


Article

Perceived Social Impacts of Protected Areas, Their Influence on Local Public Support and Their Distribution across Social Groups: Evidence from the Eifel National Park, Germany, during the COVID-19 Pandemic

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Abstract: Protected Areas are a cornerstone of biodiversity conservation policies, providing significant benefits both for nature and people. This study investigates the diversity, extent, and social and spatial distribution of the social outcomes of the Eifel National Park in Germany and how these are linked with the level of public support for the park, as well as the effect of COVID-19 on these social impacts. Structured questionnaires were distributed to local residents living inside or near the national park. According to our study the national park is rated positively by the majority of respondents, and provides a range of benefits, but also costs, to local communities. There are also variations in how these impacts are distributed across different sub-communities, between residents and visitors, and across geographical locations in and around the park, and there is a significant relationship between local people's perceptions of some social impacts and their level of support for the national park's existence. Evidence from the COVID-19 pandemic suggests that, whilst living in close proximity to the park enhances the quality of life of local residents, any future increases in tourism may need careful planning and management if they are not to erode local people's quality of life.

Keywords: public acceptance; benefits; spatial distribution; social equity; biodiversity policy



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1. Introduction

Protected areas (PAs) are considered to be the main policy tool for biodiversity conservation in Europe, with over 120,000 areas designated in the continent [1]. As well as protecting biodiversity, PAs have a widely recognised role in promoting human wellbeing, such as by improving people's physical and mental health, protecting local social and cultural values, and enhancing ecosystem services [2–4]. They are also significant visitor destinations, often attracting large numbers of tourists, offering a range of leisure and recreational opportunities and associated benefits to visitors and local people alike, and bringing in significant income for local communities living in close proximity to these areas [5,6].

Due to their role as multi-functional landscapes, PAs may have a very wide range of positive and negative social impacts and may impact on different stakeholders according to their geographical location, as well as depending on the influence of diverse social factors [7–10]. The magnitude and direction of the impact (positive or negative) will therefore depend

significantly on the stakeholder group and type of user. For example, the designation of a PA often implies significant benefits for visitors who are able to enjoy specific activities, such as scuba diving or mountain trekking. However, new regulations accompanying the designation of a PA often restrict local communities' practices and livelihoods due to changes in governance, ownership rights, and access to natural resources [11,12]. Public perception of such impacts, positive and negative, are found to be a key factor affecting public support for nature protected areas [8–10,13], and the assessment and equitable management of such impacts will be essential for the legitimacy of PAs [14–16].

These differences in the type and distribution of impacts have been increasingly researched in the literature, with several scholars emphasising the need to focus on social equity issues [8,17,18]. This is an important area of research considering that the unequal distribution of costs and benefits between stakeholders may cause new conflicts between different social groups, and erode public support resulting in inefficient, ineffective or iniquitous governance of protected areas [19,20]. Such conflicts may arise between local residents and visitors, and within different sub-communities and stakeholder groups within the local population.

Furthermore, the significant impacts of COVID-19-related pandemic control measures on work patterns, access to indoor spaces, and public mobility during the partial economic shutdown of spring 2020 led to rising numbers of visitors to PAs across Europe and worldwide. Such effects were also seen at the Eifel National Park in Germany, with many visitors coming from nearby urban areas (Aachen, Cologne/Köln, Düsseldorf, the Ruhr District), as well as from neighbouring Belgium and the Netherlands [21–23]. The impact of the COVID-19 pandemic on the management and governance of PAs, and in particular on the impact-related issues mentioned above, is still under-researched and has few recent historical parallels with which to be compared. However, the pandemic is expected to have had significant socio-economic implications for PAs [21,22,24]. This is because during the different stages of the pandemic visitor numbers fluctuated greatly [22] depending on the social distancing restrictions that were in place [25,26]. This, in turn, is expected to have interrupted the existing socio-economic system, with consequences for, and further socio-economic impacts on, local people and businesses.

In this paper, we present the results of a survey distributed in the Eifel National Park, situated in the southwest of the German state of Nordrhein-Westfalen (North Rhine-Westphalia, NRW), aiming to explore the above issues. Structured questionnaires were distributed during Autumn 2020, aiming to capture the perceptions of local people regarding the social impacts of the national park in recent years, how these impacts affect public support for the park, to explore how the impacts are distributed across the local community as well as between locals and visitors and, finally, to capture how COVID-19 enhanced or diminished the park's impacts on local people and the role of the national park for them during the pandemic.

2. Materials and Methods

2.1. The Case Study Site

Germany has one of the highest numbers of PAs in Europe [1] and the Eifel National Park is one of 16 designated national parks in Germany. It was established in 2004 on predominantly publicly owned land, including 33 km² of former military training grounds, with less than 0.1% of its area being privately owned [27]. The latter fact contributed to low public resistance towards and high acceptance of the foundation of the national park, as found in earlier studies of public acceptance carried out in 2006 and 2013 [27,28]. The main objective of the Eifel National Park is to protect the natural environment, including the park's habitats (expansive beech and mixed forests, as well as open landscapes) and their fauna, including rare animal species such as black storks, Eurasian eagle owls, and wild cats. The park also has significant rewilding objectives for three-quarters of the park area over the next thirty years [29].

However, the Eifel National Park also offers significant recreational activities, including cycling and walking trails, and the tourist activities taking place in the national park are a significant source of income for local communities, especially for those involved in the hospitality sector. For example, 12 years after its founding, the regional economic effects of the national park include gross sales of more than EUR 30 million (compared to EUR 8.7 million in 2007) and full-time employment benefits equivalent to almost 700 people [30]. Situated near the border with Belgium and the Netherlands, the Eifel National Park is considered both a domestic and a European tourist destination, attracting on average 900,000 visitors every year [30].

On 22 March 2020, new regulations came into force in Germany limiting people's movement and everyday activities in response to the increasing number of COVID-19 infection cases. However, PAs such as the Eifel National Park remained generally open and accessible. Notably, the number of visitors to the national park increased significantly, as was seen at other European PAs in countries where outdoor activity was still permitted during the COVID-19 restrictions [22].

2.2. Questionnaire Description

A structured questionnaire was designed to explore a range of issues relating to people's views on the Eifel National Park based on similar questionnaires prepared by the research team for several other PAs in Europe. The final questions included in the questionnaire were significantly influenced by this previous research on European PAs and a review of existing studies assessing social impacts of protected areas in Europe [9].

Questions covered: (a) support for, knowledge of, and attitudes towards the national park; (b) respondent's perception of the impacts of the park on diverse aspects of their lives and wellbeing; (c) the distribution of the costs and benefits of the park among different social groups; (d) the impact of the COVID-19 pandemic on respondents' lives and whether living in the park helped them cope with the pandemic; (e) opinions on potential measures to control overcrowding in the park and; (f) basic demographic and residency data. An English translation of the original questionnaire in German is provided in Supplementary Information Appendix SA. Text boxes were provided to collect some unstructured data as an additional source of qualitative data to assist with the interpretation of the more structured responses.

