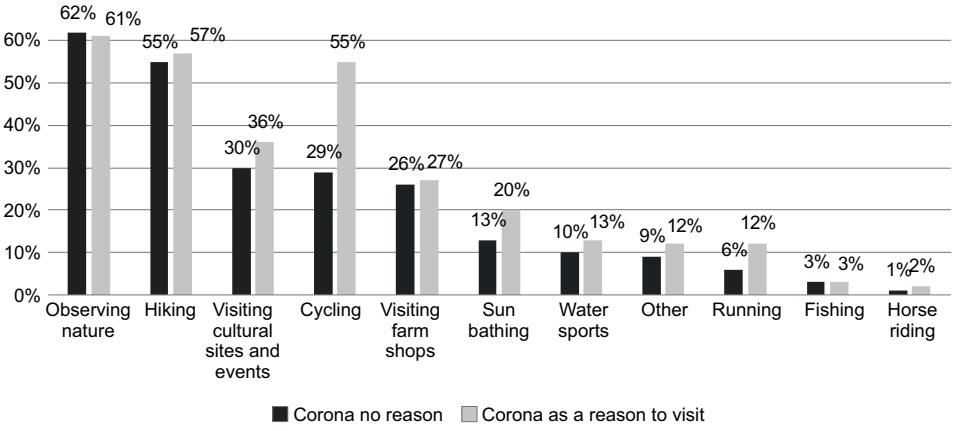

Figure 6.7. Tourist activities of Schorfheide-Chorin Biosphere Reserve in relation to the coronavirus-influence.
Source: own elaboration.

Finally, coronavirus-influenced overnight visitors to Schorfheide-Chorin Biosphere Reserve spent more time in the region (length of stay: 6.3 days) than other visitors (length of stay: 4.6 days).

All this resulted in an overall higher economic impact of tourism in the region, compared to the previous study from 2017/18 (see Chapter 5.4.2.).

6.3.2.2. Impact on the tourism industry

The following results are based on a business-survey that was conducted in Schorfheide-Chorin Biosphere Reserve in March–April 2022. The survey was sent to all tourism businesses of the Biosphere Reserve via mail, a postcard reminder, and by a telephone follow-up with the option to take part online or via telephone. Hence, the survey was distributed in a hybrid mode with the aim of reaching as many businesses as possible (for the questionnaire please see Appendix G, https://doi.org/10.12657/9788379864201-apps).

The businesses were identified through a systematic analysis of the tourism structure. This was done by way of a multi-stage research: Firstly, the official databases of the local tourism organisations were used as baseline information. Secondly, all major online-booking platforms (Booking.com, HRS.com, Tripadvisor, fewo-24.de, etc.), as well as Google Search, were searched. Thirdly, Google Maps was searched for all tourism-related listings of businesses.

The list of businesses was structured in line with the international classification of economic activities (NACE), so that all characteristic tourism activities could be defined and covered. In total, 865 tourism businesses could be identified, which exceeds the number of all registered tourism businesses of the region by 45%. This already reflects the existence of a high number of micro-enterprises – especially in the accommodation sector – that have an annual gross-turnover of less than EUR 17,500 and therefore do not need to be listed statistically (Statistics Berlin-Brandenburg, 2022).

The businesses were asked about their economic situation in 2021 and 2019 – including coronavirus aspects, their sustainability orientation, and their relationship towards the Biosphere Reserve. The questionnaire had 37 questions that were nearly evenly split between open and closed ones. All analyses were done with SPSS®.

In total, 120 businesses responded to the survey (Table 6.3), which equaled a response rate of 14%. However, only about half of the respondents provided complete information on their economic situation and only 15% provided information on their environmental cost. Still, almost all the respondents answered all the questions regarding the coronavirus-influence on their business-activities.

Table 6.3. List of tourism businesses and respondents in the survey in Schorfheide-Chorin Biosphere Reserve.

Class	Economic industry	Business--structure	Respondents	Response--rate
55–56	Accommodation	752	97	13%
49–51	Transport	29	2	7%
77	Rentals	1	0	0%
79	Travel agencies and tour operators	25	3	12%
90–93	Art & culture, sport, entertainment and recreation	73	18	25%
Total		865	120	14%

Source: own elaboration.

Approx. three-quarters of the respondents (77%) were sole proprietorships or private companies, with the majority employing fewer than five persons. Approx. 70% of the respondents were accommodation providers. This corresponded to the analysis of the tourism structure, where approx. 60% of all businesses were accommodation providers.

In terms of the economic performance, the arithmetic mean of the average gross turnover amounted to approx. EUR 150,000 in 2021 and 2019. As the respondents included outliers, the median turnover was way smaller with EUR 33,000 in 2021 and 2019, and the 5% trimmed mean[25] amounted to EUR 104,000 in 2021 and EUR 103,000 in 2019. Interestingly, 44% of all the respondents had a turnover of EUR 25,000 or less in 2021, with more than 70% of the turnover was generated by tourists.

Sustainability played an important role for three quarters of the respondents while the Biosphere Reserve was an important factor for the economic situation of more than 50% of the respondents.

As presented above in this chapter, demand-side calculations of the economic impact of tourism in 2020/21 showed an increase of 12% in Schorfheide-Chorin Biosphere Reserve. The business survey presented a similar picture and allowed for more specific insights from the industry perspective. Whereas the average turnover was very similar between 2019 and 2021 with a slight increase of approx. 1% in 2021 (in terms of the 5% trimmed mean), the individual business performances were very different. Figure 6.8 presents an overview of the turnover-differences of all the businesses. It shows that 30% of the respondents benefited from a turnover surplus of at least 10% between 2019 and 2021, 41% of the respondents were faced with turnover losses of at least 10%, and 29% of the respondents had no major turnover variations between the two years.

When distinguishing between different business-types, it becomes clear that – especially – restaurants and cultural/leisure service providers were faced with turnover losses, whereas transport providers and non-commercial accommodation providers were having turnover increases between 2019 and 2021 (Figure 6.9).

The outlook of the tourism businesses was rather positive (Figure 6.10): Approx. 45% described their actual economic situation as either very good or good, and only approx. 16% of the respondents defined their economic situation as bad or very bad.

However, only a minority of 28% expected improvement of their economic situation in 2022, with a majority of 54% expecting a similar tourism season as in the previous year.

Finally, the majority of tourism businesses seemed rather sceptical in terms of an overall economic recovery: 30% of the respondents did not expect a recovery in 2022 and 11% did not even think that they would recover at all. In contrast, almost one-quarter of the respondents (22%) stated that they were not affected at all and another 16% had already returned to their pre-pandemic economic level (Figure 6.11).

[25] The 5% trimmed mean excludes the 5% highest and lowest values, so that outliers are reduced. It can be characterised as a compromise between the median and mean.

