

**SUSTAINABLE TOURISM AND MODERN TOURISM IN BUKOVINA:
CHALLENGES AND OPPORTUNITIES****Gabriela - Liliana CIOBAN***Stefan cel Mare University of Suceava, 720229, Romania*gabriela.cioban@usv.ro**Abstract**

In the context of globalization, Bucovina has become one of the most attractive tourist destinations in Romania, known for its unique natural and cultural heritage. This paper analyzes how modern tourism influences the development of the region and explores ways in which sustainable tourism can provide balanced development for both local communities and the natural environment. Both the challenges and opportunities involved in the development of tourism under the influence of globalization and new consumer trends are analyzed. The main objective is to examine how economic benefits, the need for environmental protection, and the preservation of sociocultural authenticity can be combined, based on the three fundamental dimensions of sustainable tourism: economic, ecological, and sociocultural. We focus on a comparative analysis between modern tourism and sustainable best practice models already implemented in Bucovina, such as: regulation of tourist flows, environmental education programs, local branding ("Authentic Bucovina"), eco-rural certification, and promotion of authentic experiences. We also want to highlight how ecological infrastructure (green transport, selective waste collection, renewable energy) contributes to creating a sustainable framework for tourism development. Through this approach, we offer recommendations for harmonizing the two main directions of tourism development, emphasizing the need for integrated policies that take advantage of modern trends without jeopardizing Bucovina's natural resources and its distinct cultural identity.

Keywords: *Sustainable tourism, modern tourism, heritage conservation, traditions, economic needs, social needs.*

JEL Classification: *L83, O14, Z23.*

INTRODUCTION

Bucovina is a tourist region of Romania, which stands out for its impressive natural resources, such as the Codrii Seculari from Slătioara (UNESCO, 2017) (they are an example of good practice in biodiversity conservation by limiting access to these forests over 350 years old). Călimani National Park and Rarău - Giumalău Mountains contribute to the promotion of ecotourism, through marked mountain trails and guided tours that minimize environmental impact (Fennell, 2014); through the cultural richness represented by medieval painted monasteries such as Voroneț (nicknamed the "Sistine Chapel of the East"), Moldovița and Sucevița (UNESCO World Heritage Centre, 2023), monasteries included in the UNESCO World Heritage List: Dragomirna Monastery, Humor Monastery, Pătrăuți Monastery, Arbore Monastery, the Church of "The Ascension of the Holy Cross" Pătrăuți, "St. John the New" Monastery Suceava and Probota Monastery; through the presence of craftsmen who carry out activities to promote traditions such as the art of icons, egg-laying, woodworking, fiber spinning and weaving, pottery at Marginea (traditional pottery), offering tourists authentic experiences (Popescu, R., 2020). Through agro-tourism programs that allow tourists to participate in traditional agricultural activities and contribute to reducing the ecological footprint and supporting the rural economy (Hall et al., 2020) (guesthouses in Gura Humorului, Voroneț, etc. emphasize local products: cheeses, honey, zacuscă, etc. and organic activities). The resorts of national interest (Vatra Dornei - balneal-climatic resort, Câmpulung Moldovenesc and Gura Humorului) (*Statii de interes national*, f.a.) and the resorts of local interest (Sucevița, Cacica, Dorna Arini, Dorna Candrenilor, Frumosu, Fundu Moldovei, Mălini, Moldovița, Panaci, Poiana Stampei, Pojorâta, Putna, Sadova, Șaru Dornei, Solca, Vama, Vatra Moldoviței) (*Statii de interes local*, f.a.) are also important

The increasing number of tourists in Bucovina in recent years has contributed to the local economic downturn, but it has also brought significant challenges related to the preservation of natural and cultural

heritage as the region is facing negative effects of mass tourism, including overcrowding of sites, degradation of natural resources and loss of authenticity of the local experience.

This paper explores the relationship and differences between sustainable tourism, which prioritizes long-term conservation of resources, and modern tourism, which focuses on comfort and rapid economic growth. In doing so, we aim to provide relevant examples and enlightening bibliographical sources to understand to what extent

I. PRESENTATION OF THE CONCEPT OF SUSTAINABLE TOURISM AND ITS IMPORTANCE IN THE CURRENT CONTEXT.

Through the concept of sustainable tourism, the benefits to communities and to natural and cultural heritage are particularly highlighted - emphasizing that tourism development does not compromise the use of resources by future generations. In addition to the beneficial effects, sustainable tourism also has negative impacts on the environment, the economy and society. In this regard, we note that the World Tourism Organization (UNWTO), considers the negative impacts of sustainable tourism on the economy, society and the environment as a result of meeting the needs of visitors, meeting the needs of the industry, as well as the host communities. In other words, uncontrolled tourism has a significant negative impact on the environment, leading to habitat destruction, pollution and resource depletion.

The importance of sustainable tourism is also reflected in the fact that it provides jobs by stimulating local businesses and promoting cultural exchange. We can also say that tourism is a vital economic driver for many regions and a balance between economic benefits and ecological conservation (Brears C. Robert, 2024).

Sustainable tourism involves careful planning and management of tourism activities to ensure that natural resources will not be depleted and will not harm the ecosystem. Sustainable tourism therefore requires reducing waste, conserving water and energy, protecting animals and supporting local economies.