2.3. Sample Description

The research team distributed ~6700 postcards to all households in 12 villages inside or adjacent to the Eifel National Park, inviting them to participate in the online survey (Figure 1). The sampling frame included villages and small towns that: (i) are surrounded by the national park (Erkensruhr, Wolfgarten), (ii) border the national park (Dreiborn, Einruhr, Morsbach), or (iii) host one of the official access points, i.e., a designated national park gate (Gemünd, Heimbach, Hergarten, Höfen, Nideggen, Rurberg). The town of Monschau was chosen as a popular cross-regional and international tourist hotspot that is potentially affected by proximity to the national park. The survey was also advertised online via informal networks with the help of the Eifel National Park Authority. In total, 333 responses were received, giving a 5% return by household. All numerical data were analysed with SPSS 27.0 [31].

The demographics of the sample are presented in Table 1. Of particular note in the sample of respondents is their distribution among higher age bands, as is typical of many such national parks, the low percentage of respondents who worked within the park (less than 10%), and the fact that, on average, respondents had a very long association with the park (on average, participants had lived or owned a second home in the area for approximately 38 years).

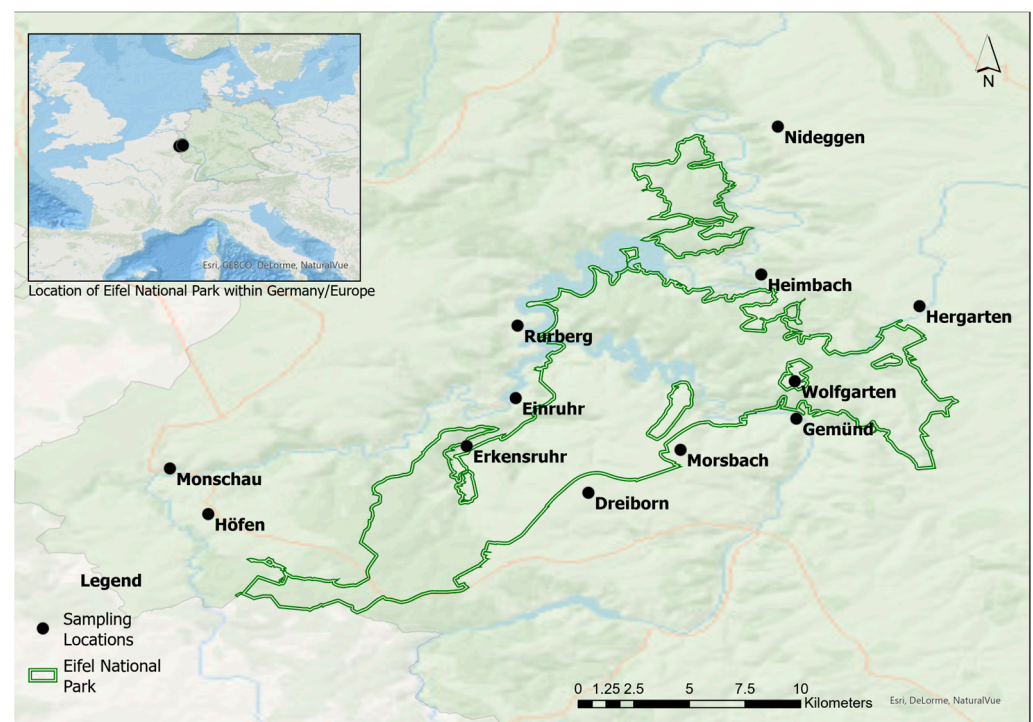


Figure 1. Eifel National Park, Germany, indicating the park boundary and the 12 settlements surveyed.

Table 1. Sample characteristics.

Age Category	%	Household Income (Annual)	%
18–25	3.0	No income	2.1
26–35	6.9	up to 25,000 euro	8.7
36–45	8.7	25001–up to 50,000	24.3
46–55	16.8	51,000–70,000	13.5
56–65	24.3	over 70,000	13.5
66–70	10.8	Prefer not to say/no response	37.8
Over 70	11.1	Education	%
Prefer not to say/no response	17.7	Volks-/Hauptschule *	6.6
Gender	%	Mittlere Reife **	21.6
Male	49.2	Abitur (incl. university entry qualification)	12.3
Female	33.6	Fachhochschulabschluss (polytechnic)	21.6
Diverse	0.3	Hochschulabschluss (university)	19.2
Relationship with the Eifel area	%	Promotion (PhD)	1.2
Permanent resident	90.7	Respondents works in the national park	9.9
Owner of holiday home	4.8	Average years living in the area/owning 2nd home	37.6 (mean)

* Volksschule refers to the minimum primary (Grundschule) and lower secondary (Hauptschule) education that was compulsory in Germany prior to 1964; ** Mittlere Reife is an intermediate secondary school-leaving certificate.

3. Results

3.1. Public Perceptions of the Social Impacts of Eifel National Park before the COVID-19 Pandemic

To investigate the social impacts (positive and negative) of the national park on local people, respondents were asked if they were personally affected by changes in the

local area resulting from the existence of the park in the last 5 years, before the COVID pandemic began.

Mean respondent scores (Figure 2) indicate that living inside or near the Eifel National Park has had a broadly very positive impact on local communities in the past 5 years. The most positive impacts reported were related to the reputation of the region, a feeling of connectedness to nature, business opportunities from tourism, employment opportunities, environmental protection, recreation and on the quality of life (Figure 2 indicates the mean respondent scores across the sample on a scale of 1 (negative) to 3 (neutral) to 5 (positive)). Respondents therefore reported a broad mix of environmental, economic, and social and affective benefits from living in or near the park, as also noted in the qualitative data, with comments regarding the convenience of living near the park and the leisure opportunities, the connection to nature that it offers, new job opportunities and sources of income from tourism, or simply greater awareness of diversity and ‘pride’ in the park area.