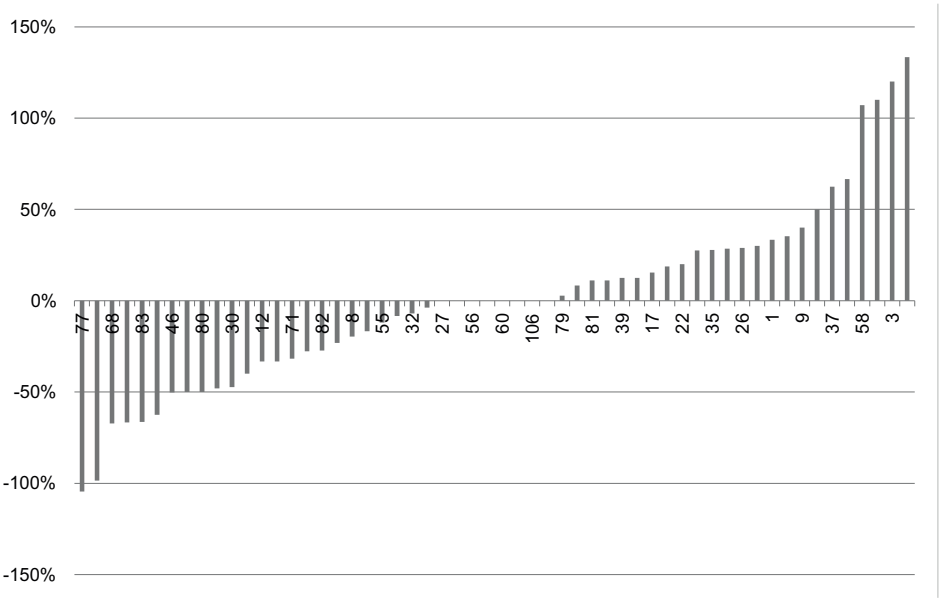

Figure 6.8. Percentual 2021/2019 turnover differences of responding tourism businesses in Schorfheide-Chorin Biosphere Reserve.
Notes: x-axis refers to the case number of the responding businesses (n = 56). Three outliers with turnover increases of >500% were excluded.
Source: own elaboration.

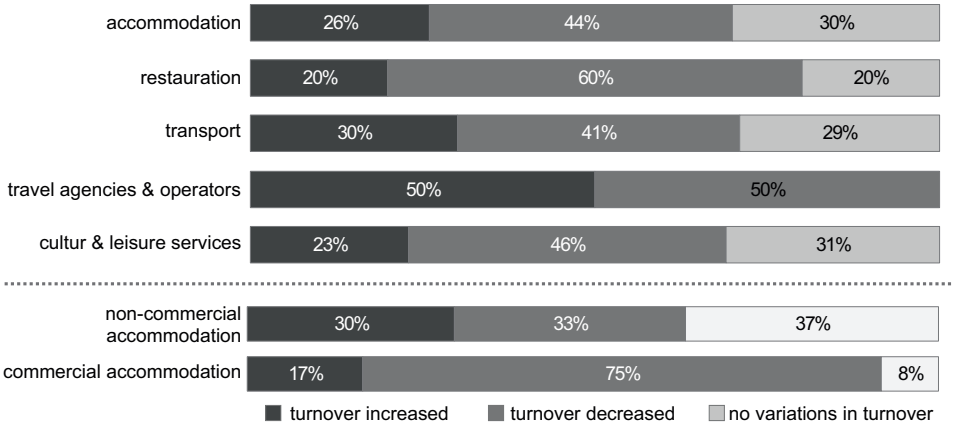

Figure 6.9. 2021/2019 turnover differences of different business types in Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

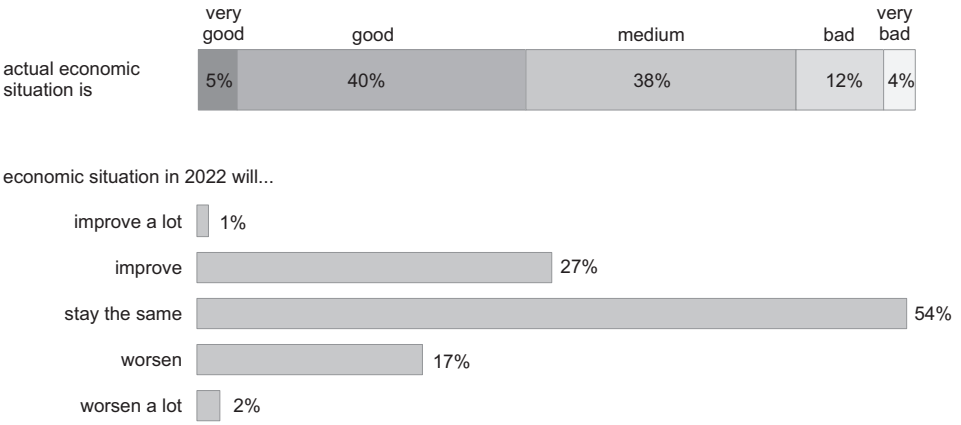

Figure 6.10. Economic outlook of tourism businesses in Schorfheide-Chorin Biosphere Reserve
Source: own elaboration.

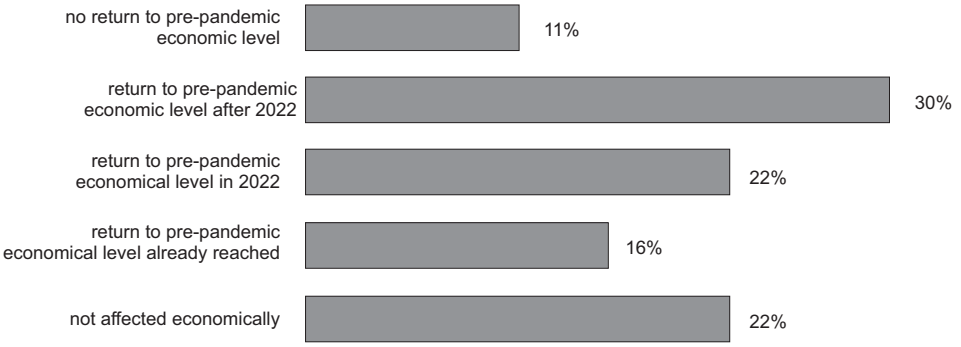

Figure 6.11. Expected economic recovery of tourism businesses in Schorfheide-Chorin Biosphere Reserve.
Source: own elaboration.

6.3.3. The impact of COVID-19 on tourism in the Polish protected areas of the Pomerania Euroregion

The results of the research carried out in the Polish part of the Pomerania Euroregion are presented for the five mentioned Polish PAs. To start off, the research aimed to determine how much the respondents knew about the coronavirus (Figure 6.12).

Most of the respondents had knowledge about the coronavirus. For all the five PAs under investigation, the average share of respondents having no knowledge about the pathogen was only 2.7%. In general, the population was well-acquainted with the issues relating to the pandemic.

Most of the respondents pointed to a moderate proximity of the coronavirus. Clearly, more respondents considered it to be close to (indicating a value

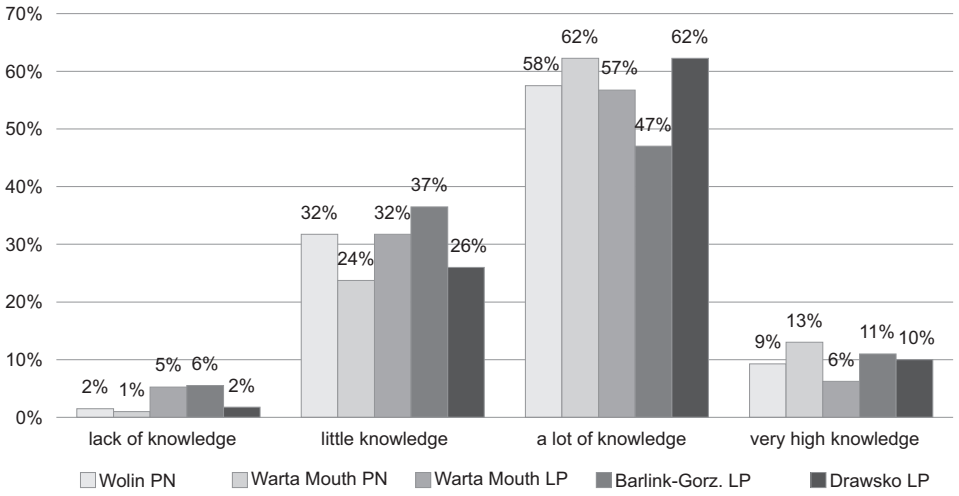

Figure 6.12. Knowledge about the coronavirus.
Source: own elaboration.

between 1 and 3) rather than far from them (between 5 and 7). Leaving out all values except the extremes, an average of 13.1% of the PA inhabitants considered COVID-19 to be a very near and 16.5% a very distant threat.