Sustainable tourism is helping to mitigate the problems arising from the growth in global travel (O.M.T., 2025) (international tourism recorded an estimated 1.4 billion arrivals in 2024 - an 11% increase on 2023. Europe was the most visited destination, with 747 million arrivals in 2024, while Asia and the Pacific saw a 33% increase. Destinations such as El Salvador and Morocco reported significant increases of 81% and 35% respectively (Figure 1.). UNWTO expects growth to continue in 2025, due to strong demand.) - to the pressure and overcrowding on popular destinations, pollution and environmental degradation - by promoting responsible travel practices that protect and enhance destinations' natural and cultural heritage. Also, according to the World Travel and Tourism Council (WTTC), the total contribution of travel and tourism to global gross domestic product is expected to reach just under US\$10 trillion in 2023, almost matching pre-pandemic levels. This figure covers the direct, indirect and induced impacts of the global travel and tourism sector. Meanwhile, the total number of global tourism jobs is expected to exceed 300 million in 2023

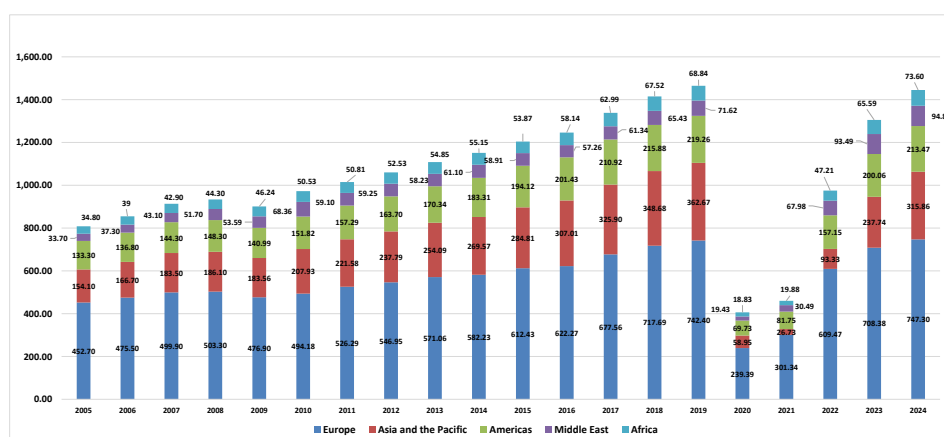


Figure 1. Number of international tourist arrivals worldwide from 2005 to 2024 by region (in millions)

Source: www.statista.com/statistics/186743/international-tourist-arrivals-worldwide-by-region-since-2010/

In the same context, we note that sustainable tourism promotes a deeper connection between travelers and the places they visit, encouraging travelers to respect the places they visit. It is important to implement

sustainable tourism practices proposed by residents, tourism businesses and policy makers. To this end, sustainable tourism taxes have been introduced in some tourist regions to help finance nature conservation investments. Travelers can also do their bit by traveling out of season and have the opportunity to spend their holiday money on local products.

II. METHODOLOGY FOR ANALYZING SUSTAINABLE AND MODERN TOURISM IN BUCOVINA

This methodology allows to investigate the level of implementation of the principles of sustainable tourism, to assess the impact of modern practices on the environment, economy and local communities, as well as to identify trends and opportunities for future development.

The study includes a quantitative analysis of performance indicators through the evaluation of documents, sectoral reports, official statistics, which capture the complexity of the phenomenon.

Quantitative data: official statistics extracted from UNWTO, Suceava County Council, etc. reports for the period 2019-2023, on the number of visitors, tourist flows, occupancy, level of green investments, assessment of green infrastructure, assessment of selective waste collection practices, green transportation, and identification of authentic vs. modern elements in accommodation and service structures.

III. RESEARCH LIMITATIONS

We recognize potential methodological limitations, such as uneven access to up-to-date data for some localities. These limitations are offset by the diversification of sources and triangulation of results (Creswell & Clark, 2017).

IV. SUSTAINABLE TOURISM VERSUS MODERN TOURISM IN BUKOVINA

Sustainable tourism has become a central concept in the development of modern tourism, being closely linked to the global challenges of climate change, conservation of natural and cultural heritage and social equity. The concept evolved from the need to manage the negative impacts of mass tourism and to create a balance between the needs of the tourist, the host community and the environment.

The concept of sustainability originates from the Brundtland report (Our Common Future, 1987) by the World Commission on Environment and Development (WCED, 1987): "Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". This definition has since been extended and applied to the field of tourism, giving rise to the concept of sustainable tourism, which implies a type of tourism that respects the principles of sustainable development. The World Tourism Organization (UNWTO) updated the definition of sustainable tourism in 2005, stating that: "Sustainable tourism refers to tourism that takes full account of its current and future economic, social and environmental impacts, responding to the needs of visitors, industry, the environment and host communities." (UNWTO, 2005). David Weaver argues in his paper "Sustainable Tourism" that sustainable tourism is an ongoing process, not a fixed state, and involves constant adaptation of tourism practices. Tatjana Mihalic emphasizes that sustainable tourism cannot exist without effective governance, strategic management and the involvement of local stakeholders (Mihalic, 2000), and in 2016 she points out that "Sustainable development requires a coherent integration of economic, environmental and social objectives into destination development strategies" (Mihalic, 2016). Bramwell & Lane in 1993 emphasizes the need to involve all stakeholders in decision making i.e. "Sustainable tourism is a form of tourism that leads to responsible resource management to meet the economic, social and aesthetic needs of visitors while preserving cultural integrity, essential ecological processes and biodiversity" (Bramwell & Lane, 1993).