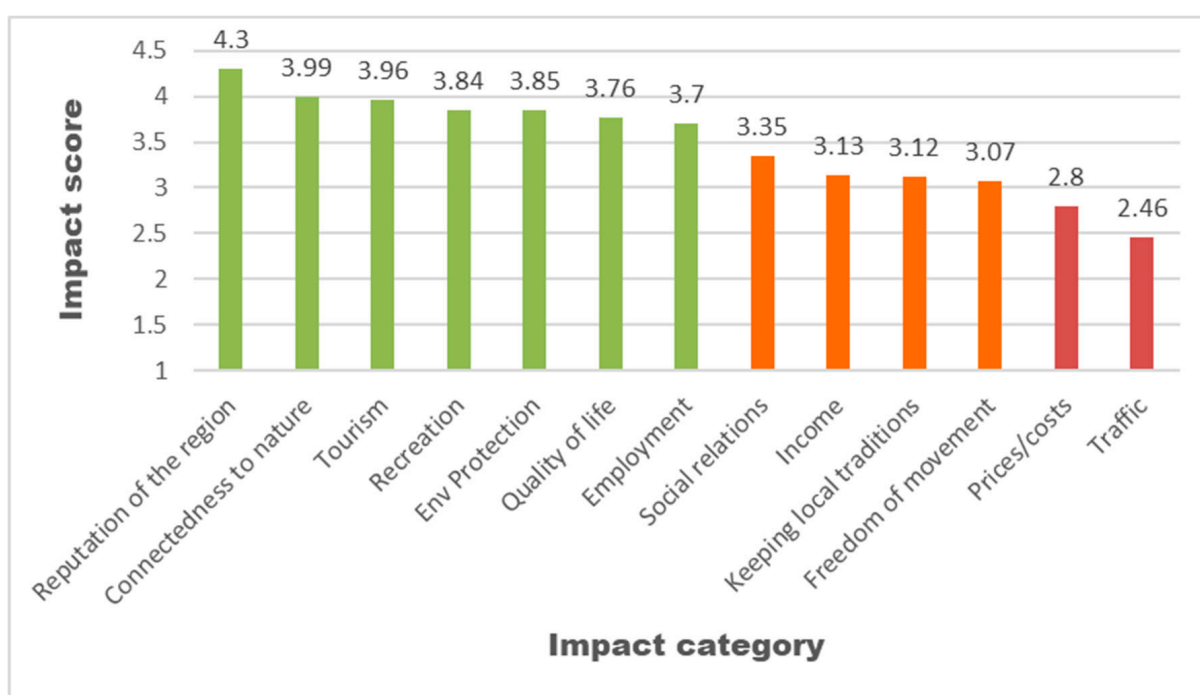


Figure 2. Perceived social impacts of the Eifel National Park before COVID-19. (mean values across the sample, scale 1–5: 1 representing negative impact, 5 positive impact, 3 no impact). Colour coding is explained in the main text.

A number of impact categories were close to neutral on the evaluation scale (between 2.5–3.5, presented in orange in Figure 2). The impact of the park on social relations, income, keeping local traditions, and freedom of movement were rated as neutral/slightly positive, whilst the impact of the park on prices and costs, as well as on traffic were evaluated slightly negatively. The most negative impact was seen to be that of the park on traffic (in red in Figure 2). With regard to this latter category, a range of negative comments were made in the qualitative dataset on higher or excessive traffic volume resulting from tourism and visitors to the park, as well as pollution and noise, especially from motorbikes, along the main access routes into and through the park.

Additional negative impacts mentioned explicitly in the open-ended comments by several respondents referred to restrictive regulations introduced upon the establishment of the national park, such as restricted access to certain areas and prohibition of traditional or long-standing activities, such as wild food foraging and firewood collection, hunting, fishing, or wild swimming, although the net overall impact on preservation of local traditions, and on freedom of movement were evaluated as broadly neutral in the quantitative survey results.

Furthermore, in the qualitative dataset, a number of additional issues were raised that were not evident from the quantitative results. A small number of comments mentioned a range of issues related to the environment and quality of life including: litter and human waste along hiking trails, visitor anti-social behaviour and non-compliance with rules (e.g., wild camping, littering), damage to property, wildlife conflict with wild boar, and even a fear of the reintroduction of wolves. The majority of comments, however, referred to a range of issues linked to loss of tranquility and overcrowding, which could limit local people's leisure options, and crowds, particularly at weekends, making parking difficult and hiking trails busy, with one respondent calling this 'over-tourism'. Other respondents noted that this was especially a problem around particular hotspots, with restaurants drawing many visitors. Some responses suggested that these comments are biased towards the era of COVID restrictions and problems may be less severe under normal circumstances.

Comments on development issues were mixed and partly contradictory, suggesting that they refer to localised rather than generalised effects: some criticising large-scale hotel and tourism development and the construction of wind turbines, balanced against comments on restrictions on woodland management and the lack of tourism infrastructure.

3.2. Social Impacts and Public Support for Eifel National Park

Public support for the Eifel National Park was assessed by asking respondents whether they would vote in favour of, or against, the continued existence of the park in a referendum. In total, 89.9% of respondents stated that they supported the continued existence of the park, against 2.9% that would vote for the park to be abolished (7.2% would abstain, the remainder did not answer). This compares with 65% in favour of the park and 19.6% against in a similar survey in 2013 [27], and 62.5% and 20%, respectively, in 2006 [28]. These previous surveys related to a smaller study area of 6 villages in the park (Dreiborn, Erkersruhr, Einruhr, Hergarten, Rurberg and Wolfgarten), rather than the entire study area for this research. The comparable figures for this study for the same 6 village areas are: in favour of the park: 79.8%; against the park: 15.5%; abstained: 4.8% ($n = 84$).

Furthermore, when asked whether they had changed their opinion on the park since it was established in 2004, 46.5% said that they had not changed their opinion, 34.5% said their opinion had improved, and only 11.4% said that their opinion of the park had worsened. The above, therefore, suggests a clear increase in support for the park from people living in and near the park since its establishment [23].

To consider the possible relationship between respondents' level of support and their perception of impacts, Figures 3 and 4 below present the mean impact scores assigned by respondents to each impact category in the questionnaire (Section 3.1 above), disaggregated between those who would vote for or against retaining the national park, respectively (excluding those who stated that they would abstain from the hypothetical vote).

Perceived social impact scores were seen to be significantly correlated with the level of public support. When exploring the answers that participants gave regarding the continuation of the national park (Rho Spearman correlations coefficient, $p < 0.05$) it is seen that people who rate more positively the impacts of the existence of the national park, such as increased income and improved quality of life, tend to be more supportive and in favour of the park. On the contrary, those who stated that they would be against the continuation of the existence of the national park rate the impacts more negatively (Figures 3 and 4).

