

Perceptions of mountain ecosystem services in Golija-Studenica Biosphere Reserve, Serbia: latent transformation from sustainable towards regenerative tourism

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Keywords: mountain ecosystem services, local stakeholders, tourist perceptions, regenerative tourism, sustainability

Abstract

Regenerative tourism is a new approach that seeks to establish and foster a symbiotic relationship between humans and nature based on the use of nature's ecosystem services (ESs) for people's improved quality of life and general wellbeing while promoting human contributions to the natural environment for the benefit of all. This research focuses on ESs as indicators of latent tendencies in the transformation from sustainable to regenerative tourism. The research was conducted in two cycles over a period of 11 years. The Participatory Rural Appraisal method (PRA) was used to gather information and local stakeholders' views concerning Serbia's Golija-Studenica Biosphere Reserve. Ninety-nine tourists were also interviewed face-to-face regarding their interests and demands. The research method included a Relative Frequency Citation index (RFC), which identified the ESs that respondents considered most important. The local stakeholders were unanimous in accentuating the importance of providing ESs that bring economic value, while tourists focused more on regulating or supporting cultural services. Our research methodology may serve as a benchmark for studies in other mountain tourism destinations and communities that are investigating developments towards regenerative tourism.

Profile

Protected area

Golija-Studenica

Biosphere Reserve

Mountain range

Dinaric mountains

Country

Serbia

Introduction

The term *ecosystem services* (ES) is most commonly used to denote *nature's benefits*. The Millennium Ecosystem Assessment (MEA 2005) provides the most widely applied framework for understanding ESs, which it divides into four categories: supporting services (water and nutrient cycling, formation of soil); provisioning services (food, clean water, raw materials such as wood and cotton, natural remedies); regulating services (crop pollination, climate regulation, waste decomposition, water and air purification, biological control of pests), and cultural services (recreational opportunities, therapeutic effects of the natural environment on human health). When natural ecosystems are degraded and land is repurposed, the species and functions that constitute the ecosystems are usually disrupted, which means that the range and level of ESs decline, incurring huge costs and losses for various stakeholders (Negev et al. 2019). The proper evaluation of the resources that nature provides results in greater interest and investment in, and improved preservation of, natural resources. The assessment of ESs is of long-term importance for both national and local economies (Chan et al. 2006; Egoh et al. 2007). ES mapping and assessment are the topics of numerous studies published in the past decade or so (Egoh et al. 2008; Häyhä et al. 2015; Wolff et al. 2015; Kulczyk et al. 2018; Vannier et al. 2019). Although the scientific literature exploring the relationship between tourism and ESs is scant, certain sources emphasise the importance of the tourism sector for understanding the

relationship between nature and society (Pueyo-Ros 2018). The tourism sector, like many other economic areas, depends on ESs (Smith & Ram 2016). The local economy also requires different types of ES (e.g., provisioning services or regulating services) as a basis for destination choice (Mieczkowski 1985). According to Garrido et al. (2017), concerning studies conducted in European countries, local stakeholders perceive provisioning ESs as the most beneficial type.

UNESCO's MAB Programme implements a unique approach to protected area management and biosphere reserves (BR). The concept of the BR includes the protection of natural and cultural heritage, but also provides a model for the cohabitation of humans and nature, i.e. for combining ecological aspects with economic and social needs in *living laboratories* (Poikolainen et al. 2019; Jančić et al. 2021; Raviv et al. 2021). Mountain areas are exceptionally important centres of biological and cultural diversity and traditional knowledge. They include a mosaic of different ecosystems that provide key goods and services to the entire community. UNESCO's BRs provide excellent sites for case studies on the linkages between biodiversity, ESs and land use by different actor groups (Viirret et al. 2019).

The most important challenge in the management of natural resources is to bridge the differences in the perceptions of various interest groups (Bridge-water 2002; Stoll-Kleemann & Welp 2008; Coetzer et al. 2014). This is an opportunity for tourism to move towards regenerative tourism in protected areas. By fostering reciprocal relationships between humans

and nature, regenerative tourism contributes to creating regenerative communities, places and destinations. This supports the development of tourism destinations, host communities, accommodation facilities and capacities, while benefitting the tourism industry in general (Bellato et al. 2022a).

Regenerative tourism is a step forward regarding environmental protection. According to Bellato and Cheer (2021), it unifies science and community knowledge and practices in the tourism context, using a transformational approach to increase positive effects on local communities and ecosystems. Regenerative tourism seeks to transform conventional tourism by embracing *tourism as a living system* and celebrating a holistic approach to nature, wellbeing, health, indigenous practices, and the goods provided by nature and its ecosystems (Becken & Kaur 2021). Bellato et al. (2022b) indicate that establishing regenerative tourism requires different stakeholders to discuss how to reconfigure the tourism system. Economic dependency on tourism in protected areas is defined by a range of services that ecosystems can provide, and these services can be integrated in a regenerative approach to the complex relationship between inhabitants and nature (Vermeeren 2020). One of the most powerful tools for understanding this relationship is to understand ESs themselves (Pueyo-Ros 2018).