Therefore, sustainable tourism is characterized by three fundamental dimensions: (economic: generating economic, equitable and sustainable benefits for local communities; ecological: protecting ecosystems and the rational use of natural resources; socio-cultural: respect for local culture, heritage conservation and involvement of host communities in decision-making).

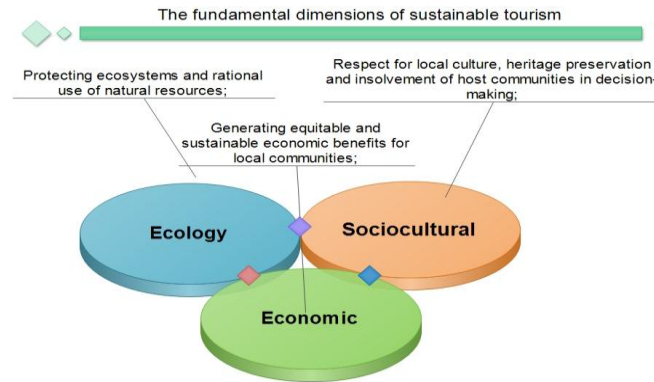


Figure 2. The fundamental dimensions of sustainable tourism

These dimensions are supported by the fulfillment of sustainable tourism objectives in Bucovina such as:

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| Objectives of sustainable tourism in Bucovina: | <ul style="list-style-type: none"> ✓ Protecting the natural environment; ✓ Preserving cultural heritage; ✓ Equitable economic development; ✓ Involving local communities; ✓ Educating tourists and promoting responsibility. |
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For Bucovina, sustainable tourism is essential to preserve the natural heritage, protect monasteries, nature reserves, promote traditions and authenticity.

Modern tourism requires immediate accessibility, modern infrastructure (the construction of modern hostels and large hotels in tourist areas such as Gura Humorului, Cîmpulung Moldovenesc, Vatra Dornei can alter the traditional architecture (Ciobotaru, A., 2021)), car traffic in tourist areas which, through pollution, affects the natural environment, as well as the excessive expansion of parking lots, guesthouses and restaurants without protecting the environment (Hall, C. M., Scott, D., Gössling, S., 2020). In the same register, we recall that modern tourism leads to the overcrowding of tourist attractions (the monasteries of Voroneț, Putna, etc. or the Tihuța Pass receive a large number of visitors, especially during the peak season: Easter holidays, Christmas holidays or school holidays, which contributes to the physical wear of monuments and the overcrowding of the surrounding areas (UNESCO World Heritage Centre, 2023)). Modern tourism is also centered on entertainment: on events and trade fairs attracting a wide audience and promoting mass-produced mass souvenirs, which reduces authenticity. (Popescu, R., 2020) Excessive technologization and modern accommodation facilities have a high environmental impact, but also an unbalanced economic impact: revenues generated by mass tourism do not always go back to local communities (e.g. large hotel chains that outsource profits).

The positive effect of modern tourism is that it stimulates the local economy (generating a rapid economic flow in the short term), contributing to an increase in the number of visitors (thanks to modernized road infrastructure and comfortable accommodation), but can profoundly affect cultural and natural resources if development is not managed sustainably; it helps to increase the international visibility of the tourist destination and facilitates access for tourists from different demographic groups. A comparison between sustainable tourism and modern tourism highlights the following aspects: (Table 1).

Table 1. Comparison of sustainable and modern tourism in Bucovina

Nr.crt.	Aspect	Sustainable Tourism	Modern tourism
1.	Purpose	Conservation and responsible use of resources	Attracting large numbers of tourists and short-term income
2.	Environmental impact	Minimum respect for biodiversity and natural landscapes	High, through pollution and uncontrolled development
3.	Economic benefits	Distributed directly to local communities	Concentrated in large commercial chains (multinationals) or in large cities
4.	Authenticity	Unique and traditional experiences	Uniformation, through the promotion of commercial services

The issues highlighted in the table show that the main problems between modern and sustainable tourism derive from economic pressure versus long-term resource protection. These issues require some recommendations for harmonizing sustainable and modern tourism:

I. Regulating tourist flows	Implementing online booking systems to limit acces to congested areas (e.g. UNESCO monasteries)
II. Educating tourists and operators	Programs to educate tourists on respecting the natural environment and supporting small local business
III. Promoting the sustainable tourism brand	Creating a local brand focused on ecotourism and authenticity, which will attract tourists interested in authentic experiences
IV. Developing green infrastructure	Investing in green transport selective waste collection and the use of renewable wnergy in questhouses and hotels

Figure 3. Recommendation for harmonizing sustainable and modern tourism
Source: Author, 2025

4.1. The overcrowding of tourist areas in Bucovina has generated problems related to the degradation of natural resources and insufficient tourism infrastructure. In this context, the development of methods to regulate tourist flows and the implementation of online reservation systems are necessary and applicable solutions to protect sensitive objectives. Examples of measures implemented to regulate tourist flows in Bucovina:

- Online reservation system for the access to the Slătioara Dry Forest - aims to protect the UNESCO-listed dry forest by limiting the number of tourists (tourist groups are limited to 15 persons) and each tour is guided by a specialist who educates tourists about the local ecosystems. Reservations can be made through the "Visit Bucovina" platform, which provides information on prices, routes and rules of visitation.
- Entrance fee (possibility to book tickets online) and organized tours of the Voroneț Monastery aimed at reducing overcrowding (at certain times) and financing conservation works on the exterior paintings (UNESCO World Heritage Centre, 2023). According to a report of the Archdiocese of Suceava and Rădăuților (Arhiepiscopia Sucevei și Rădăuților, 2023), from June to August 2023 the crowding was reduced by 20% during the peak season (the total number of monthly visitors remained high, but the crowding per time slot was reduced – Figure 4.), and the funds collected (76%) through the entrance fee (12 lei/person) were used for the restoration of the frescoes, maintenance of green spaces, waste management and the salaries of certified guides (Figure 5.).