Regarding the rate of spread of COVID-19, nearly 30% of the respondents indicated that the new coronavirus was proliferating very quickly. This perception prevailed among the persons enquired, except for the inhabitants of Warta Mouth Landscape Park.

In order to explore the work-related constraints and the economic uncertainty experienced by the respondents, they were asked whether the preventive measures taken by the authorities against the COVID-19 pandemic affected their professional lives. The results are shown in Figure 6.13.

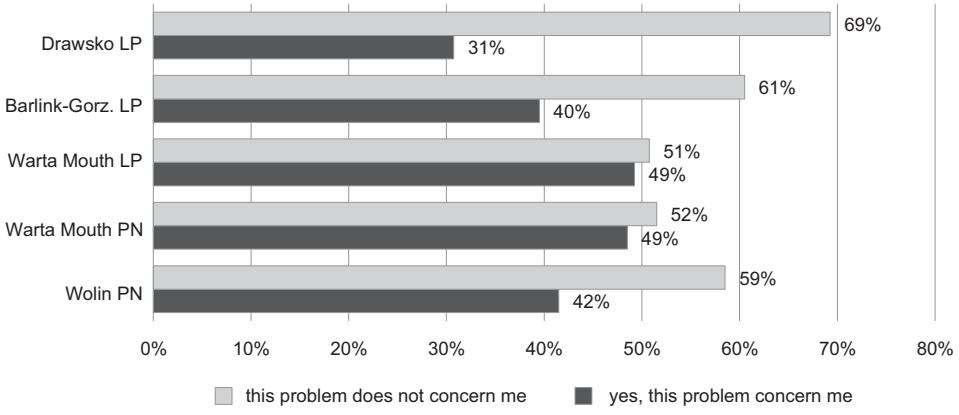

Figure 6.13. Impact of the COVID-19 pandemic on the respondents' work situation.
Source: own elaboration.

In each of the studied PAs, the majority of the respondents did not feel the pandemic affected their professional lives. The most positive situation was found in Drawsko Landscape Park, where nearly 70% of the respondents reported no work-related constraints caused by COVID-19. The most bothersome work-related and economic constraints were claimed by the respondents from Warta Mouth Landscape Park and Warta Mouth National Park. For all the PAs, an average of 42% of the respondents declared that the preventive actions against the pandemic affected their jobs.

Another statement that the respondents were supposed to address was their perception of the media outlets reporting and covering events related to the new coronavirus.

Most of our respondents believed that the topic of the new coronavirus had been blown up by the media. Few shared the opinion that COVID-19 was under-reported. The respondents' opinions were consistent with the situation observed at the beginning of the pandemic, when information was published daily and abundantly (Powell, 2020), which also led, among other things, to concerns about the reliability and inconsistency of the reports.

A further two statements that the respondents were asked to address explored their fear of the coronavirus. Figures 6.14a–b show their responses to the statements about how they perceived the pathogen:

- it is something I think about all the time (1) – it is something I don't think about at all (7) (Figure 6.14a)
- it is worrying (1) – does not worry me at all (7) (Figure 6.14b)

The responses suggested that the virus was a moderate cause of fear (answers to the first two statements), although the largest number of respondents considered SARS-CoV-2 to be a major cause of concern. Their sense of major concern was associated with the permanent tension and the sense of a lack of security, calm, and balance that accompanied the respondents. As for thoughts centred around the new coronavirus, the greatest fear could be observed among the respondents from Wolin National Park, whose most frequent answer was that they thought about the it all the time. The least marked variation in responses was observed for the statement: "The new coronavirus is something I don't think about at all". The percentage of those claiming they had no fear of the virus was 15.4% of all the persons surveyed.

When asked to reveal whether they considered the virus as scary or were not worried at all, on average more respondents claimed SARS-CoV-2 was scary (values between 1 and 3). Thus, it can be concluded that these respondents experienced the tension caused by the pandemic and the restrictions more severely.

The final statement related specifically to the respondents' assessment of their ability to respond to and have an impact on the new coronavirus situation (Figure 6.15).

The answers revealed the respondents' neutral assessment of their ability to respond to COVID-19. Most frequently, they claimed that they were unable to actively fight back but at the same time did not feel completely helpless. As regards

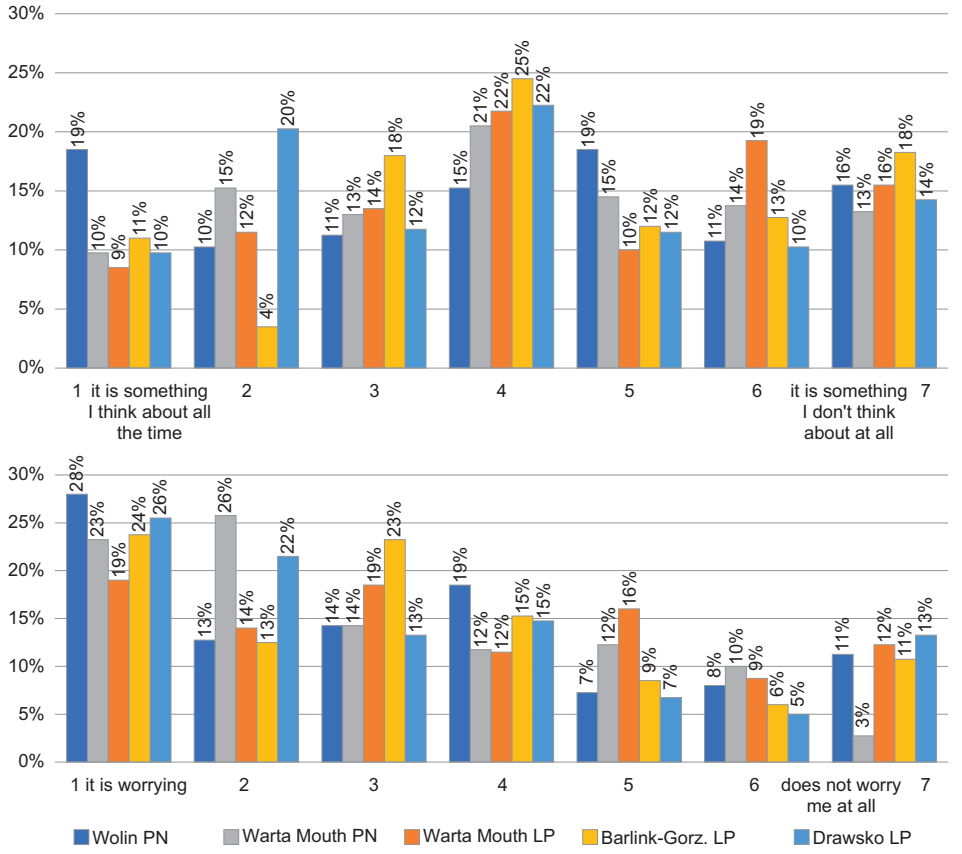

Figure 6.14a–b. Assessment of the respondents' fear of the coronavirus.
Source: own elaboration.

the extreme indications, a prevailing number of the respondents believed that SARS-CoV-2 was something that made them feel helpless.

Summing up the subjective attitudes to the new pathogen demonstrated by the respondents from the PA regions under investigation, despite having substantial knowledge about SARS-CoV-2 and a certain degree of media scepticism, the respondents were concerned and anxious. This can be explained by their limited ability to respond to the pandemic, the restrictions imposed by the authorities, and conflicting media information, especially in the early stages of the pandemic.