The relationship between ESs and regenerative tourism is mirrored in *place-based*, *whole-system* and *community-led* models, ecosystem-centered approaches, the concept of human and non-human wellbeing, the *getting back to tradition* paradigm, as well as in the appreciation of socio-cultural, ecological and economic values (Bellato et al. 2022a; King 2022). Yuan (2020) indicates that regenerative tourism finds inspiration in indigenous practices (e.g., traditional agriculture and food systems, or local ecological knowledge). The regenerative tourism approach tries to mimic nature, get closer to nature-based solutions, and allow for reviving traditional practices in ESs while enhancing economic wellbeing and resilience (Hussain & Haley 2022). The approach might best be recognized in the aftermath of natural disasters or pandemics when local communities wish to rebuild or revive traditional knowledge and skills based on natural solutions (Vermeeren, 2020). The UN Decade of Ecological Restoration (2021–2030) recognizes that communities have become more resilient to crises such as the Covid-19 pandemic thanks to nature-based solutions (Edrisi & Abhilash 2021).

There is a need for research projects that support global trends from *sustainable* to *regenerative* tourism (Solimar International 2022), as well as to investigate the core factors that enable tourism businesses to be more ecologically, socially and culturally regenerative while respecting community needs and improving ecosystem integrity. However, a comprehensive analysis of the literature on this topic, as well as of other available resources, has identified several gaps

concerning regenerative tourism (Thurow 2023). Pioneering efforts to scientifically establish and explore the concept of regenerative tourism were made by several publications (e.g. Zaman et al. 2022; Bellato et al. 2022a, b; Bellato et al. 2023), especially in discussing the relationship between ESs and tourism (Pueyo-Ros 2018). Most of the literature focuses predominantly on the concept of regenerative tourism and its relationship with human wellbeing and touristic experience (Thurow 2023), but we are still lacking a homogeneous and systematic research methodology, research knowledge, and examples of its application. In particular, tourists' perception of regenerative tourism needs to be examined, since there is insufficient data on this topic.

While holistic tourism focuses on natural resources as the means for achieving the pillars of sustainability, regenerative tourism is an *alternative paradigm* focusing on a symbiotic human–biosphere relationship (Farsari 2021). Tourism experience, wellbeing and feeling for tradition have for a long time been important aspects of eco- and nature-based forms of tourism. In the new paradigm, however, ESs are emerging as the foundation of the economy. They direct stakeholders' perceptions towards regenerative tourism, fostering better and inclusive strategic and/or planning documents, improving the decision-making processes, and bringing a positive contribution to overall wellbeing (Vermeeren 2020). The novelty of this study is its focus on this new aspect. It therefore opens the doors for conducting further research in this area.

Regenerative tourism includes shifts in mindset and practice which ultimately change the socio-ecological context by strengthening the human–nature relationship (Mathisen et al. 2022; Dredge 2022). ESs have been chosen as indicators of latent changes in the process of transition to regenerative tourism, notably the increased demand for natural products in recent years (Luković et al. 2023). Regenerative tourism supports the symbiotic relationship between ecosystems and communities by embracing nature-based solutions. Furthermore, the common interest of both local communities living in protected areas and the tourists visiting them lies in the preservation of ESs through sustainable resource management.

The key factors of the mindset shift include community needs/perceptions, ecosystem integrity, biodiversity benefits and human wellbeing (King 2022). This paper aims to present the shift in mindset over eleven years of different stakeholders who use a broad range of ESs, and to identify a potential transition towards a regenerative paradigm. It does so by asking two research questions: 1. What kind of ESs were perceived in the past, and which have been considered recently? 2. Is there indeed a latent transformation towards regenerative tourism?