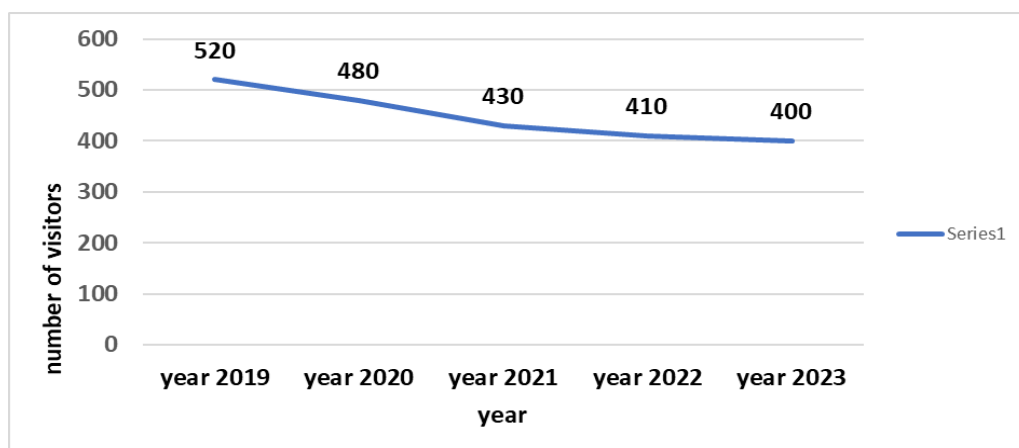


Figure 4. Average number of simultaneous visitors in Voroneț (Peak Season)

Source: Archdiocese of Suceava and Rădăuților. (2023). Annual report on tourist flows and heritage management at Voroneț Monastery



Figure 5. Destination of funds collected from the entrance fee (2023)

Source: Archdiocese of Suceava and Rădăuților. (2023). Annual report on tourist flows and heritage management at Voroneț Monastery

This strategy did not detract from the attractiveness of the site, but optimized the visitor experience and allowed funds to be used for historic preservation and the implementation of environmental protection measures. The implemented measures reflect internationally recognized best practices, promoting the sustainability of cultural and religious tourism as recommended by the UNWTO („UNWTO Report Links Sustainable Tourism to 17 SDGs”, 2021) and similar case studies at UNESCO sites (Hall, C. M., Scott, D., Gössling, S., 2020).

- c. Access limitation and customized tours (for small groups) in the Zugren Gorge to reduce human impact on this protected mountain landscape. Programs are managed through the "EcoTouristic Bucovina" application. According to an internal report from 2022, the measures taken have contributed to a 35% reduction in pollution of the area and the feedback from tourists has been positive (the share of tourists declaring the experience "good to excellent" increased from 71% to 88% after the implementation of the program, reported through digital questionnaires integrated in the EcoTouristic Bucovina app) with an appreciation of the better organization and the focus on education.

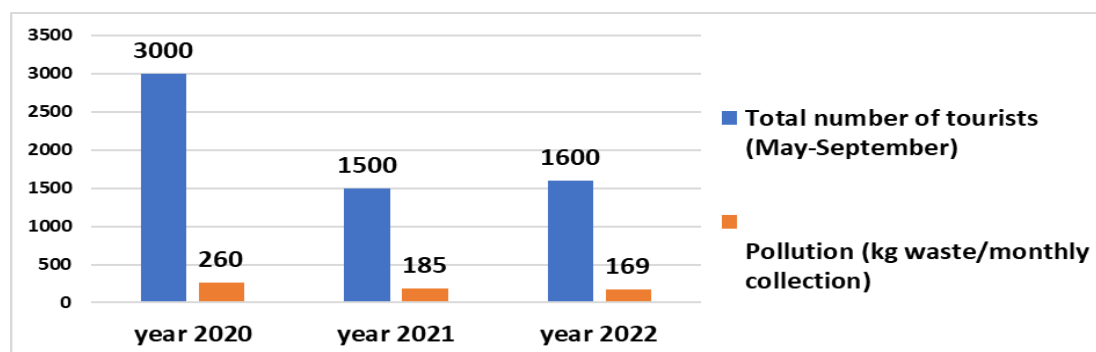


Figure 6. Monitoring report on the impact of tourism and conservation measures Zugren Gorges

Source: According to the monitoring report (Zugreni Park Administration, 2022)

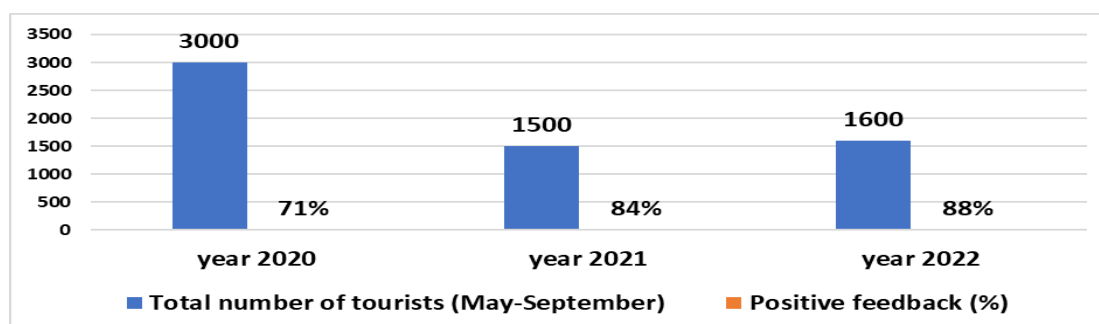


Figure 7. Monitoring report on the impact of tourism and conservation measures Zugren Gorges