The next part of the survey assessed the respondents' attitudes towards tourism within and the visitors to the PAs (visitors are considered to be both overnight visitors and day-trippers, hence the general term "tourist" was used in the survey).

The respondents' opinions on changes in attitudes towards tourism within and visitors to the PAs in the Polish part of the Pomerania Euroregion are presented in Table 6.4. The respondents expressed their opinions on a scale of 1–7, where "1" meant "I do not agree at all" and "7" meant "I agree completely".

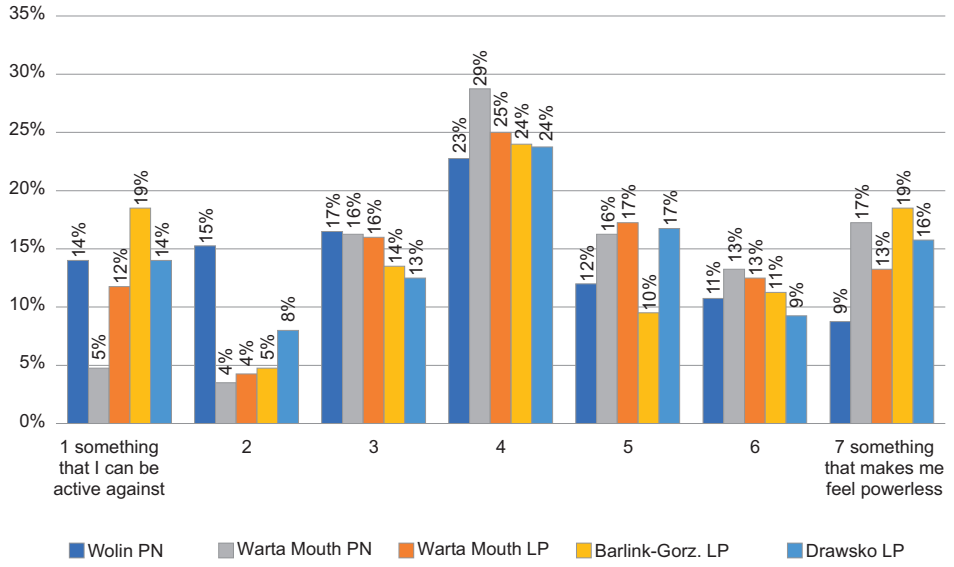

Figure 6.15. Assessment of the ability to respond to the coronavirus situation.
Source: own elaboration.

Most of the respondents in September and October 2020 fully agreed with the statement that it was still too early to go on holiday. 16.5% of the respondents from all the PAs under investigation did not agree at all with this opinion. Therefore, concerns and uncertainty related to the new coronavirus prevailed in the population asked. The response structure was very similar for all the individual PAs investigated.

The next statement explored the respondents' opinions on whether or not tourism was responsible for increasing the local community's exposure to the spread of the virus. Most respondents demonstrated a neutral attitude towards the claim that tourism increased the local community's exposure to the spread of the virus. As regards the extreme indications, more respondents fully agreed with this statement than those who did not agree with it at all. This confirms the community was concerned about their health.

The third of these statements made reference to the restrictions on mobility designed for controlling the movement of people. Similar to the previous case, the respondents adopted quite a neutral stance on tourism restrictions. However, there was no significant variation between the extreme opinions. Despite their declared substantial knowledge of the new coronavirus, the enquired persons found it difficult to express their own opinion on safety related to tourism, which suggests a certain distance of the population to tourism issues. The respondents in the individual PA regions did not differ in their response structure.

The last statement among those regarding the changes in attitudes towards tourism explored the respondents' opinions on whether or not the restrictions imposed were necessary to ensure the safety of the local community. Apart from those from Wolin National Park, most respondents fully agreed that

Table 6.4. Respondents' attitudes towards tourism and visitors in Polish PAs during the pandemic.

		Wolin NP	Wartha Mouth LP	Wartha Mouth NP	Barlinecko-Gorz. LP	Drawski LP
It is still too early to go on holiday[a]	Mean	4.19	4.12	4.57	4.38	4.30
	TTBV	35.5%	32.8%	41.0%	38.3%	37.8%
	LTBV	27.8%	29.5%	19.5%	24.5%	27.8%
Tourism increases the risk of spreading coronavirus to the local population[a]	Mean	4.02	4.18	4.06	4.00	4.10
	TTBV	25.3%	28.5%	25.5%	23.5%	27.3%
	LTBV	24.0%	23.3%	23.5%	23.0%	21.5%
Tourist activities should be restricted as long as possible[a]	Mean	4.07	4.04	4.05	4.03	3.91
	TTBV	23.0%	22.8%	21.5%	21.5%	20.8%
	LTBV	19.8%	20.3%	18.0%	20.5%	22.5%
Coronavirus-related restrictions applicable to tourism are necessary to ensure the safety of the local population[a]	Mean	4.32	4.16	4.49	4.39	4.43
	TTBV	35.3%	31.5%	38.3%	34.8%	35.8%
	LTBV	20.8%	26.0%	18.0%	20.0%	20.0%
I will avoid places with many tourists in the future[a]	Mean	4.00	4.04	4.22	4.07	4.01
	TTBV	29.0%	29.0%	30.0%	30.3%	26.0%
	LTBV	30.8%	29.8%	24.3%	27.0%	28.5%
I am planning a holiday trip myself this year or have already made one[a]	Mean	3.40	3.53	3.25	3.45	3.26
	TTBV	24.5%	25.8%	19.0%	24.3%	20.5%
	LTBV	43.8%	41.5%	44.5%	42.3%	46.5%
In your opinion, how do tourists comply with measures to reduce the incidence of coronavirus?[b]	Mean	4.09	4.18	4.34	4.28	4.40
	TTBV	18.5%	16.5%	16.0%	15.0%	12.3%
	LTBV	26.8%	23.3%	27.3%	27.5%	28.8%

Note: TTBV: Top two box values; LTBV: Lower two box values; a: 1 = disagree completely to 7 = agree completely b: 1 = fully to 7 = not at all.
Source: own elaboration.

coronavirus-related restrictions imposed on tourism were necessary to ensure the safety of the local community. For all the PAs, such an opinion was shared by an average of 24% of the respondents. A slightly smaller proportion, i.e. 21.7%, adopted a neutral stance on this statement. Those who did not agree with the statement at all accounted for 14.8%.

The respondents were also asked whether the restrictions imposed on tourism were perceived as sufficient to ensure the safety of the local population. Most of the respondents in all the PA regions fully agreed that tourists should be required to prove that they were not infected.

Still, there was a neutral stance on the statement that tourists should be given the freedom to move as freely as the local community. On average, 16.5% of them agreed fully with this statement, while 12.6% were of the opposite opinion. The majority of respondents believed that foreign tourists should not yet travel to their respective regions. Those who held a neutral opinion on this statement accounted for a slightly smaller share of the responses. 14.8% of the respondents were in favour of their PAs being fully available to foreign tourists, with the highest percentage of such responses recorded for Warta Mouth Landscape Park (nearly 20%) and the lowest for Warta Mouth National Park (11.5%). The lowest variability of responses between the individual PAs was recorded for those who took a neutral stance.

The survey relating to the impact of the COVID-19 pandemic on PAs was wrapped up with a question about whether tourists were adhering to the measures designed to reduce the spread of the coronavirus. The results are presented in Figure 6.16.