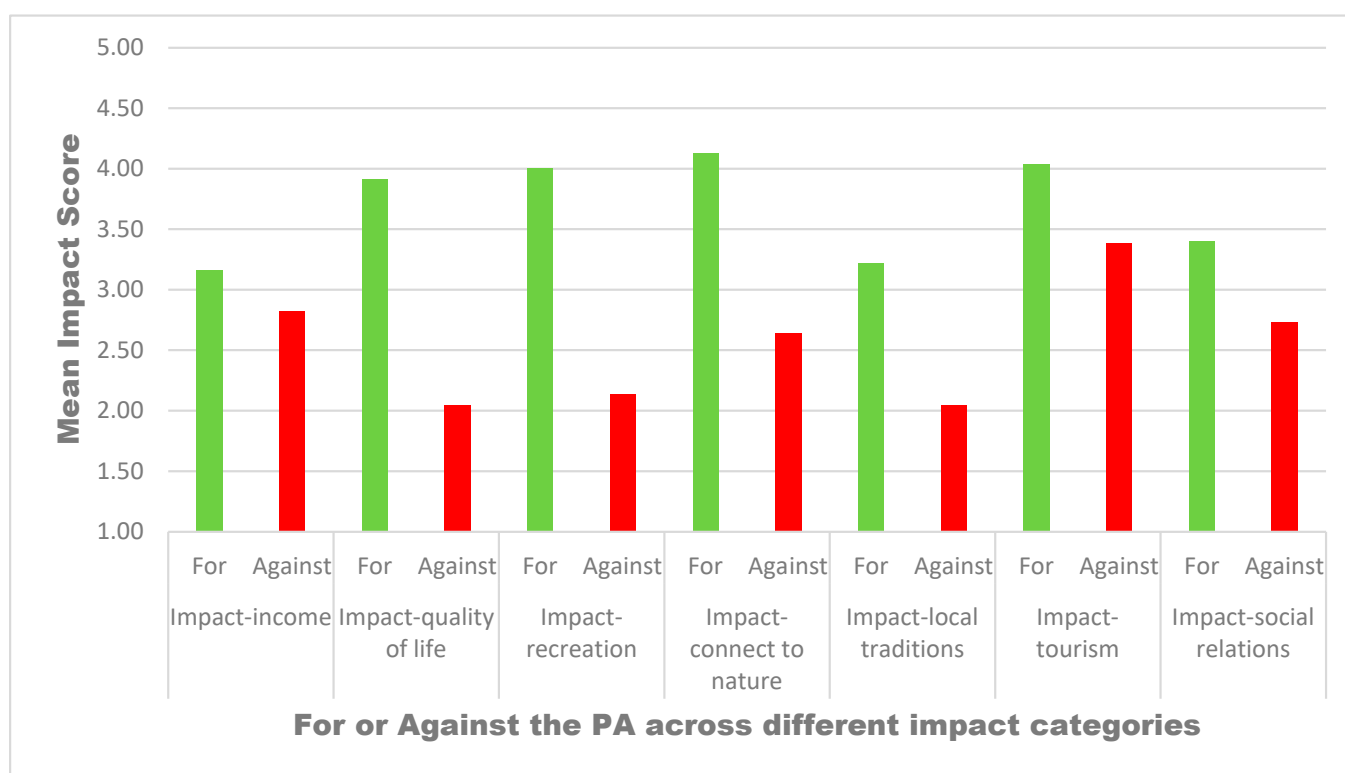


Figure 3. Mean scores of different impact categories for those who stated that they would vote in favour of or against the existence of the national park.

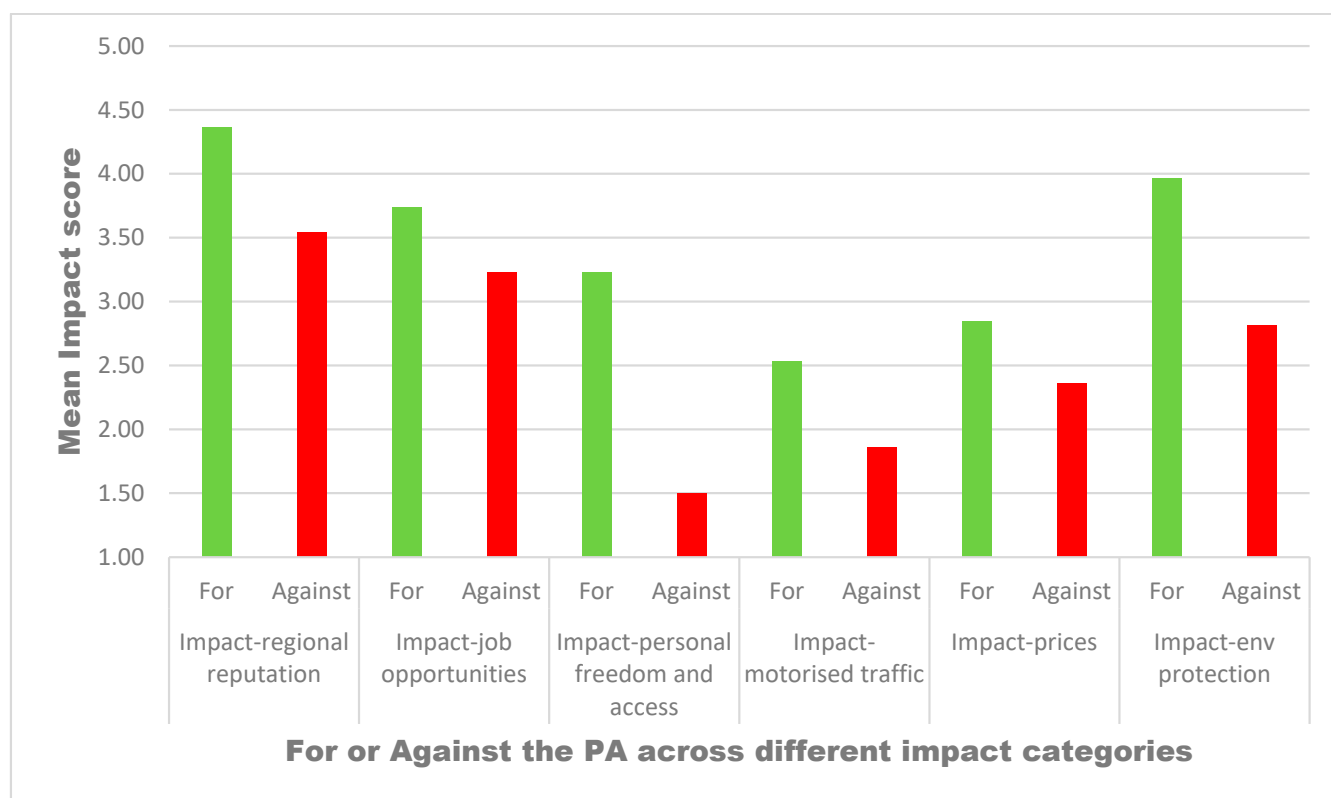


Figure 4. Mean scores of different impact categories for those who stated that they would vote in favour of or against the existence of the national park.

3.3. Distribution of Impacts between Local Residents and Visitors

In the quantitative survey, 55.9% of respondents (in this case the opinion of local residents) considered the benefits of the national park to be equally distributed between local residents and visitors. However, a significant percentage (29.7%) felt that the benefits are mainly enjoyed by visitors (Figure 5). Few respondents considered that there were no benefits from the park (3.9%).

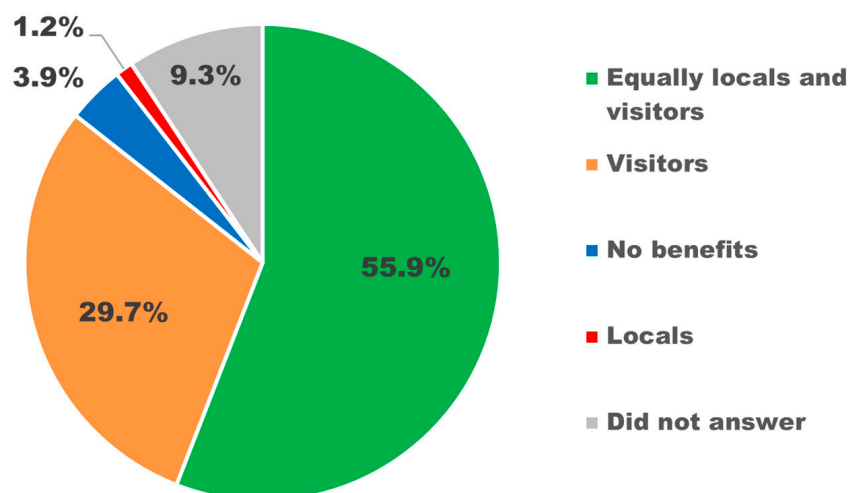


Figure 5. Distribution of benefits from the Eifel National Park between locals and visitors (%) ($n = 333$).