Source: According to the monitoring report (Zugreni Park Administration, 2022)

These results highlight the success of a responsible tourism strategy based on controlled access restriction, personalized tours and effective digital communication. The substantial decrease in pollution coupled with the increase in visitor satisfaction validates the methodology adopted as a best practice model for other

protected natural areas in Romania and the Carpathian area (Hall, C. M., Scott, D., Gössling, S., 2020). The digitization of tourism management facilitates both impact monitoring and proactive tourist information, with benefits for biodiversity conservation and the quality of the recreational experience (UNWTO Report Links Sustainable Tourism to 17 SDGs", 2021).

- d. Limited visiting hours at popular sites: at Sucevița and Moldovița monasteries, tourists can only be scheduled at certain times to allow for the restoration of the religious spaces and activities, and crowding is reduced. (Popescu, R., 2020)
- e. Prohibition of motorized vehicles on certain mountain trails: in the Rarău areas, ATV access to protected trails is strictly regulated and their use is allowed only outside natural areas. (Hall, C. M., Scott, D., Gössling, S., 2020)
- f. Digital systems and mobile apps: the "Visit Bucovina" app allows tourists to book tickets for several attractions in the region, get guides and information on environmental protection rules.

4.2. In order to prevent the negative effects caused by the lack of education of tourists, several programs have been developed in Bucovina that promote environmental education of tourists and support local entrepreneurs.

The programs for educating tourists to respect the natural environment - in Bucovina - focus on nature reserves, mountain trails and cultural sites.

In this respect, the following have been initiated and implemented:

A. Programs that promote environmental education of tourists about ecological practices and the importance of conserving natural resources. In Bucovina, these initiatives focus on nature reserves, mountain trails, and cultural sites.

- a. The program "Responsible hiking in Rarău - Giumalău" launched in 2018 by local NGOs in partnership with the administration of the Călimani National Park and the City Hall of Câmpulung Moldovenesc, (Educating tourists about the importance of protecting the alpine ecosystems of the Rarău - Giumalău Mountains (Popescu R., 2023): The number of participants collecting their own waste on the trails increased by 30% between 2018 and 2022, according to a local report (Hall, C. M., Scott, D., Gössling, S., 2020)).

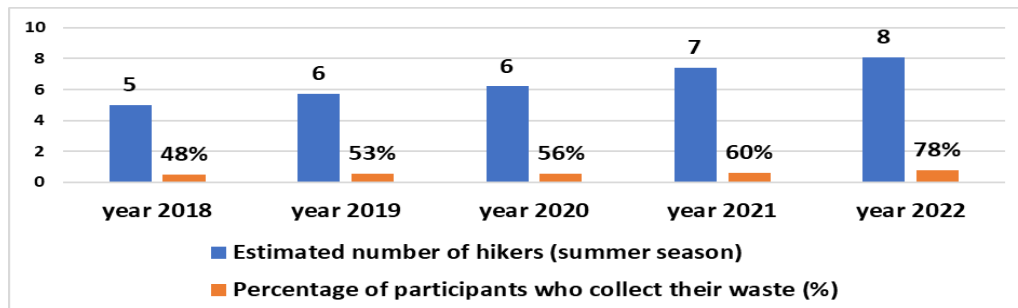


Figure 8. Evolution of the percentage of tourists who collect their own waste (2018–2022)

Source: Association of Friends of Rarău. (2023). Annual report: Impact of the "Responsible Hiking in Rarău-Giumalău" program on tourist behavior (2018–2022).

The available data highlights the positive effects of an integrated strategy for environmental education and eco-friendly infrastructure. The spectacular increase in the percentage of responsible tourists between 2018 and 2022 confirms the importance of continuous intervention and cooperation between local NGOs, public administration, and tourism operators. (Drumeții montane în siguranță și responsabilitate, 2022; Popescu R., 2023) This model provides a solid basis for replication in other mountain regions with high tourist flows.

- b. The "Green in Bucovina" program (awareness campaigns, such as "Protect the forests of Bucovina," which seeks to limit deforestation by promoting nature-friendly tourism, etc.).
- c. The "Ecotourism in Protected Natural Areas (Secular Forests of Slătioara)" program – (Limiting visitors to protect the fragile ecosystems of the forests, while educating tourists. According to (UNESCO World Heritage Centre, 2023), the program has contributed to reducing soil erosion and increasing visitor education).

B. Programs to support small local businesses - Communities in Bucovina depend largely on rural tourism, making it essential to support small businesses to stimulate the local economy. Support programs include projects to promote artisanal and traditional products, as well as the development of agritourism.

- a. The "Crafts of Bucovina" program aims to preserve local traditions and support artisans through education and promotion. The program increased the income of local artisans by 40% between 2019 and 2022.