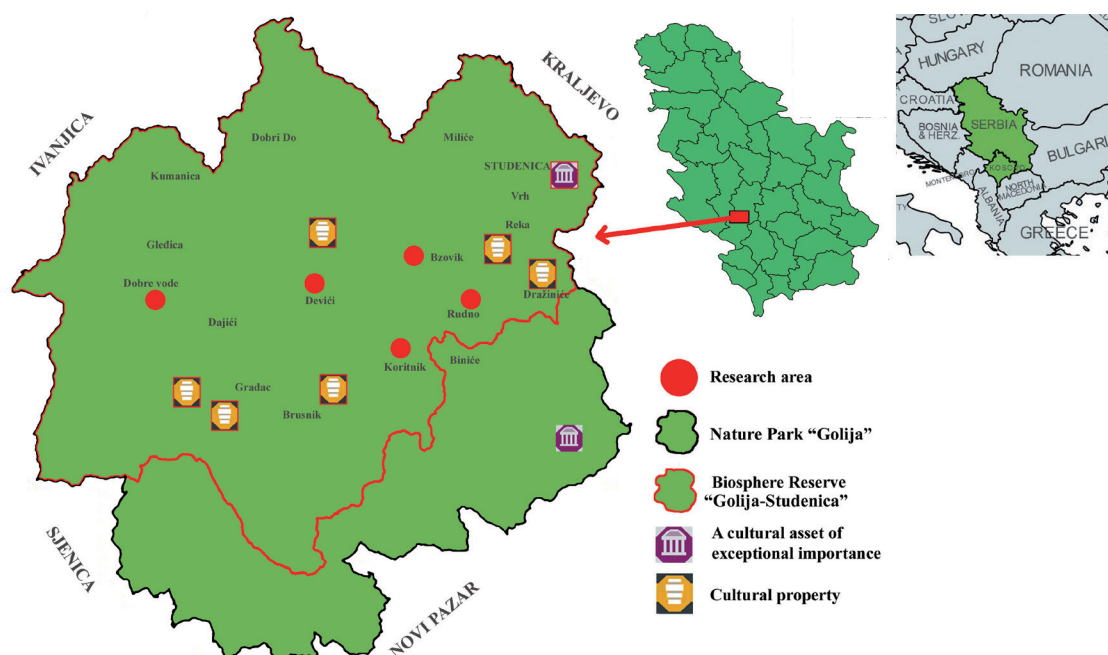


Figure 1 – Map of the research area. Design: Milica Luković 2024, using MapChart, <https://www.mapchart.net/>. Datasource: Spatial plan of special purpose of Nature Park Golija, <https://www.kraljevo.rs/prostorni-plan-podrucja-posebne-namene-parka-prirode-golija/>; <https://www.skijanje.rs/ski-centri/srbija/golija-ivanjica/prostorni-plan-parka-prirode-golija/>.

Materials and methods

Study area

The research was conducted in the Golija-Studenica BR (Serbia; designated in 2001). The research area is situated on the slopes of the Radočelo and Golija mountains in southwestern Serbia (N43.437642; E20.419426) and covers an area of 53,804 ha (Figure 1).

Today, there are about 6,000 inhabitants living in the area in 42 settlements, predominantly engaged in animal husbandry, and gathering herbs and mushrooms (Tomić & Stojavljević 2013). A traditional lifestyle based on agriculture has evolved, creating a landscape of pastures, meadows and forests. The percentages of households whose main sources of income are related to agriculture (livestock, meat and milk production) or diverse non-agricultural activities (wood products, herbal sector) are presented in Table 1. Sustainable agriculture, crafted natural or wild products, and rural eco-tourism based on natural resources, which meet UNESCO's MAB principles of the cohabitation of man and nature, are considered the most significant (Vilimonović & Ralević 2008).

Studenica Monastery, built in the 12th century and a UNESCO World Heritage site (UNESCO 2017), is located at the north-eastern edge of the BR. Golija also has national protected status as a nature park. In recent decades, tourism in Golija has developed alongside the traditional economic activities and has been recognized as a factor in rural revitalization and the preservation of traditional architecture and customs (Sagić et al. 2019). However, the development of ski slopes and tourist resorts about ten years ago has resulted in

soil erosion; water, soil, air, noise and light pollution; deforestation, loss and fragmentation of natural habitats, and reduction of biodiversity; negative changes in the balance of watercourses and groundwater, and at times in visitor overload (Rodríguez-Rodríguez & Bomhard 2011; Ćurčić et al. 2021).

This area has been developing for around two decades, and numerous recreational facilities can now be found here, such as hiking and biking trails, herbal routes, viewpoints, waterfalls and man-made structures, all supporting the development of ecotourism and enriching the area's tourism offer. Nevertheless, due to their geographical remoteness and above-average age, people in Serbia's mountainous areas, such as Golija, often suffer from insufficient information, resulting in their being less open to adopting new knowledge (Pantić 2019).

By understanding the unique potential of a place, stakeholders in tourism-related businesses can develop reciprocal relationships with communities and explore ways of harmonizing with nature while building the capacity of related social-ecological systems. Additionally, regenerative tourism facilitates net-positive effects on ecosystems by helping to provide the conditions necessary for their restoration and ongoing self-generation (Mang & Haggard 2016), while also improving the capacity for communities to flourish. In regenerative tourism, people, governments and businesses all work together to serve the broader systems affected by tourism (Howard et al. 2008; Pollock 2019).

Data collection and analysis

Collection of data from stakeholders was organized in 2010 and 2021, and from tourists in 2012 and

Table 1 – Households' main sources of income (2008) (Source: Vilimonović & Ralević, 2008; PLA/PRA Study within the project "Net for support to rural development").