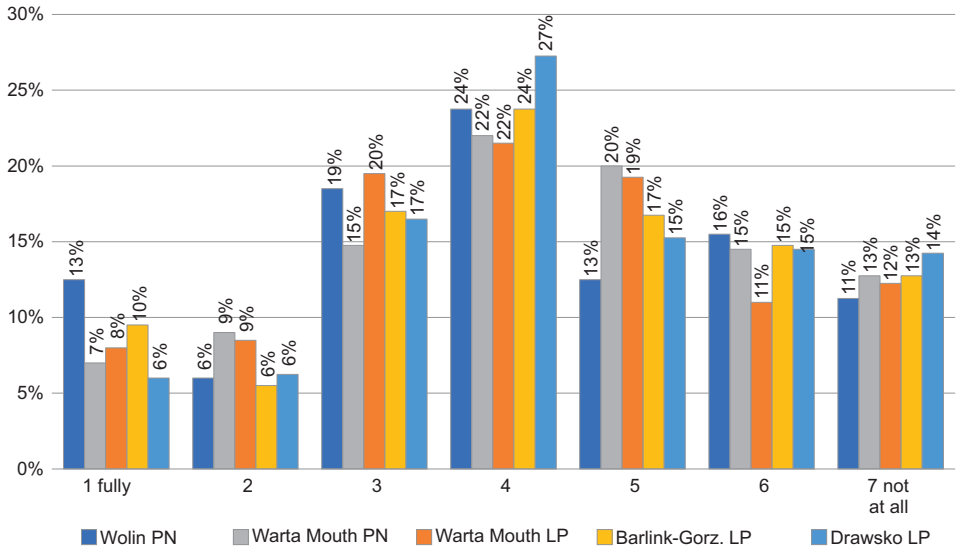

Figure 6.16. The responses to whether tourists were adhering to the measures designed to reduce the spread of the coronavirus.
Source: own elaboration.

As was the case with most of the previous matters explored in the survey, the respondents held neutral views and did not favour any of the options. However, a look at the extreme responses shows that those claiming that tourists were not at all compliant with the measures designed to reduce the spread of the coronavirus clearly prevailed (12.7%), with those claiming the opposite accounting for 8.6%. Characteristically, on the other hand, the respondents from the Wolin National Park region – in contrast to those from the other PAs under investigation – provided more positive than negative responses to the question whether tourists were fully compliant with the anti-COVID-19 measures.

6.4. Discussion

The outbreak of the coronavirus pandemic marked a game-changing episode in the early 2020s and created a heavy economic turmoil for the global tourism industry. This study revealed that volume-growth oriented numbers such as overnight stays are not capable of sufficiently reflecting the economic development throughout the pandemic years. The traditional idea of connecting tourism "success" to growth in tourism numbers has been questioned before, especially in the context of the global financial crisis (Hall, 2009), and further relativised with the rising challenges of overtourism, climate change, and now the COVID-19 pandemic (Gössling & Higham, 2020). In addition, domestic tourism is clearly a driver of the current tourism recovery and has even dampened international tourism drops. As the research showed, PAs are perceived as attractive and safe destinations for travelling close to home as an alternative to other European or even intercontinental tourism destinations. PAs also benefited from high shares of domestic tourism, in comparison to urban destinations that have a comparably higher share of international visitors, and demonstrated ideal potentials for open-air activities and nature-based travel products. Also, the analysed PAs are characterised by a generally low importance of the winter season, compared to mountain destinations that were particularly hit by the coronavirus-related lockdowns (see Mayer et al., 2021). This resulted in rather higher visitor pressures and frequentations during the pandemic. Even though the overall frequentation decreased in accordance with national studies (Dwif-Consulting GmbH, 2022), tourism turnover and income even increased and created stable economic impacts that provided enough resources for stabilised tourism employment.

However, the pandemic created both winners and losers, with businesses that could reach turnover increases of 100% or even more and others – especially restaurants and cultural services providers – that were faced with larger turnover cuts in the pandemic years compared to 2019.

In addition, business outlooks are not consistent, with a remarkable share of businesses pessimistic about the upcoming years. Nevertheless, as other experts confirm (Dwif-Consulting GmbH, 2022), a market shakeout is not expected and the pandemic has rather functioned as a burning glass of already existing local challenges of tourism such as staff shortage, lack of professionalisation, low

revenues, and high economic dependencies on external factors such as governance and tourism policies (Lew et al., 2020; Balas & Strasdas, 2019).

The research in the PAs in Poland dealt with topics related to the population and their perception of the pandemic towards tourism. The results show that most of the respondents took a neutral stance on most of the examined issues. The hesitation to clearly prefer one of the options indicates the reluctance of the respondents to express their opinion on the COVID-19 situation, as well as a certain individual distance to tourism development in the respective region. The reasons for this may be sought in the fact that research about the pandemic is still developing, in the constantly changing circumstances of the pandemic, and in the feeling of uncertainty in the community during this emergency period.

PA management could use the results of the presented research and take advantage of its potential to align tourism towards sustainability in the coming years, with COVID-19 serving as a reset for changing overall perspectives on tourism development. The phrase "building back better" has already become the main message of tourism (UWTO, 2020), meaning that sustainability aspects should be integrated into all forms of support and be the core of new scenarios and business models, aiming at a more resilient tourism industry overall. However, these statements are still to be perceived as pledges that lack any specific operational underpinning or actual implementation in tourism policies and protected area governance.

6.5. Interim summary

This part of our research allowed for an in-depth analysis of the effects of COVID-19 on tourism in the PAs of the Pomerania Euroregion. The visitor surveys showed that many visitors chose one of the PAs as an alternative destination to their originally planned journey, which created new economic potentials for the tourism businesses, as the visitors who were affected by the coronavirus spent more money in the region and stayed there longer. This resulted in even higher tourism incomes for the analysed Schorfheide-Chorin Biosphere Reserve, compared to 2017/18 when a similar economic impact study was conducted.

Even though the overall economic situation of tourism in Schorfheide-Chorin Biosphere Reserve did not decrease due to the pandemic, our business-survey showed that this did not account for all tourism businesses in the region, as COVID-19 created both winners and losers in terms of economic performance in the years of the pandemic. Hence, business outlooks are rather pessimistic, as the pandemic is still ongoing.

Surveys conducted in the Polish PAs in September and October 2020 showed that the respondents, despite declaring a high level of knowledge about coronavirus, in many cases took a neutral stance. It can be assumed that a future regulated and evidence-based approach to pandemics will also stabilise tourism in PAs again and that the current potentials for developing sustainable tourism approaches can be used to further pursue conservation interests and to increase the quality of life of the host population by way of tourism activities.

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7. Conclusion

In this final chapter we summarise the main results of our project (Section 7.1) and draw practical implications for protected area (PA) administrations, managers and staff, as well as all PA stakeholders such as political decision makers on all spatial scales, and tourism officials and businesses (Section 7.2). Subsequently, we provide some good practice examples of cross-border collaboration regarding PA tourism (Section 7.3) and close this volume by outlining avenues for future research (Section 7.4).

7.1. Summary of the main project results

As outlined in Section 1.3, the main scientific objective of the REGE project was to work out common methods for collecting, analysing, and evaluating data on the social and economic effects of large-scale PAs. The term "common" refers to the Euroregion Pomerania and its PAs (see Section 2 for portraits) in North-Western Poland and North-Eastern Germany. In addition to a potential lack of cooperation and coordination regarding socio-economic research efforts between the PAs in each country due to time- and resource-related restrictions (and the inherent tendency of the scientific community to strive for originality and innovation instead of comparability and monitoring; see also Spenceley et al., 2021, p. 66), the situation is even more complex in the Pomerania region due to its cross-border nature, the language barrier, and the differing institutional settings regarding the PAs.

In this project, we focused on three areas of research in the realm of social and economic effects of PAs: the analysis of PA visitor satisfaction (Chapter 3), the analysis of park–people relationships (Chapter 4), and the analysis of the regional economic impact of park visitation (Chapter 5).