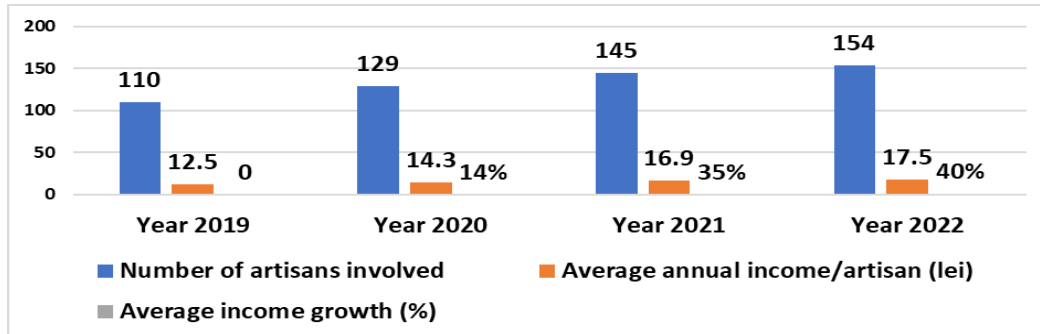


Figure 9. The Impact of the Bukovina Crafts Program on Craft Communities

Source: Suceava County Council. (2023). Annual report: Impact of the Bucovina Crafts Program on artisan communities.

The 40% increase in local artisans' incomes reflects the effectiveness of the program both economically and culturally, combining education with active market promotion. (Popescu, R., Oneață, A., 2022) Exhibiting products at national fairs, facilitating online sales and networking activities have contributed to increasing the visibility of the "Bucovina Handicrafts" brand and strengthening a modern handicraft community capable of responding intangibly to contemporary challenges. (UNESCO, 2021) The "Bucovina Handicrafts" programme is proving to be a best practice model for revitalizing intangible heritage and sustainably supporting local artisans, demonstrating that continuous education and smart promotion can generate both economic and social benefits.

- b. Project "Tastes of Bucovina" - aims to promote local culinary products through fairs and festivals and to integrate small local farms into tourist circuits to support traditional farmers. According to the Suceava County Council (2020), the project has generated a 25% increase in tourist interest in guesthouses offering traditional products.
- c. Project "Agrotourism - Key to Rural Development" - aims to encourage small businesses by promoting agrotourism in villages in Bucovina. In Gura Humorului more than 50 hostels have implemented environmentally friendly practices: use of renewable energy and reduction of plastic consumption. (Fennell, 2014)

These programs have benefited tourists, local communities (increased incomes and stimulating the rural economy), the natural environment (by reducing pollution and preserving natural landscapes), but for increased effectiveness, these initiatives need to be scaled up to the regional level and integrated into long-term sustainable tourism strategies.

4.3. In the same context we can say that promoting the local sustainable tourism brand centered on ecotourism and authenticity can attract tourists interested in authentic experiences. Among the projects carried out in Bucovina in this sense, we mention :

- a. Local branding - "Authentic Bucovina", launched by the Bucovina Tourism Association and Suceava County Council. This project promoted unique experiences such as participation in egg-laying workshops, hikes with local guides in the Codrii Seculari, visits to authentic sheepfolds and tastings of local products. (Popescu, R., 2020) Advertising materials, websites, brochures, as well as social media platforms use slogans such as "Choose Bucovina - Nature, Tradition, Authenticity" and "Home to Customs" to emphasize local uniqueness.
- b. "Eco-Rural Bucovina" certification - this project has helped several guesthouses and farms in Bucovina to obtain a quality certification for environmentally friendly practices: selective collection, use of renewable energy, seasonal local menu, traditional landscaping and natural materials. (WWF Romania, 2022)

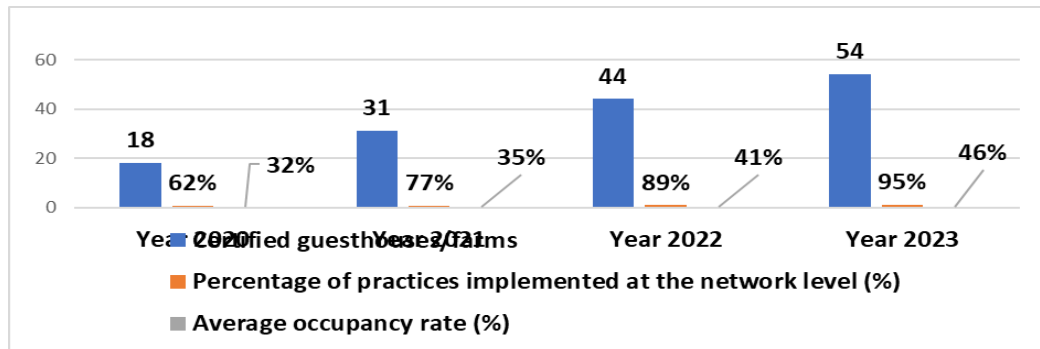


Figure 10. Annual report on sustainable certification and its impact on rural tourism

Source: Eco-Rural Bucovina Association. (2023). Annual report on sustainable certification and the impact on rural tourism.