Income sources	Income sources related to	
	agriculture	other activities
Sale of milk and dairy products	85%	/
Sale of livestock	80%	/
Sale of potatoes	40%	/
Sale of wood products and wood for fuel	/	30%
Rural – eco-tourism	/	15%
Salary/pension	/	12%
Sale of mushrooms, non-timber forest products/medicinal herbs	/	10%

2021, garnering information about the perception of ESs, and Local Action Groups were established, in line with the LEADER approach. Participatory Rural Appraisal (PRA) was applied for data collection in rural areas, a method based on the experiences of people living and / or working in rural areas in managing their natural resources (e.g. Ćurčić et al. 2021). Following PRA methodology criteria, respondents / participants and experts examined selected topics in face-to-face discussions, in order to gather information about local skills and knowledge, traditions and natural resource management, and to map important resources etc. The process was carried out during several sessions (e.g. to design ID cards for villages, map resources, and determine the socio-economic situation of various communities) in the context of a training programme for local stakeholders. The stakeholder group included local landowners, nature park managers, representatives of households engaged in rural tourism, farmers and teachers. Some of the stakeholders participated in research in both 2010 and 2021. Stakeholders were selected according to the recommendation of local authorities and representatives of local NGOs. Tourists were selected randomly in situ. In 2012, 42 tourists were interviewed using semi-structured questionnaire-based interviews (similar to those of, e.g., Garrido et al. 2017; Ahmad et al. 2009; Jain 2010). The data collection was repeated in 2021 on a sample of 57 tourists.

Our research used a relatively small number of respondents because the model requires fewer respondents than standard attitude questionnaires. In addition, the research area is relatively small, includes a small number of households involved in tourism, and has limited tourism capacities. Socio-demographic data are given in Figure 2. Participants were asked about their views on ESs, but without reference to specific ES categories. Thus if they mentioned an interest in the local speciality known as *green bread* (containing nettles and herbs), for example, we categorized them in the cultural ES category. The research was based on concepts confirmed by previous similar studies (Garrido et al. 2017).

Specific resources or phrases used by respondents to describe ESs were allocated to one of the four basic

categories: 1. Supporting, 2. Provisioning, 3. Regulating, and 4. Cultural. The standard classification systems proposed by Millennium Ecosystem Assessment (2005), Daily et al. (2009), TEEB (2010), and de Groot (2010) were used, modified by the authors to fit the objectives of this study. Each category included a list of ESs (Table 2). The interviews were analysed quantitatively using the Relative Frequency of Citation index (RFC),

$$RFC = FC/N$$

where FC represents the frequency of citations of a particular ES, and N is the total number of respondents.

To confirm the measurement of the diversity of perceptions, the entropy method was used as an indicator of system disorder, where a higher value means a larger number of differences. This method is used in numerous scientific fields, such as ecology, engineering, medicine, economics and finance (e.g. Chuansheng et al. 2012; Ermatita et al. 2012; Li et al. 2004; Guo 2001). The entropy statistic $H(x)$ was also applied, to determine uniformity of distribution. This provides the basis for creating a measure of inequality $I(x)$, or in this case, the differences between the perceptions of tourists and those of stakeholders, where x is the observed parameter (here, perceptions about the ESs). The calculation of equality or inequality can be represented by the equation (Czyz & Hauke 2015):

$$I(x) = H(x)_{\max} - H(x) = \log_2 n - \sum_{i=1}^n p(x_i) \log_2 \frac{1}{p(x_i)}$$

$$= \sum_{i=1}^n p(x_i) \log_2 [n p(x_i)]$$

$$\text{za } 0 \leq I(x) \leq \log_2 n$$

where $I(x) = 0$ indicates the absence of inequality (or uniform distribution), while $I(x) = \log_2 n$ indicates the maximum non-uniformity of the selected parameters x . In our case, $p(x_i)$ represents individual perceptions about the ecosystem. Entropy measures were calculated separately for the perceptions of tourists and of stakeholders.

Results

The sample of people from the local community comprised 61.9% men and 38.1% women in 2010, and 71.4% men and 28.6% women in 2021 (Figure 2). Recent studies indicate the existence of gender-specific roles in different rural-related activities and greater decision-making power of men in aspects of community management (Kalauni et al. 2020). Rafael and Almeida (2017) also indicate that women, who represented about 70% of the tourists interviewed, are more sensitive to ecological and bio-cultural heritage issues. The highest percentage ($\approx 85\%$) of respondents were in the 31–50 and 50+ age groups. Of the Tourists,

Table 2 – The ecosystem services most frequently mentioned by respondents (FC: frequency of citation; RFC: relative frequency of citation; n: number of respondents; %: respondents $\times$ number of sub-categories = 100%).