Meanwhile 52.9% of the respondents considered that the negative impacts of the park fell more on the locals rather than visitors (Figure 6). Only 6.9% of participants see these costs to affect visitors and locals equally. This said, interestingly, 30.3% of respondents do not associate any costs with the designation of the national park.

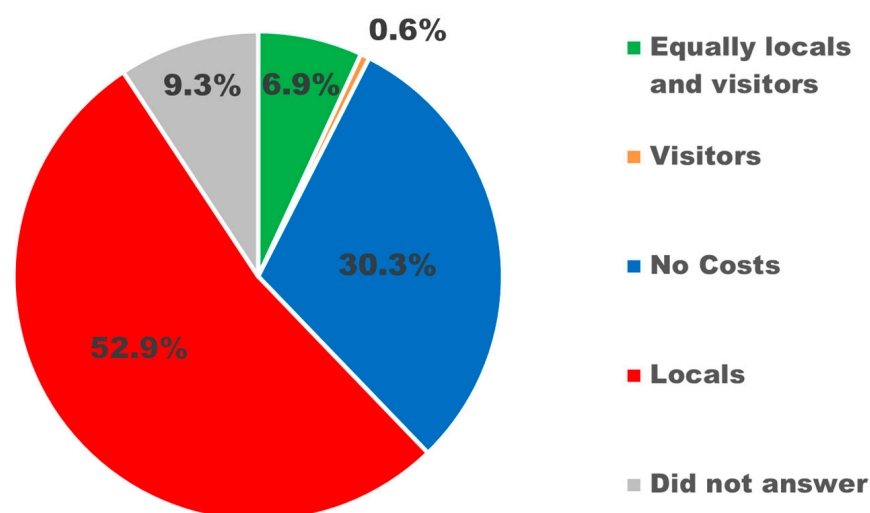


Figure 6. Distribution of costs (disadvantages) from the Eifel National Park between locals and visitors (%) ($n = 333$).

Some qualitative comments also noted that negative impacts were borne by local people, or that tourists benefited at the expense of locals.

3.4. Equity of Distribution of Impacts within the Community

In the quantitative survey, about half of the respondents (51.7%) thought that the costs and benefits of the national park are distributed equally among the local residents while about a third (34.5%) thought there to be inequalities within the local communities.

The qualitative comments indicate two possible factors relating to the uneven distribution of costs and benefits: where in the area a person lives, and whether their personal income is related to the tourism industry. Locals working in the tourism industry and in the gastronomy/restaurant sector, in particular, are identified as clear benefactors of the national park in the comments. Costs are seen to be carried mostly by the residents of the immediate surroundings of the national park or those living along the main roads to and around the park, as they are directly affected by enhanced traffic (including motorcycle noise), as well as by residents affected by overcrowding at hot spots and associated problems with limited parking spaces, all of which were mentioned frequently by the respondents in the survey in qualitative comments.

Several respondents also pointed out how changes in user rights associated with the establishment of the national park affected local stakeholders in different ways. In particular, some paths popular with the locals have been closed, but also that harvesting of wood and mushrooms has been banned. When respondents were also asked how reasonable they consider a selection of park regulations to be, some rules, such as keeping dogs on a leash, prohibition of foraging, collecting wood, or veering off the paths, were considered as very reasonable by less than 50% and were some of the less consistently observed rules by local respondents, suggesting reduced or variable levels of support for such rules.

3.4.1. Demographic Factors

When considering the distribution of impacts across different demographic categories, a relationship between educational level and certain perceived impacts was observed (Figure 7). In general, there is a tendency for participants in the lower educational groups to evaluate the different impacts with lower scores (more negatively), suggesting that they perceive lower benefits and higher costs from the park. These differences are statistically significant regarding the impact on quality of life, connectedness to nature, tourism, the reputation of the region, and environmental protection. Furthermore, there were two categories of impacts where statistically significant differences were observed between male and female respondents: tourism and traffic (t -test = 10.787, t -test = 2.484, respectively, $p < 0.05$). In both cases, women evaluated these impacts with significantly lower scores compared to men (3 and 4.83, respectively). Finally, the income level of the respondents was not statistically correlated with how participants perceive impacts.

3.4.2. Spatial Distribution of Impacts

The spatial distribution of the perceived impacts reported are illustrated in Figures S1–S5 in Supplementary Information Appendix SB. The maps illustrate the general spatial distribution of impacts in and around the park. Reported perceived social impacts for Social Relations and Income (Figures S1 and S2 respectively) were seen to be mostly neutral (neither very positive nor negative). Neutral impacts (Likert score of approximately 3) were recorded for Social Relations in most of the park, rising towards 4 (moderately positive) in the southern, central portion of the park, whilst for Income, reported impact values varied in a narrow range of 3–3.5 throughout the park. Municipalities with more positive impacts were noted to be more likely to fall within the park boundary. The remaining impacts (Quality of Life, Recreation and Connectedness to Nature: Figures S3–S5, respectively), exhibited a larger range of reported impact scores, and tended to range across both positive and negative impact levels. As for Social Relations and Income, all three exhibit a positive impact in the south-central areas of the park. On the other hand, in the north-west area of the park a negative overall level of impact is reported.