The visitor satisfaction studies in eight PAs of the Pomerania region (six Polish and two German PAs) revealed a very high level of satisfied park visitors (for most of the parks): For all the parks analysed, the average visitor satisfaction measured on a five-point Likert-type scale (five indicating a very high level of satisfaction) was higher than four, with five of the parks scoring even higher than 4.5. The interviewed visitors also expressed a similarly high level of visitor loyalty to the parks, as operationalised by their stated probability of recommending them (five parks scoring higher than 4.7, all parks scoring higher than 3.85) and their stated intention to revisit the parks (four parks scoring higher than 4.5, all parks scoring higher than 4.0). Visitors to the German PAs were more satisfied with their visits compared to their counterparts in the Polish PAs and were also more inclined to recommend a park visit to their family and friends than visitors

to the Polish parks were. However, the intention to revisit the parks was higher for the Polish parks, maybe due to a higher level of regular visitors from the region compared to the nation-wide source area of the German national parks of Jasmund and Western Pomerania Lagoon Area. These positive results should encourage the PAs and destination managers to continue their good work or to analyse the reasons for less positive results in an in-depth manner. The PAs should continue our visitor satisfaction measurements by integrating them in a regular socio-economic visitor monitoring system, where the relevant questions could be combined with other research topics such as crowding experiences or spending behaviour.

Park–people relationships were analysed for 14 PAs in the Euroregion Pomerania, ten Polish and four German. These parks enjoyed a very high amount of support among the local population, as measured with the very high share of positive votes in favour of the PAs in the "Sunday question", which let the local respondents decide in a hypothetical way about the future existence of the PAs. The overwhelming majority of local people would opt for the future existence of the PAs: in seven out of 14 PA regions, the share of positive answers was >95%; in only three regions was this share below 90%. Since the designation of the PAs (respectively, the respondents moving into the PA region) the overall attitude of the local people towards them has improved considerably, with the highest shares of indifferent interviewees in the Polish landscape parks. The improved attitude was also obvious when comparing our results with those of earlier park–people relationship studies. Concerning the concrete actions of the respondents regarding the PAs, it was clear that there were significantly more activities in favour of the PAs than against them, with more active opponents and more passivity in the Polish PA regions. In terms of the methodologies adopted, our survey instrument worked well also in the international context. However, there is a need for further development, e.g. by incorporating a more sophisticated measurement of the overall attitude towards PAs and for including any missing constructs of the conceptual framework.

The assessment of the regional economic impact of tourism in the PAs of the Pomerania region turned out to be one of the most difficult tasks in this project because of the differing availability of secondary data in Poland and Germany. This made the direct extension of the well-established methodological approaches in the German PAs to the PAs in the Polish part of the region practically impossible. To be specific, there are not any regional multipliers available in Poland, whereas in Germany the tourism consultancy dwif e.V. provides the so-called value-added quotas which are used for nearly all studies concerning the regional economic impact of tourism in the PAs. The approach used by Zbaraszewski and Pieńkowski (2022) for Drawa National Park to estimate such multipliers themselves through extensive empirical fieldwork (similar to Mayer & Woltering, 2008 in Germany's Bavarian Forest National Park) was deemed unrealistic due to the ongoing COVID-19 pandemic and the alleged reluctance of tourism operators in the Polish PA regions to reveal sensible business data to interviewers. Therefore, after long discussions, the project team decided to apply the input-output-approach to

estimating the regional economic impacts of park tourism for their case study of Poland's Wolin National Park, following the example of Arnegger (2014). To our best knowledge, this estimation for Wolin National Park was the first analysis of the regional economic impact of both the national park and of PA visitation in Poland. In this way, our project enriches the otherwise already well-established body of research about visitation to Polish national parks and could serve as an example for future applications in other parks of the country. In Wolin National Park, we recorded 691,741 visitor days/year, strongly dominated (91.4%) by overnight visitors. Overnight visitors spent 2.5 times more per person and day compared to day-trippers (PLN 270 vs. PLN 110 or EUR 59.2 vs. EUR 23.5). This led to a gross turnover of PLN 181.68 million (EUR 38.85 million), which generated a regional income derived by the input-output estimations of PLN 364.65 million per year (EUR 77.98 million) and which provided an income equivalent of about 7,500 persons.

In the German part of the Euroregion, we estimated the economic impact of visitation to Schorfheide-Chorin Biosphere Reserve. This provided an opportunity to compare these results with a relatively recent assessment from 2017/18, which was done using the same methodological approach. This also allowed for estimating the effects of the COVID-19 pandemic on the visitation structure in the Biosphere Reserve and the economic impact of its visitation (see Chapter 6). Our estimations revealed 2.54 million visitor days for Schorfheide-Chorin Biosphere Reserve. Given the large size of the Biosphere Reserve (1291 km²) and the spatial proximity to the German capital of Berlin with more than 3.5 million inhabitants to which the Reserve is directly connected via motorway (A11) and railways, this equaled a visitor density of 19.7 visitor days per ha, which is relatively low, at least compared to almost all German national parks with the exception of Müritz (11.6) and Lower Oder Valley (19.8) (Mayer et al., 2010; Job et al, 2016, p. 11). Regarding the visitor types, 33.1% of the visitor days were generated by overnight visitors, 64.0% by day-trippers and 2.0% by local residents living inside the Reserve. Day-trippers spent, on average, EUR 27.80 per person and day in the Biosphere Reserve, while overnight visitors spent EUR 65.50 per person and day. The average daily expenditures of specific biosphere visitors were lower compared to other visitors. The combination of visitor days and visitor type specific expenditure patterns led to a total gross turnover of EUR 101.14 million generated by visitors to the Biosphere Reserve and a regional income of EUR 49.99 million per year, which corresponded to an income equivalent of 2,311 persons. These numbers underlined the considerable regional economic relevance of tourism and recreation in Schorfheide-Chorin Biosphere Reserve, especially as approx. one fifth of these economic impacts could be attributed to visitors with a high bioreserve affinity, i.e. these would have not occurred if the PA had not existed.

If we compare the regional economic impact estimations of Wolin National Park and Schorfheide-Chorin Biosphere Reserve, the differences between the methodological approaches become obvious. While the regional income of park tourism in the Biosphere Reserve was approximately half of the gross turnover

values, this relation was basically quite the opposite for Wolin National Park, where the gross turnover translated into a bit more than double the value of the economic impact[26]. However, this implies that the regional income results of both approaches were not really comparable, which necessitates additional research in the future (see Section 7.4).

Although not originally intended, as the COVID-19 pandemic had been far from anyone's imagination when the project was applied for and set up, the REGE project provides first-hand insights into the effects of the COVID-19 pandemic on PA visitation and its economic impact in the Pomerania region (Chapter 6). The visitor surveys showed that many visitors chose one of the PAs as an alternative destination to their originally planned journey, which created new economic potentials for the tourism businesses, as those visitors who were influenced by the coronavirus spent more money in the region and also stayed there longer. This resulted in even higher tourism incomes for the analysed Schorfheide-Chorin Biosphere Reserve, compared to 2017/18, when a similar economic impact study was conducted. The COVID-19 pandemic also led to a relatively higher visitation pressure on the rural PA regions as again exemplified for Schorfheide-Chorin – the only slightly lower visitation number compared to 2017/18 was realised on a much-reduced number of potential days due to the several lockdowns imposed in the meantime. This implied much higher numbers of visits per day than before the pandemic. Even though the overall economic situation of tourism in Schorfheide-Chorin Biosphere Reserve did not decrease due to the pandemic, the conducted business-survey showed that this did not account for all tourism businesses in the region, as COVID-19 created both winners and losers in terms of economic performance in the years of the pandemic.