Main categories and sub-categories of ecosystem services	Stakeholders				Tourists			
	FC	RFC2010	FC	RFC2021	FC	RFC2010	FC	RFC2021
	(n=21)		(n=21)		(n=42)		(n=57)	
Supporting ES								
Biogeochemical cycles	0	0	0	0	0	0	1	0.02
Photosynthesis	0	0	0	0	0	0	0	0
Biodiversity	3	0.14	7	0.33	5	0.12	12	0.21
Species	6	0.29	7	0.33	6	0.14	18	0.32
Food chains	0	0	0	0	0	0	0	0
Structure	0	0	0	0	0	0	0	0
Function	0	0	0	0	0	0	0	0
%	6		9		4		8	
Provisioning ES								
Crops	16	0.76	15	0.71	10	0.24	24	0.42
Fodder	18	0.86	16	0.76	1	0.02	0	0.00
Wild edible plants	13	0.62	15	0.71	22	0.52	41	0.71
Wild mushrooms	14	0.67	15	0.71	24	0.57	40	0.70
Wild game	11	0.52	12	0.57	16	0.38	12	0.21
Meat	13	0.62	13	0.62	30	0.71	18	0.32
Milk and dairy products	15	0.71	16	0.76	33	0.79	35	0.61
Wild berries	12	0.57	15	0.71	25	0.60	38	0.66
Wild fruits	9	0.42	13	0.62	14	0.33	30	0.52
Medicinal plants	10	0.48	14	0.67	20	0.48	45	0.79
Timber	9	0.43	10	0.48	3	0.07	7	0.12
Wood for fuel	9	0.43	9	0.43	2	0.05	0	0.00
Plants from which bees collect nectar	8	0.38	10	0.48	0	0.00	0	0.00
Meadows	13	0.62	13	0.62	0	0.00	0	0.00
Hay	15	0.71	14	0.67	0	0.00	0	0.00
%	58		63		32		34	
Regulating ES								
Air quality	12	0.57	14	0.67	31	0.74	38	0.67
Pollination	14	0.67	18	0.86	15	0.36	21	0.37
Soil erosion control	5	0.24	7	0.33	0	0.00	0	0.00
Climate regulation	4	0.19	10	0.48	6	0.14	9	0.16
%	42		58		31		30	
Cultural ES								
Social relations	11	0.52	12	0.57	19	0.45	21	0.37
Natural landscape beauty	13	0.62	12	0.57	23	0.55	24	0.42
Natural heritage	14	0.67	15	0.71	24	0.57	27	0.47
Historical remains	16	0.76	13	0.62	25	0.60	24	0.42
Sense of place	10	0.48	12	0.57	20	0.48	18	0.32
Aesthetics	9	0.43	13	0.62	18	0.43	22	0.39
Recreation and eco-tourism	12	0.57	17	0.81	27	0.64	34	0.60
Education and knowledge	7	0.33	12	0.57	16	0.38	30	0.53
Health	13	0.62	17	0.81	22	0.52	42	0.74
Man-made landscape	11	0.52	16	0.76	20	0.48	34	0.60
Spiritual and religious values	17	0.81	13	0.62	23	0.55	26	0.46
Traditional skills, food, recipes	9	0.43	15	0.71	17	0.40	45	0.81
%	56		66		50		51	
Entropy measure H(x)	1.375		1.395		0.165		0.181	

63.2% were university-educated, whereas among the Stakeholders, the largest group of respondents had left education after completing secondary school (61.9%).

In order to answer our research questions, the perceptions of local stakeholders and tourists regarding ESs were evaluated according to the frequency of mentioning. Provisioning and cultural ESs were specified by both respondent groups as the most important.

For the stakeholders, ESs were considered important as a source of economic contribution or of wellbeing, while the tourists identified them as sources of recreation, experience and education, and as having health benefits (among other things). Comparison between the perceptions of ESs in 2010 and 2021 shows small-scale changes, among both groups of respondents, in individual types of ESs. The general perception of

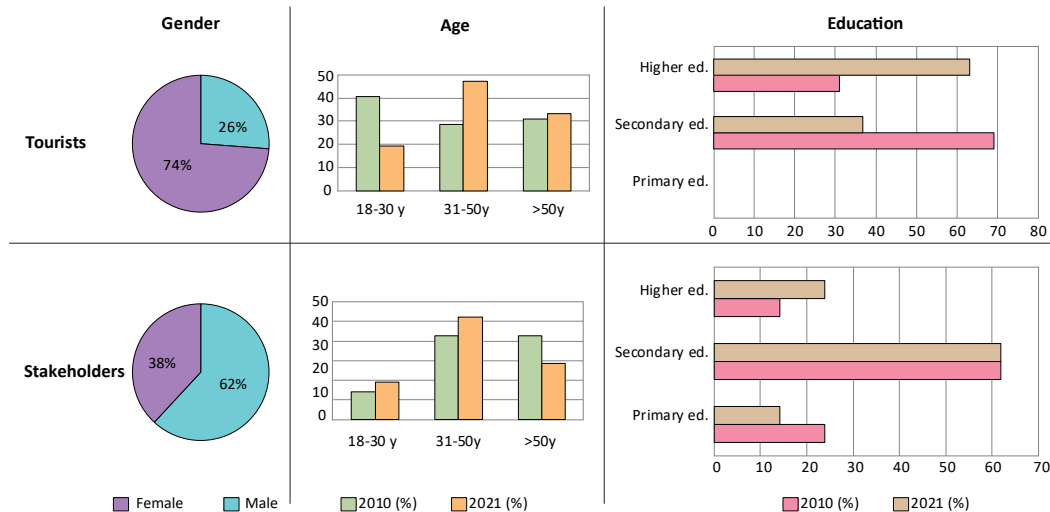


Figure 2 – Sociodemographic data.

supporting and regulating ESs is still poor because the respondents are not fully aware of their significance. These types of ES are not therefore a matter of direct interest to participants, except when clean water, clean air or pollination are mentioned.