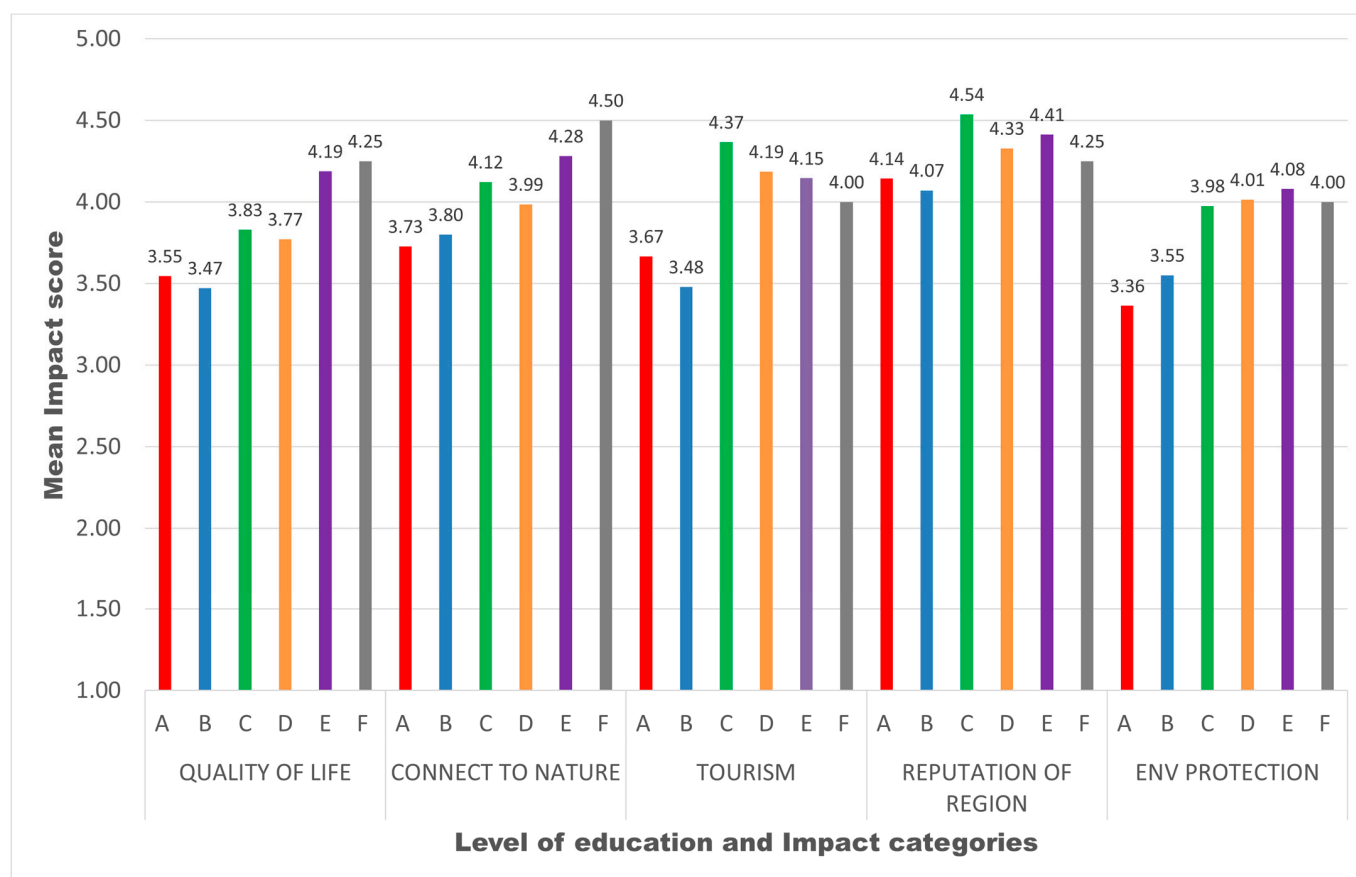


Figure 7. Perceptions of impacts between different educational groups. X-axis labels of education level: A—Volks-/Hauptschule; B—Mittlere Reife; C—Abitur; D—Fachhochschulabschluss; E—Hochschulabschluss; F—Promotion. See Table 1 for explanation of the education levels.

3.5. Impact of COVID-19 Restrictions on the Distribution of Impacts

As noted earlier, the number of visitors to the national park was seen to increase significantly with the onset of the COVID pandemic. Participants in the Eifel National Park survey were therefore asked about the impact of the wider COVID-19 restrictions on their everyday lives, in general, and in relation to the national park.

Our results indicate that there were several significant negative impacts following the introduction of COVID-19 regulations (Figure 8). The most negative impact was the fact that people could not socialise as before. This is followed by negative impacts resulting from the enhanced number of visitors to the national park; specifically, busier than usual cycle paths and walking trails. A number of respondents' qualitative comments also mentioned a range of negative impacts, particularly increased traffic flows, traffic-related noise, parking issues, and the cancellation of social and cultural activities, as well as range of issues related to visitor behaviour, such as littering and wild camping.

In terms of positive impacts most people enjoyed working from home, not having to travel as much as before and spending more time with members of their household (Figure 8). The shift towards working from home was seen as a positive development, with benefits for the environment (less commuting) and personal wellbeing. Further positive side effects noted by respondents' qualitative comments included reduced air traffic and clearer skies, relating to the fact that the area lies underneath major air traffic routes and approach paths to nearby international airports (e.g., Köln-Bonn, Düsseldorf).

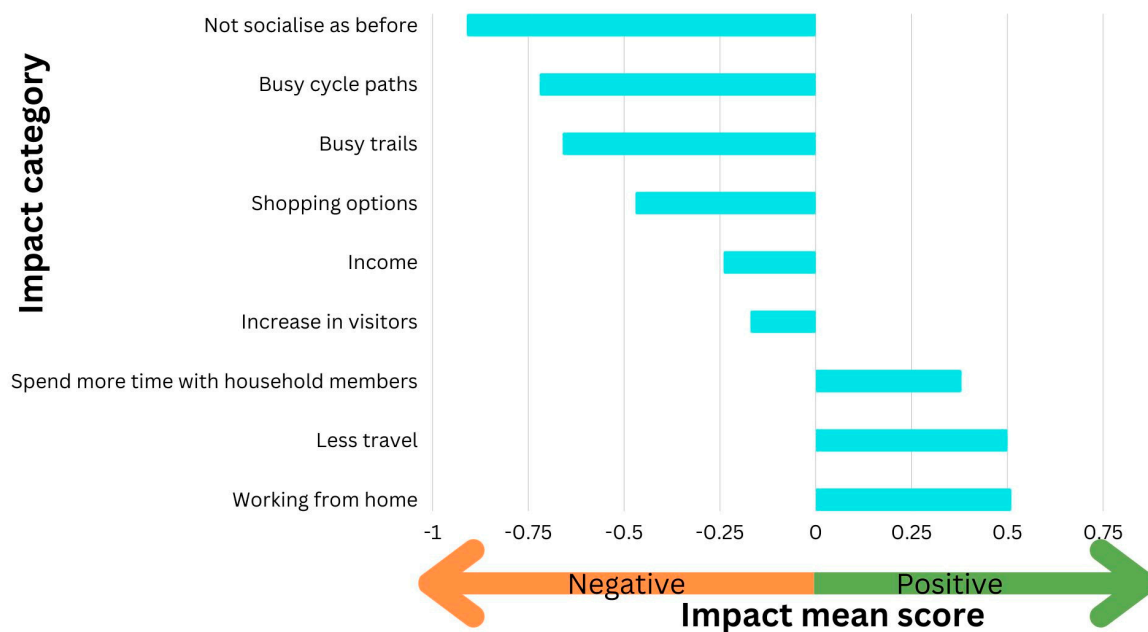


Figure 8. Impact of COVID-19 restrictions as perceived by local residents. Mean score, scale ranging from -2 (most negative impact) to 2 (most positive impact).

The fact that some respondents also noted reduced traffic, greater tranquility and less disturbance of nature as positive impacts of the pandemic suggest that disturbance from traffic and visitors was variable according to location within the national park.