The research covering the impact of COVID-19 on the PAs in the Polish part of the Euroregion showed that the respondents had considerable knowledge about the coronavirus. In five of the studied PA regions, most of the respondents did not feel their professional lives were affected by the pandemic, and pointed to a moderate proximity of the coronavirus. Interestingly, the majority of the respondents regarded the topic of the new coronavirus as having been blown up by the media. The respondents' opinions were consistent with the situation observed at the beginning of the pandemic when information about the pandemic was reported daily and massively. Although most responses suggested that the virus was perceived as a moderate cause of fear, they claimed that media reports could cause some people to feel tension and the sense of a lack of security, calm, and balance. This was in line with the indication of respondents during the survey conducted in September and October 2020 that it was still too early to go on holiday again. They also pointed out that foreign tourists should not be allowed

[26] This is not the case for the German Biosphere Area Black Forest, where Majewski (2022) compared both an input-output- and the regional multiplier approach common for the German protected areas. Her results show that both approaches lead to the same magnitude of direct and indirect effects. Direct and indirect regional income make up circa 51% of the regional gross turnover of visitation in the Biosphere Area, while direct, indirect and induced income as estimated with the input-output-approach accounts for 58% of the regional gross turnover.

yet to visit the respondents' regions. This could be explained by the difficulty in determining their own opinions on safety issues associated with opening up to tourism. Moreover, SARS-CoV-2 was not yet a fully researched phenomenon in 2020 and the circumstances of the pandemic were constantly changing.

7.2. Practical implications of the project and its results

There are several results of our project which provide concrete recommendations for PA administrations, managers and staff, as well as all PA stakeholders.

One of the main lessons learned was the finding that there was a huge need to implement a permanent socio-economic monitoring system analysing the links between PAs and their social and economic environment in respect of their activities. Ten years ago, Woltering (2012) suggested such a socio-economic monitoring system for the regional economic impact of PA tourism in the German context. Table 7.1 sums up our recommendations for a socio-economic monitoring system for PAs in the Pomerania Euroregion and beyond. This monitoring system must include – as core elements – regular analyses of visitor satisfaction, motivation, activities and behaviour, as well as park–people relationships. The questionnaires developed, adapted and tested in our project offer an empirically validated basis for such a system. The sets of questions included in our studies could be used as a modular system to achieve a high degree of flexibility. Such analyses will of course go beyond the necessary uniform questions or information, thus ensuring the comparability of results over time and for different PAs, and could also include local, park-specific elements. In addition, the regional economic impact of park visitation should be estimated regularly. However, the standardised analysis and estimation approach established in the German PAs will hardly be possible in Poland. For this reason, in the Polish PAs the economic impact estimation of park tourism should be further examined and developed using the input-output approach. The fact that information about visitor expenditure is also required in any case for the estimation of the regional economic impact in turn underlines the need to collect detailed information about the visitors, which should be achieved by establishing such a systematic monitoring system. Furthermore, the number of visitors/visitor days is the most relevant basic data for all economic impact analyses. The estimation of the visitor frequentation continues to be a crucial analysis step. As the local and regional settings differ considerably between the PAs, there is not one common, "one size fits all" recommendation. Finally, it will most likely be a mix of available secondary data – the sources are official tourism statistics, automatic counters, reports on tickets sold by tourism infrastructure, and estimations by local stakeholders – and own empirical fieldwork (e.g. long and short interviews to assess the visitor structure etc.) which needs to be customised by experts. Job et al. (2021) provide recommendations for visitor counting in PAs based on the German example of free access to the parks, which is also the case with the international guidelines for the assessment of the regional economic impact of PA tourism (Spenceley et al., 2021).

The systematic installation of automatic visitor counters in many Polish national parks, such as Wolin National Park, already constitutes an important step towards such a visitor monitoring system. In this vein, German national parks could possibly learn from their neighbours' example. However, the installation of automatic visitor counting machines must also go hand in hand with adequate resources to manage the measurements and calibrate the devices to generate valid and reliable results. Furthermore, this systematic visitor counting should be extended to less strict PA categories, such as the Polish landscape parks or the German nature parks. In combination with official tourism statistics and onsite surveys, this continuous automatic counting could provide the basis for reliable estimations of visitor frequentation, as demonstrated by our study in Schorfheide-Chorin Biosphere Reserve and as explained in Job et al. (2021).

The results of our COVID-19 study revealed that the PAs were important destinations for outdoor recreation during the pandemic, which provided valuable experiences and considerable benefits for the physical and mental health of the population. To underline these relevant benefits that PAs provide to the society, the assessment of the regional economic impact of PA visitation is crucial, as are visitor satisfaction studies, fitting to the viewpoint of Hornback and Eagles (1999, p. 6):

> "All management is dependent upon information. The better the quality of information, the better the opportunity for good management."

Furthermore, our project activities showed the need for stronger cooperation between the PA administrations – this need exists both on the respective national levels and in the cross-border context (Chapter 7.3 highlights best practices and results of such cross-border cooperation). It is also important that cooperation between PAs should not only take place within the framework of projects but that it should be practiced as a permanent high-priority task. Due to their limited duration, projects can only serve to initiate cooperation and possibly even partnerships. This also holds true for the cooperation between PA administrations and research institutions from both parts of the Euroregion.

Finally, our findings about park–people relationships (PPR) document the relevance of transparency of PAs' activities. German PA administrations have already positive experiences in communication with their social environment, but they nevertheless can still improve their strategies and tools for outreach and communication. In Poland, there is a considerable demand for establishing communication channels between the PA managements and the local communities, as well as contact and cooperation with business stakeholders (e.g. tourism operators and businesses).

The park–people relationships in the Pomerania region are mostly very positive, however, this is not to be taken for granted, as any new developments can lead to conflicts and worsen the rapport. The positive overall attitude also does not imply that there are not any points of contention between the local population and the PA administrations. Therefore, we recommend that the following should be done:

- Communicate openly and in a transparent way, with the use of different outlets and streams of communication in parallel, to maximise outreach. PA administrations should explain what and why they are doing, e.g. imposing restrictions on some traditional land uses etc. PA administrations should strive to create a community spirit where local people regard the PA as "theirs" (e.g. connecting to already existing local people's attachment to the place) so that they and the administration are working hand in hand for their joint aims.
- Locals should have means of participation in PA management, e.g. by organising regular public hearings, round tables, or by local municipalities partaking in an advisory board to the park. They should be given the chances to actively participate in the management of PAs and/or the practical work (e.g. counting birds). Usually, it is beneficial for PPR to win over local decision makers and opinion leaders for active involvement.

Table 7.1. Recommendations for a socio-economic monitoring system for protected areas

Establish a permanent **socio-economic monitoring system** in which several observation and counting tools are embedded, beside regular surveys and studies. This monitoring system should be modular to ensure a high level of flexibility
The **visitor counting** system shall be based on automatic counters, which need to be calibrated regularly using manual counting. Such an automatic system must be reviewed every five years by full-blown complete counting on all PA entrances (see Rüede & Krüger, 2021, for the example of Black Forest National Park, Germany). In between, the yearly visitor numbers can be extrapolated based on the continuous counting by the automatic devices
Regular visitor surveys should be conducted at least every three years. These surveys include a standard catalogue of questions about trip characteristics, PA knowledge, the role of the PA for trip decision, visitor satisfaction, crowding perceptions, and expenditure
Using the expenditure data and the visitation numbers, the **regional economic impact of PA visitation** can be estimated, implying either regional multipliers or regionalised input-output-analysis. Such analyses should happen every five to ten years
Every ten years, a **park–people relationship study** based on a representative sample of the local population in and/or around the PA using the same methodology and questionnaire should be conducted
Most importantly: be consistent and always ensure comparability on two levels: a) inter-temporal comparability with earlier studies in the same PA to be able to draw comparisons and monitor progress; b) spatial comparability with other PAs to attain a benchmark of one's own performance.
Establish a **partnership structure** between PAs and surrounding businesses, thus building a trusty collaboration to create a win-win-situation (businesses can use the brand value of the PA, while the PA gains local support). Such a partnership can be created step by step only, takes time, and is a very sensitive job – that means it needs a permanent responsible, communicative, and trustworthy contact person in the PA administration

Source: own elaboration.