The entropy measure calculation shows that there are no statistically significant differences between the two groups, at the level of $p < 0.05$. Small differences between 2010 to 2021 are expressed as 1.375 to 1.395 for stakeholders, and 0.165 to 0.181 for tourists (Table 2). Considering the RFC index for single ES sub-categories (e.g., traditional skills, food, recipes or wild edible plants), there is a latent tendency towards regenerative tourism, which values indigenous knowledge and nature-based solutions.

Perceptions of local stakeholders related to ESs

The perceptions of ESs in the past and in recent times were analysed during PRA sessions. Situational analysis tools gave insight into the way locals see their situation, including relevant issues, and potentials or opportunities. The local stakeholders saw opportunities for income by developing agricultural potentials such as livestock and crops such as buckwheat and rye (Table 2, fodder -0.86 ; crop production -0.76 ; milk production -0.71 ; meat production -0.62 ; selling wild mushrooms -0.67). Due to a lack of local employment options and hence low incomes, the local population tended to grow their own food and valued ESs. They also recognized the development of rural tourism as an opportunity. The period 2010–2021 saw a significant increase in the number of beds provided for tourists by households (Tomić & Stojisavljević 2013; Sagić et al. 2019). The latent changes after eleven years also show increased interest in wild edible plants (0.71) and medicinal herbs (0.67), both in terms of trade and as a return to tradition. Regarding cultural ESs, tourism in 2010 was based on the promotion of natural and cultural-historical values, which was also the case in 2021 (spiritual and religious values -0.81 ; historical

remains -0.76 ; natural heritage -0.67). In addition to the area's cultural potential, the typical mountain climate, natural products and healthy food gave the area significant tourist potential, which is reflected in the local stakeholders' perceptions, particularly in terms of getting back to *healthy roots* (0.81), education and knowledge (0.57), and ecotourism (0.81). This change was probably a spontaneous one that occurred during and after the Covid-19 pandemic.

Perceptions of tourists related to ESs

The second round of interviews was with tourists, and related to their perceptions of, and interest in, the benefits from nature which they expected at the tourist destination. Over the period 2010 / 2012–2021, the study area changed in terms of tourism capacities. The earlier motivation of tourists to visit the BR related mainly to cultural services (in particular historical remains), natural beauty and recreational activities. However, the impact of global trends and the notion of *getting back to wellbeing* have shifted tourists' attention to health (0.74), and to traditional skills, food and recipes (0.81) as motives for visiting a particular destination. Tourists' perceptions of provisioning ESs also changed, especially concerning the category of wild natural products (in 2021: edible plants -0.71 ; mushrooms -0.70 ; medicinal plants -0.79).

Comparative analysis of latent changes occurring over a ten-year period concerning the perception of ESs

The comparative analysis reveals changes that occur over time (2010 / 2012 to 2021) in the perception of the main ES categories (supporting ES, provisioning ES, regulating ES, and cultural ES). The results show a slow change in the perceptions of a limited number of ESs, and a latent movement towards regenerative thinking. Perceptions of regulating ESs increased significantly, by 16%, which implies raised awareness of the importance of natural goods and services. For

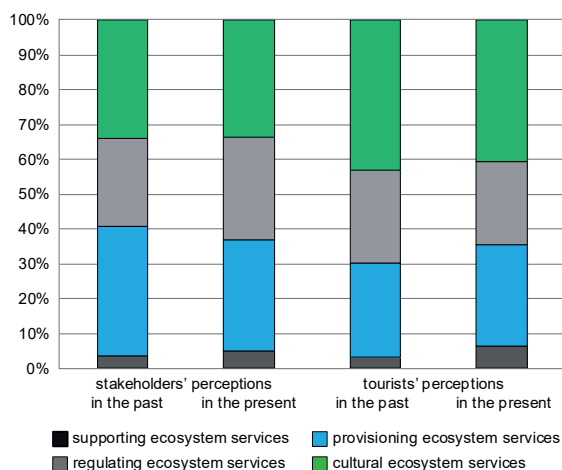


Figure 3 – Proportions of the most frequently mentioned ecosystem service categories in 2010/2012 and 2021.

provisioning services, there was a small decrease between the two periods, probably due to the diversification of non-agricultural activities and improvements in the tourism sector, which resulted in a 3% increase in interest in cultural ESs. The most important trend was a very large increase in demand for natural products (see e.g. Galanakis 2020; Timoshyna et al. 2020). Supporting ESs also record a small increase compared to the previous period, probably because of increased awareness of global environmental issues and increased interest in ecology following the outbreak of the Covid-19 pandemic (Figure 3).

Local communities consider provisioning ESs as having a key role, because they bring direct economic value through traditional landscape management (in the production of meat, milk, fodder and other crops, for example). If we analyse the particular sub-categories within the provisioning ES category (Figure 4), it is evident that for local stakeholders, those ESs that generate economic benefits maintain their importance through the years. However, there are small changes, notably a slight increase in interest in wild natural products. Tourists' perceptions show decreased interest in meat and meat-based food and wild game, and a small increase in the demand for natural plant-based products.