Asked whether or not it was important to live in or near to the Eifel National Park during the implementation of COVID-19 regulations in spring 2020, two-thirds of the participants who responded to the question (67%) considered this to be very important or important to them. Only one in ten of those who responded (10.0%) said that living in the vicinity of the national park was not important to them. The participants were also asked to explain their opinion. These qualitative responses emphasized the importance of access to nature for physical and mental wellbeing, and for recreation, on people's freedom and quality of life in lockdown, which was frequently contrasted with cramped and hectic conditions and lack of access to nature and recreational opportunities in urban environments. These conditions were seen as the cause of higher infection rates in cities compared to the rural environment, where social distancing is easy to maintain.

The increased visitor numbers that the national park experienced during the first peak of the pandemic were nevertheless seen as a problem in this context, with several respondents complaining about further overcrowding, noise, littering, and a lack of discipline among visitors regarding social distancing rules. Increased traffic, where noted, had been viewed already as one of the key negative impacts of the park pre-COVID. However, a number of respondents also acknowledged that local knowledge of the area had allowed them to avoid overcrowded hotspots.

Preferences for a number of potential policy tools to manage overcrowding were also explored in the questionnaire. The most preferred tools were 'soft' informational methods such as the use of a mobile app through which people can be alerted to overcrowding incidents, and signage encouraging observance of park rules and regulation as well as (at the time) social distancing measures. The least preferred options were more controlling or coercive measures, such as to reduce visitors parking spaces and to introduce an online booking system for parking, and which might also impact negatively on residents.

4. Discussion

4.1. Social Impacts and Public Support for Eifel National Park

Our results indicate that respondents reported a wide range of diverse benefits to local residents and that most such impacts proposed to the respondents were rated positively. This is in accordance with global evidence highlighting that living close to protected areas has a positive impact on people's wellbeing [2,4,32,33] with particular potential economic benefits for highly touristic PAs [5], such as the Eifel National Park. The Convention on Biological Diversity has recognised the economic benefits of nature-based tourism, whilst also highlighting, however, the need for sustainable management of visitors in protected areas around the world [16].

Of negative perceived impacts, the most significant were traffic-related. Busy road traffic entails both social impacts (noise nuisance and disturbance, severance of communities where roads are very busy) as noted in the qualitative comments, but also implies environmental and health impacts on people (noise stress, air pollution) and ecological impacts on wildlife (disturbance and associated severance of animal ranges, safety risk from being hit by cars, effects of air pollution, and nutrient enrichment) [34–39]. In addition, the impact of the park on prices and costs was perceived to be neutral overall or slightly negative, despite a net small positive perceived impact on incomes. This suggests, therefore, a range of possible economic impacts both negative and positive for local people, with possibilities of both gain and loss of income [40–42] and increased costs resulting from competition for resources with visitors and possibly newer wealthier residents, leading to price inflation [43].

Nevertheless, our survey recorded a high level of public support for the Eifel National Park amongst participants. When comparing this result with previous studies in the area [27,28], there is evidence that the level of public support for the national park has increased overall in recent years. Initial support may have been strong as a high proportion of the park was on public land at its foundation and the relatively low proportion of private land ownership may mean that there are relatively few disputes between landowners and the park authority over land management and development issues. Indeed, such disputes were mentioned only very infrequently in the qualitative comments data set. Contributing to a further increase in support may have been an increase in public awareness over time concerning the importance of environmental issues and the success of continuing informational campaigns about the national park, as these would influence residents' values, beliefs, and understanding about the importance of the environment and nature [9]. Also, as time passes, local people may come to identify with the park more and incorporate it into their sense of place connection. Indeed, in the survey results, the impact of the park on the reputation of the region and on local people's sense of connectedness to nature were reported to be the most positive impacts of all. Such increases in support are in accordance with evidence in research elsewhere [8,10,13].

Other factors, such as population turnover, may or may not be significant, as other researchers have noted the phenomenon of amenity migration and even 'rural gentrification' in association with highly valued rural landscapes and protected areas [44–46]; although in this study, a high proportion of respondents claimed a long-standing connection with the park area, at least as second home owners.

The respondents' evaluation of impacts appears to be correlated with the level of support for the park that they reported, implying that either respondents who experience or evaluate the benefits more positively are in consequence more supportive of the park, or conversely, that respondents who are less supportive of the park for other reasons, in consequence, view the impacts more negatively. This accords with the finding of other studies that indicate that public support for PAs is correlated with the social impacts of the PA on local people [8,10,13]. Furthermore, overall public support was noted to be lower in the core area of the park than in the wider area of this study. Areas close to but not inside the park may have populations that are more in favour of the park, as inhabitants here, particularly second/holiday home owners, may enjoy many of the benefits of the park

without some of the costs. This may explain why the figure in favour is higher in the whole study area, and is in accordance with the theory of an acceptance crater [47–49].

The impact of the COVID-19 pandemic on local people and the responses to our survey corroborate the fundamental importance of accessible nature for the physical and mental wellbeing of the population. However, the impact of increased visitor numbers on local communities, which has been observed in several European protected areas in the past few years [22], will have to be considered carefully, as a range of negative impacts may dampen public acceptance levels.

4.2. The Impact of COVID-19

As noted, the first wave of COVID-19 in Spring 2020 had a range of impacts on local people's practices and routines. People had to alter their activities, and were seen to increase their engagement with easily accessible and permitted outdoor activities. Our survey results indicated that the practical impacts of COVID-19 restrictions on local people were broadly negative with a few positive aspects. The slightly negative economic impacts observed in the Eifel areas has also been noted in other protected areas in the global north and south [22,50,51].

Most respondents felt that living in or near the national park helped them cope with lockdown, suggesting that, not only does life in or around the national park contribute to people's wellbeing in normal times, but it also allows them to cope with more difficult times, further suggesting that communities in and around the national park may be relatively resilient to a crisis such as the COVID-19 pandemic. This suggests further ways in which access to PAs can support people's health and wellbeing [2–4]. This finding has been confirmed also in other parks [21,22,52–55], although it may, to some extent, be influenced by the predominance of respondents in the age group 45–70, with relatively few respondents from younger people, who might be more economically vulnerable.

On the other hand, the results regarding overcrowding and visitor behaviour suggest that the sustainability of this situation may be undermined should over-crowding become a more regular problem in the park. Our data indicated a negative impact resulting from larger than usual numbers of visitors for the relevant time of year, with greater use of and, in places, overcrowding of infrastructure, as well as negative comments regarding visitor behaviour. Indeed, Eifel National Park rangers registered more than twice as many violations of park rules and regulations in 2020 compared to 2019. This is in line with findings right across Europe during the same time period [21,22]. The COVID-19 pandemic lasted longer than expected and impacted significantly, but unevenly, on residents of and visitors to nature protected areas, protected landscapes, and national parks across Europe and the world [22]. Results suggest then that, for residents, living in a landscape like the Eifel National Park can make them more resilient to crises such as the COVID-19 pandemic, but that their wellbeing can be eroded by large numbers of visitors, which would also impact negatively on the ecological effectiveness of the park [41,56–59].