7.3. Examples of good practices of cross-border cooperation

The visitor satisfaction analyses performed have helped to bridge the existing research gap, for Polish landscape parks in particular. So far, no studies on this issue have been published or made publicly available to PA stakeholders. The results of the visitor satisfaction analyses document a high level of satisfaction experienced by park visitors. Probably one of the factors contributing to such a high level of satisfaction has been the long-term active measures undertaken by the Polish-German borderland PA administrations, with special credit going to the model cooperation between Germany's Lower Oder Valley National Park and Poland's West Pomeranian Voivodship Landscape Parks Complex (ZPKWZ). Thanks to this collaboration, extensive tourism infrastructure and other projects have been implemented both on the German and Polish (Zachodniopomorskie Voivodship landscape parks) sides of the border in recent years. The projects co-financed by the European Union, among other things through the Interreg programme, included in particular (ZPKWZ, 2022):

- the INT55 project titled "Sustainable nautical tourism in the unique Lower Oder Valley" (Ger.: *„Nachhaltiger Wassertourismus im einzigartigen Unteren Odertal"*; Pol.: *„Zrównoważona turystyka wodna w unikalnej Dolinie Dolnej Odry"*) carried out between 2019 and 2022, which included the construction of a viewing platform in Lower Oder Valley Landscape Park,
- the INT135 project titled "Nature without borders in the unique Lower Oder Valley" (Ger.: *„Natur ohne Grenzen im einzigartigen Unteren Odertal"*; Pol.: *„Przyroda bez granic w unikalnej Dolinie Dolnej Odry"*), where nature reserves were marked and made available to tourists in a way that ensured that no human pressure was allowed (Photo 1),
- the project titled "Building, improving and promoting tourism infrastructure in six West Pomeranian landscape parks to disseminate knowledge and promote ecological behaviour – stage 1", where 1,288 small-scale infrastructure elements were built to guide tourist traffic in the following landscape parks: Drawsko, Ińsko, "Beech Woods" Szczecin, Cedynia, Lower Oder Valley, and Warta Mouth (Photo 2, 3),
- the project titled "Adapting the Siekierki-Neurüdnitz European Bridge to tourism", where an unused railway bridge in Cedynia Landscape Park was adapted to pedestrian and bicycle use (Photo 4),

Among these cross-border projects, apart from the large tourism infrastructure facilities, various other tourism support products are also being developed by the PAs of the Pomerania Euroregion, such as:

- natural resting places (sheds with bench tables, places for bonfires),
- multilingual educational and information boards,
- training courses for guides,
- tourist maps and information brochures,
- information and promotional articles in the Polish and German local press,
- conferences and workshops for local communities, websites.

Photo 1. Kostrzyn floodplains
Source: ZPKWZ stock photo.

Photo 2. Lower Oder Valley Landscape Park, Widuchowa, the viewing platform in winter
Source: ZPKWZ stock photo.

Photo 3. Warta Mouth Landscape Park, Namyślin
Source: ZPKWZ stock photo.

Thanks to the development of bicycle transport, the near future should witness a growth in cross-border tourism, including in the PAs of the Polish-German borderland. The recently intensified expansion of cycling routes in the Polish-German borderland, especially the following ones in the Polish part of the Euroregion (UMWZ, 2022):

- the Velo Baltica cycling route (EuroVelo 10 and 13),
- the cycling route around Szczecin Lagoon,
- the Western Lake Districts cycling route, and
- the Blue Velo cycling route,

and in the German part:

- the Oder-Neisse cycling route (Velomapa, 2022)

will likely lead to an increased frequentation by cyclists of the Pomerania

Photo 4. Cedynia Landscape Park, Siekierki-Neurüdnitz bridge
Source: ZPKWZ stock photo.

Euroregion, including its PAs. Nevertheless, most of the practical implications from the TAPA-project summed up in Mayer et al. (2019) to increase the cross-border visitation of PAs along the Polish-German border are still valid.

7.4. Avenues for future research

Our Polish-German literature overview indicates that both countries can boast a considerable body of research into the issues investigated as part of the present project. In general, PA visitor satisfaction studies seem to have been more extensive in Poland than Germany, although their results are mostly available in the Polish language only. However, in Germany more research has been done regarding the regional economic impact of PA tourism. Special recognition should be given to the method popularised by Professor Hubert Job, which has been used in numerous studies in Germany, Morocco and Mexico for estimating the regional economic impact of PA tourism (Job et al., 2016, 2023; Arnegger, 2014; Mayer et al., 2018). In Poland, by contrast, researchers have rather aimed to determine the broader effects of PAs on the socio-economic development of their surrounding regions. In this approach, an analysis of the financial statements of the given PA, and not the demand generated by visitors, is of pivotal significance (Mika et al., 2015). It would therefore make sense to continue developing an approach for assessing the regional economic impact of PAs that would ensure the comparability of results for different countries. During the studies carried out within this project, the possibility of estimating the regional economic impact of PA tourism based on the input-output method could be successfully tested for the Polish part of the Pomerania Euroregion[27]. This was an alternative to the original objective, which was to develop and test a simplified method for estimating the regional economic impact of PA tourism. The application and testing of the input-output method for estimating the PA economic impact of a Polish national park should be regarded as successful, as due to the numerous limitations caused by the COVID-19 pandemic, including the lockdowns hindering tourism over several months, it was impossible to carry out any other studies regarding the issues concerned.

Considering the state of research in both countries and the empirical studies realised during this project, the following future research topics appear promising:

- In addition to the study conducted in Schorfheide-Chorin Biosphere Reserve, further (tourism) enterprise surveys in PA regions would be worthwhile to assess the attitudes of tourism operators towards PAs, their administrations, and the restrictions. Personal, qualitative in-depth interviews could provide the possibility of gaining the required financial data to estimate regional multipliers similar to the standard approach in the German PA regions.

[27] The same holds true for the German Biosphere Reserve Black Forest not located in the Pomerania region where Majewski (2022) also successfully used the input-output-approach.

- The input-output-analysis should be extended to Drawa National Park, which is the only Polish PA where the "German" approach for estimation of the regional economic impact of park tourism has been applied so far. This would allow for direct comparisons between both estimation approaches.
- As a next step, the regional economic impact of tourism could be estimated for the remaining 21 Polish national parks using the input-output-approach.
- Similarly, also the regional economic impacts of visitation to German PAs could be estimated with the input-output-approach (following the example of Majewski, 2022). This would allow for large-scale comparisons of both methodological approaches.
- The visitor satisfaction studies in PAs of both parts of the Pomerania region could be extended by analysing the crowding perception of visitors, the link to overall satisfaction, and their potential spatial and temporal displacement behaviour (similar to Schamel & Job, 2013).
- Based on the visitor surveys, the recreational values of PAs (operationalised as consumer surplus, see Mayer & Woltering, 2018) could be estimated (eventually using social media data, see Sinclair et al., 2020). These values underline the non-market benefits PA visitation generates for the society.

All empirical studies, approaches, and surveys should be applied not only in strict PAs but also in the Polish landscape parks and the German nature parks that focuse more on the preservation of cultural landscapes and the provision of short-distance nature-based recreation opportunities.

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