Traditionally, cultural services are identified with natural beauty and cultural heritage. Both groups of respondents specified historical remains and natural beauty (a sub-category of cultural ESs) as important components of the local economy and as an attraction / motivation for tourists. The results of a comparative analysis related to sub-categories in the cultural ES category show increases of interest in traditional skills, knowledge and recipes, and recently in ecotourism. Local stakeholders recognise and respond to the demands of tourists, following trends that complement the local economy. There is an evident increase in the perception of traditional skills, food and recipes, and improved health and wellbeing. Education

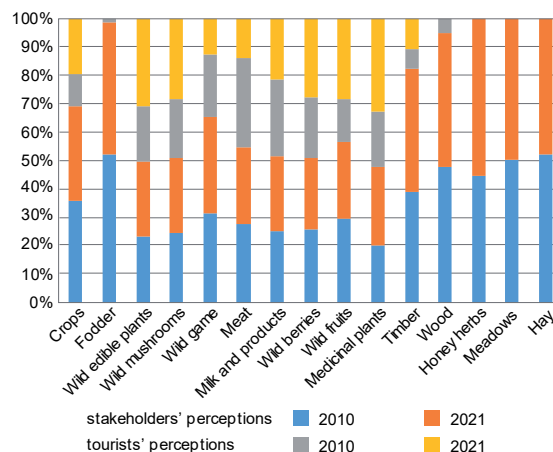


Figure 4 – Proportions and comparison of specific sub-categories in the provisioning ecosystem services category (2010–2021).

and knowledge are about 0.20–0.30 higher compared to the past (Figure 5).

Discussion

Ecosystem services: looking to the future

Recent research has shown that regenerative tourism promotes innovations by implementing new tourism practices within local communities (Bellato et al. 2022a). These new practices are based on sustainable ecological processes that contribute to human and non-human wellbeing. This paper also offers very practical guidance for tourism stakeholders who are working towards regenerative futures of tourist destinations. Perceptions of stakeholders and tourists show that changes occur spontaneously or under the influence of more global trends and problems (COVID-19, global ecological issues, questions of wellbeing and healthy lifestyle) and not as a result of state or local policy, planning and strategies. The pandemic has brought new challenges to society and ultimately restarted travel habits (Lukovic et al. 2023). New tourist demands focus on local traditional practices or ESs (e.g. wild edible plants) as part of the culinary experience (Lukovic et al. 2023). Some global discussions (e.g. Tourism Industry 4.0 2019) recognize regenerative aspects of tourism, putting local inhabitants and their quality of life at the centre, with all other stakeholders around them, hence drawing attention to and fostering indigenous traditions and bio-cultural heritage. However, this approach has not yet been incorporated into national documents.

The Tourism Development Strategy of the Republic of Serbia 2016–2025 highlighted the importance of the sustainable development of tourism, in terms of ecology and nature protection, and in terms of conserving local communities' traditional practices and cultural heritage. However, regenerative tourism itself was not considered in this strategy. In addition, the Biodiversity Strategy (Radović & Kozomara

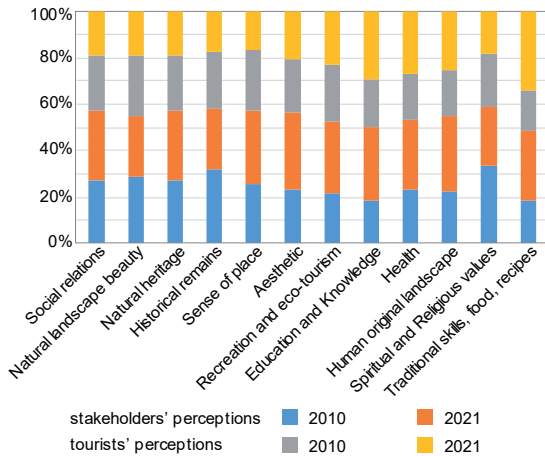


Figure 5 – Proportions and comparison of specific sub-categories in the cultural ecosystem services category (2010–2021).

2011) recognized tourism and recreation as risk factors for habitats. Recent development documents on agriculture (FAO 2023) highlight the importance of protecting biocultural heritage and of *getting back* to traditional roots, while the national Strategy for Agriculture and Rural Development of the Republic of Serbia for 2014–2024 (2014) recognized tourism as an opportunity for local economic diversification. Again, however, a regenerative approach was not considered. The results of this research could, and should, facilitate the inclusion of regenerative tourism in future strategic documents.