Whilst some of the negative impacts from visitors relate to visitor behaviour, and may require a range of measures both 'hard' (regulation and penalties) and 'soft' (education and advice), negative impacts related to sheer visitor numbers are not the fault of visitors, who are encouraged to visit a park, presented to them as a national resource and therefore belonging to everyone. Careful management may therefore be needed if we are to avoid an over-touristed future that erodes the resilience of life in the park for both residents and visitors, especially if crises such the COVID-19 pandemic reoccur or become more frequent [22].

Whilst the COVID-19 pandemic has been a one-off crisis which will probably never recur in exactly the same form, it has been an important 'naturally-occurring experiment' whereby a temporary crisis has distorted the usual socio-economic system, potentially revealing tensions and issues that are 'just-about-managed' or less evident under normal circumstances. It is therefore useful and important to understand the impact of the pandemic on nature PAs and their inhabitants in order to understand their resilience to

such shocks to their socio-economic system, which may well recur in diverse forms in the future [60]. This, in turn, may give us clues about future development of PAs and their longer-term sustainability in the local landscape and perhaps a glimpse of a conflictive or over-touristed future. It also suggests that careful management of the landscapes will be required to ensure a sustainable future for such national parks and protected areas, and their residents, to safeguard the effectiveness of landscape management, as well as to ensure the protected area's 'social license to operate' [14].

4.3. Social Equity Aspects in Eifel National Park

Overall, our study revealed that many local people perceive an unequal distribution of costs and benefits between, on the one hand, visitors and residents, and, on the other hand, among different sub-sets of the local community. This represents a social equity issue that may also need managing in order to maintain local public support for the park, and which has been reported across many PA sites in both the global north and global south [61–64]. Negative impacts of overcrowding and disturbance were reported in qualitative data to particularly affect certain 'hotspot' areas, such as particular villages, concentrations of restaurants and access routes, and that benefits and costs within the park were very location-dependent. Different residents benefit from the park in different ways, depending on where in the area they live and their spatial and socio-economic relationship to local resources and the local economy; for example, whether their income is related to the tourism industry or whether they are wealthy or retired and so relatively independent of the local economy.

It was also noted that impacts were assessed differently by respondents according to their level of education, but less so their employment. This suggests that the influence of educative level on residents' perspectives is not just related to the impact of education on employment prospects and income, but that cultural and social aspects of educative level may be more important, such as personal values and awareness of environmental issues. The influence of formal and informal education, and of prior knowledge and awareness on public support for protected areas and perception of their social impacts is complex and multifaceted [65–67]. Further research should investigate the extent to which educational level affects perception of impacts as a personal factor that affects how people evaluate their environment and local landscape, or to what extent it is a contextual factor that affects their positionality in society, and so their ability to access the benefits and avoid the costs. This may also be an important equity issue in protected landscapes where population turnover is significant in restructuring local communities as long-standing residents leave and are replaced by wealthier newcomers.

These findings regarding equity are important considering that the convention on Biological Diversity Aichi Target 11 required the incorporation of social equity in decision-making processes for protected areas and the importance of social equity has recently been reemphasised [16]. However, additional research is required in order to develop standardized easily used metrics assessing social equity in protected and conserved areas [68], including for MDCs (more developed countries) such as in Europe.

The survey results also indicated that respondents tended to believe that the costs of the PA were skewed more towards residents rather than visitors, with visitors enjoying disproportionately the benefits relative to residents. Almost a third of participants believe that visitors gain more from the Eifel National Park than the locals, whilst over half thought the costs fell on residents more than visitors. These findings again suggest possible imbalances in social equity and the distribution of positive and negative impacts of the park across different user groups. In cases such as the Eifel National Park, the impacts of the COVID pandemic may have highlighted the tensions between the benefits and rights of the general public on the one hand, and the needs and rights of the local residents on the other hand, as well as the requirements for effective natural, landscape, and cultural conservation to the benefit of visitors and locals alike. This highlights the tensions between the park as a 'national' landscape and a 'local' landscape, as well as a further tension between the park as a 'natural' landscape and as a 'social/cultural' one. Such tensions require attention to

be paid to environmental governance and the processes whereby priorities for protected landscapes are negotiated with the public locally and nationally, as well as how PAs are established constitutionally, and then subsequently governed and managed on a day-to-day basis [17,69].

Possible broader solutions at regional and national scales could be to increase access by declaring more protected areas and landscapes of a diverse nature (with diverse focus, emphasising and prioritising differentially aims such as landscape protection, nature/biodiversity protection, or recreation provision) and providing more access to green space both inside and outside the national parks, and indeed in and around urban areas where people live, in tandem with the EU target to increase the area of nature protected areas in Europe [70,71].

5. Conclusions

In conclusion, the national park provides a wide range of benefits to local people which are rated positively by the majority of the local population, but there are also costs to local people, particularly in terms of traffic-related impacts as well as negative impacts on the cost of living. Whilst levels of support for the Eifel National Park are high and have increased since its foundation, there is clearly a significant relationship between local people's perceptions of some social impacts and their level of support for the national park's existence. Nevertheless, the park is very well-supported by local communities, and this level of support appears to be related to the public's perception of the multiple benefits from living in and around the park.

Furthermore, the benefits and costs appear to be unevenly distributed within local communities and between local people and visitors. Equitable governance and the management of social equity issues will therefore be key to ensuring that the quality of life in the national park is not eroded by growing visitor numbers, nor that the benefits and costs accrue iniquitously and unevenly among local people. Experience of costs and benefits is, in part, affected by geographical location with regards to tourist hotspots and busy roads, as well as by economic aspects such as residents' source of income in relation to tourism or land management. Dialogue between the national park management authority and local residents may also be required regarding some aspects of regulation, as some rules and regulations were considered more reasonable than others. We also conclude that protected area management bodies should consider undertaking social impact assessments to assess how residents experience and perceive the impacts of their local protected areas and how this affects their support.

As regards demographic factors, impacts were assessed and appeared therefore to be perceived differently by respondents according to their level of education. We conclude, therefore, that further research should investigate the extent to which educational level affects perception of impacts as a personal factor that affects how people evaluate their environment and local landscape, or to what extent it is a contextual factor that affects their positionality in society and so their ability to access the benefits and avoid the costs.

Finally, during the COVID restriction periods, increased visitor numbers appeared to exacerbate the traffic impacts as well as other negative impacts associated with high visitation numbers and associated overcrowding. Despite this, many respondents considered that living in the national park helped them to cope with the pandemic better. A further conclusion, therefore, is that, whilst living in the park enhances the quality of life of most residents and may have made them more resilient in a crisis, any future increases in tourism will need careful planning and management if they are not to erode local people's quality of life. Results here suggest that local people currently prefer broadly 'soft' informational approaches to visitor management rather than 'harder' or coercive regulatory approaches.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su151410848/s1>, Appendix SA: English translation of the survey questionnaire; Appendix SB: Figures S1–S5.

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