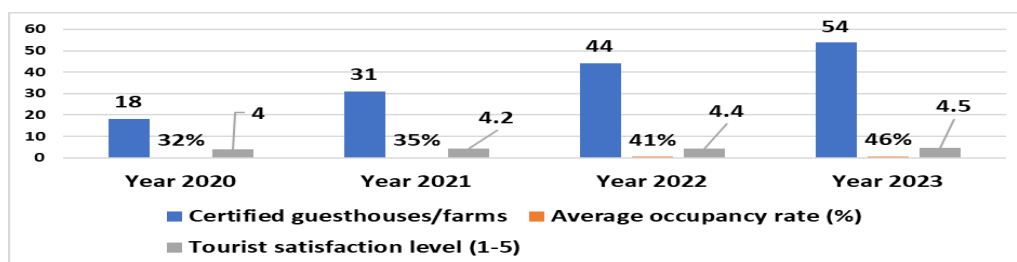


Figure 11. According to the report of the "Eco-Rural Bucovina" Association (2023) the level of satisfaction of tourists (1-5) as a result of the practices implemented at the network level

Source: Eco-Rural Bucovina Association. (2023). Annual report on sustainable certification and the impact on rural tourism.

The increase in the number of certified establishments by 200% between 2020 and 2023 underlines the attractiveness and local/regional recognition of the "Eco-Rural Bucovina" logo. The implementation of certification has led to an almost universal adoption (95% in 2023) of eco practices, which has had a direct effect on both the increase in occupancy by 44% and the level of satisfaction expressed by tourists (4.5 out of 5), in line with European trends. („UNWTO Report Links Sustainable Tourism to 17 SDGs”, 2021)

This demonstrates that the integration of sustainability standards is not only a responsible approach but also economically competitive, reinforcing the image of the region as an eco-rural destination. The increased interest of tourists in local products, authentic experiences and respect for natural resources is confirmed by the positive questionnaire responses and the increase in repeat bookings at certified sites. (Popa & Vasiliu, 2021; Stoian et al., 2022)

- c. Platform and trails "Authentic Experiences in Bucovina" - the development of this platform has the capacity to bring together guided tours for small groups, interactive workshops (e.g. pottery in Marginea, egg-laying in Ciocănești, eco picnics, wagon rides), integrates video stories of locals and testimonials of tourists who have chosen sustainable options, promoting the concept of slow-travel and participatory tourism. (Hall et al., 2020)
- d. Festivals and local events with a focus on authenticity - The Bucovina brand has also been strengthened through festivals such as "The Story of Bucovina Wine", "The Festival of Eggs in Ciocănești" and Christmas fairs organized in traditional villages. These promote local products and traditions - from household dishes to handicrafts and folk dances - which are not commercial, but focus on the authenticity of living in Bucovina. (Popescu, 2020; „UNWTO Report Links Sustainable Tourism to 17 SDGs”, 2021)

4.4. The development of green infrastructure in Bucovina's tourism is achieved through investments in green transportation, selective waste collection and the use of renewable energy in hostels and hotels. In this regard we present relevant examples, opportunities, challenges and good practices for green infrastructure in the context of tourism in Bucovina.

- a. Green infrastructure oriented investments have been made by local authorities, non-governmental organizations and tourism entrepreneurs. Through the "Green Bucovina" project implemented by the Suceava County Council, electric minibuses have been introduced between 2020-2023 to transfer tourists between the main attractions (on the Gura Humorului-Voroneț-Mănăstirea Humorului routes)

and CO₂ emissions have been reduced by about 18% (Consiliul Județean Suceava, 2021) (Figure 12.). Promotion of non-motorized transport - in Gura Humorului, the first bike-sharing program with electric bicycles was inaugurated in 2022, in partnership with four eco hostels. This project served more than 670 tourists in the 2023 summer season, more than 80% of them foreign tourists. (Popescu, 2023) These programs complement efforts to expand sustainable mobility infrastructure regionally.

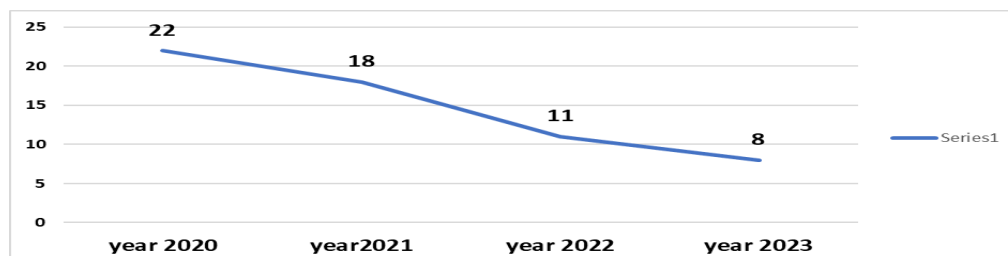


Figure 12. Reducing CO₂ emissions by implementing electric transport in Gura Humorului (2020-2023)

Source: Suceava County Council. (2021). www.cjsuceava.ro

The graph shows a decrease in CO₂ emissions, correlated with the reduction in the number of internal combustion engine trips and the increase in the use of electric vehicles.

- b. Selective waste collection: More than 40 hostels and 7 hotels in Bucovina have implemented sorting systems by fractions (glass, metal, paper, plastic, biodegradable). They have invested in training of staff and tourists, as well as in cooperation with specialized firms in Suceava and Câmpulung Moldovenesc. The "Eco-Pensiunea" program, launched by the Bucovina Ecotourism Association, reported a 37% reduction in non-recycled waste between 2019-2022 and a 50% increase in selective collection among participating guesthouses (Figure 13.) (WWF Romania, 2022).