Because of the range of pressures on natural resources, sustainable management is a global challenge for various interest groups (Stosch et al. 2018). Understanding the perceptions of different stakeholder groups in relation to ESs and how they are valued can help maximize and balance the benefits for different users (Cumming et al. 2014). In our study, provisioning ESs were given the most importance, followed by cultural and regulating ESs. This finding is in line with patterns found in other studies (Dang et al. 2021). According to Schirpke et al. (2020), a tendency to a healthy diet correlates with an importance given to provisioning ESs. Such a tendency implies that the tourist-driven demand for animal-based products (milk and dairy products, meats, eggs) will be reduced, so that arable crops will be diverted from the livestock sector to direct human consumption. It is interesting to note that education finds its place in future perspectives, both as a cultural ES itself, and in the need to educate people about the roles of ecosystems, and about natural and ecological principles (Gould et al. 2018).

Our study site, the Golija-Studenica BR, is one of the most biodiverse mountainous areas in Serbia. The region saw rapid tourism growth several years ago, causing tension between natural resource conservation and economic stability. Recent studies conducted in this region (e.g. Luković et al. 2021; Milićević et al. 2021) highlight potential natural resources, such as

wild edible plants, as part of the touristic offer and among tourists' motives and sources of satisfaction with the destination. The results of our study show the direction in which tourism should be developed in this area, which is in accordance with previous studies that stress nature conservation, authenticity, tradition and natural products. Organic livestock production involving the conservation of traditional pastures and meadows was recognized more than a decade ago as a development option for Golija-Studenica BR (Arsić et al. 2010). Our results show a similar interest on the part of local stakeholders. The main drivers of changes (biodiversity, socio-cultural and economic development, and management) in Golija-Studenica BR indicate that responsible tourism may contribute to repopulation, economic diversification and nature protection (Pantić et al. 2021).

From sustainable to regenerative tourism

Although Pantić et al. (2021) state the need for planning documents to be updated in line with recent developments, regenerative tourism is still not usually considered. Regenerative tourism, however, could play an important role in the ESs framework and be a powerful tool for understanding the relationship between nature and society (Pueyo-Ros 2018).

Over the past few years, the focus of sustainable tourism changed from balancing social, economic and environmental aspects to regenerating ways of thinking, and of rebuilding and renewing the local community through the use of the natural and cultural heritage (Roblek et al. 2021). Regenerative tourism, however, goes a step further. Rather than focusing on the potential negative effects of tourism, this new type of tourism aims to transform and improve socio-ecological systems where tourist activities occur (Hes & Coenen 2018). The interest in regenerative tourism flourished during the Covid-19 pandemic, satisfying the primary needs of communities and new tourist demands, while contributing to the quality of life of local people (Hutchins & Storm 2019).

The difficulties of establishing regenerative tourism are for both sides, local stakeholders and tourists alike. All must be aware of the need to share responsibility. The challenges that they face are related to achieving memorable, authentic and transformative experiences, the development of creative solutions for locals' and tourists' needs, local innovation through reviving tradition, culture and natural resources, and empowering local people to get back to their roots (Fountain 2021; Major & Clarke 2021). The results of this study show that latent changes in perceptions of crucial ESs (e.g., Provisioning ES – a move towards what is wild and natural; Cultural ES – greater focus on tradition and education) drive the transformation from conventional through sustainable to regenerative tourism.

Conclusion

The shift towards regenerative tourism, wellbeing and equity was accelerated by the Covid-19 crisis. But serious challenges remain for the future. This paper has outlined spontaneous and latent changes from *sustainable* to *regenerative*, based on perceptions of ESs provided by tourists and local stakeholders from 2010 to 2021. The research confirms, on a small scale, a rethinking that was born ten years ago based on the principles of UNESCO's MAB programme – a movement towards combining community with tradition, culture, and ecosystem goods and services for wellbeing. As well as a great paucity of research in the area of regenerative tourism, there are still no strategic documents in the Republic of Serbia that incorporate it, even though European documents recognize the approach in different fields (e.g., agriculture, tourism, cultural heritage). Furthermore, the research results suggest the importance for everyone (tourists and local communities alike) of being conscious of ESs and the uses to which they are being put, and especially of traditional, ethno-ecological, knowledge and skills rooted in indigenous practices. Nature-based tourism implemented in a regenerative manner can produce a win-win conservation effect, for local communities and ecosystems.

Stakeholders in regenerative tourism collaborate by sharing roles, responsibilities, knowledge, tasks and resources. Through adopting a new paradigm, regenerative tourism seeks to transform tourism, seeing it as a network of living systems that facilitate encounters, create connections, and develop mutually beneficial relationships, through travel and experiences. Regeneration occurs mentally, physically, emotionally, spiritually, culturally, socially, environmentally and economically – a transformational process that helps tourism stakeholders in working towards regenerative futures.

Future regenerative tourism research should explore connections with existing concepts in tourism, such as tourism area life-cycle, carrying capacity, stakeholder inclusion and co-creation. The limitations of this study are related to the lack of previous theoretical and empirical knowledge about regenerative tourism and of consolidated methodological approaches that would allow results to be compared. The methodology and data-gathering process, as in many other empirical studies, have certain weaknesses, especially concerning the representativeness of the sample.

Applying and testing the proposed research model could be the basis of future research across locations, not just mountainous regions, and for planning, strategy and development documents.

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