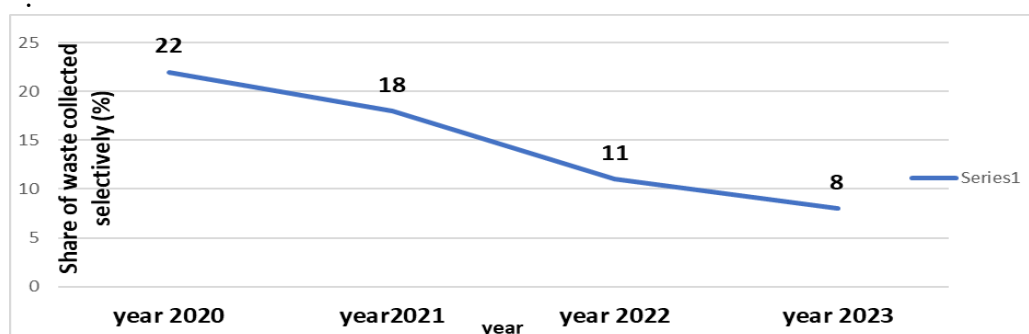


Figure 13. Share of waste collected selectively at guesthouses in Bucovina (2019–2022)

Source: Romania (2022). Eco-Pensiunea project: impact report.

The graph highlights a steady increase in selective collection, demonstrating the effectiveness of the program and education efforts.

- c. Use of renewable energy in guesthouses and hotels:

According to a regional report (Suceava County Council, 2023), 15% of hotels and 24% of eco-certified guesthouses in Bucovina have installed photovoltaic panels or heat pumps for hot water and heating (Consiliul Județean Suceava, 2023) (graph no. 12). Two guesthouses in the Fundu Moldovei area have also implemented small biomass power plants using local agricultural waste. The "Casa Verde" guesthouse in the village of Vama installed 32 photovoltaic panels with an output of 14 kW in 2021. In 2022, the guesthouse reduced its energy bill by 42% and avoided releasing over 7 tons of CO₂ into the atmosphere. (Popescu, 2023) The owners also report a higher level of attraction for foreign tourists concerned about their carbon footprint.

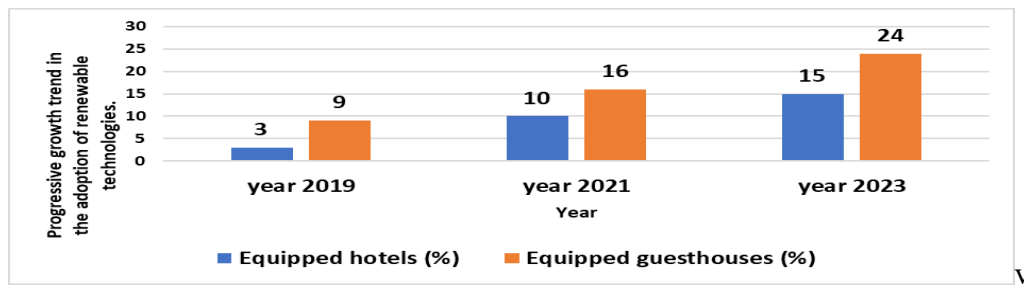


Figure 14. Evolution of the proportion of accommodation units equipped with renewable energy systems (%)

Source: www.cjsuceava.ro

The graph suggests a trend of progressive growth in the adoption of renewable technologies.

Green infrastructure development programs have proven effective in Bucovina, with measurable benefits in pollution reduction, energy efficiency and community awareness. We recommend extending these practices nationwide and creating attractive financing schemes for eco-efficient investments.

V. CONCLUSIONS

This study highlights the fact that Bucovina, located at the crossroads between tradition and modernity, is undergoing a dynamic process of transformation under the influence of increasingly diverse tourist demand.

The challenges posed by the expansion of modern tourism—increased tourist flows, pressure on natural resources, and the risk of blurring local identity—require adapted management strategies geared toward balanced development.

Sustainable tourism, conceptualized as a responsible alternative to mass tourism, is emerging as a viable solution for protecting fragile ecosystems and preserving the cultural specificity of Bukovina. Programs to regulate tourist flows, such as access management to protected sites, the organization of guided tours, and the digitization of tourist reservations, are proving effective in reducing anthropogenic impact and increasing visitor satisfaction.

The need for environmental education for tourists is becoming evident, with regional initiatives succeeding in improving their attitudes and behavior, particularly with regard to waste management, responsible consumption, and respect for natural and cultural heritage. The integration of ecological practices—selective collection, use of local resources, promotion of seasonal activities and traditions—confirms that modern tourism can be aligned with sustainability values when anchored in coherent strategies and solid local partnerships.

Furthermore, supporting small local businesses, developing agritourism, and promoting artisanal products provides economic stability to communities in Bucovina, helping to maintain rural vitality and keep traditional crafts alive.

Therefore, the transition to a modern sustainable tourism model in Bucovina requires continuous adaptation to socio-economic and environmental challenges, capitalizing on technological opportunities, local resources, and cooperation between public and private actors. The region's development prospects are marked by a balance between tourist attractiveness, environmental protection, and community well-being, and the consolidation of a sustainable tourist identity can transform Bucovina into a national and international landmark.

VI. RECOMMENDATIONS

The implementation of these measures in Bucovina has had a significant positive impact on the protection of the natural and cultural heritage, which calls for the extension of these methods to other natural and cultural sites in Bucovina; integration of all reservation systems into a centralized digital platform; creation of national educational campaigns for tourists on the importance of responsible tourism; strengthening partnerships between authorities, NGOs and local communities to extend the impact of the implemented programs; access to finance for small entrepreneurs; creation of centralized online platforms for the promotion of ecological and authentic activities in Bucovina

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