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Regional tourism: Exploring themes for Transnational Routes

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ABSTRACT: This study explores the potential for developing a thematic tourism corridor linking China, Mongolia, and Russia, drawing on theoretical insights from core-periphery theory, new regionalism, and place branding. Situated between two dominant regional powers, Mongolia faces challenges stemming from its peripheral status - such as limited accessibility and infrastructure deficits - yet these same conditions present unique opportunities for cross-border tourism development. Based on qualitative interviews with tourism experts, the research identifies six potential themes - four cultural and two natural - that could underpin a cross-border corridor model rooted in shared heritage and ecological assets. Employing qualitative research methods, specifically in-depth interviews with tourism experts, this study identifies two natural themes and four cultural themes deemed suitable for the development of cross-border tourism. The findings reveal both opportunities and constraints in advancing tourism collaboration within the China-Mongolia-Russia transboundary context. The study contributes to the regional tourism discourse by proposing context-sensitive strategies that align natural and cultural resources with market-oriented products, fostering inclusive growth, regional integration, and sustainable tourism practices. Based on empirical insights, the study proposes strategic directions to align natural and cultural resources with market-oriented tourism products, thereby enhancing visitor flows and promoting long-term, sustainable growth in the region.

KEYWORDS: thematic routes, tourism, regional integration, economic development, transnational tourism

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1. INTRODUCTION

Economic corridors refer to integrated infrastructure networks - comprising roads, railways, ports, and telecommunications - that facilitate the movement of goods, people, capital, and services across borders (Judge, 2018; Manzoor & Wei, 2018). Designed to connect cities and regions via efficient transport routes (Brunner, 2014; Nagy, 2012; Oyunchimeg, 2022), economic corridors have emerged as a critical framework for regional development since the post-Soviet transition (Bender, 2001). In parallel, regional tourism has gained prominence as a vehicle for economic integration, cultural exchange, and sustainable development. Themed transnational routes - such as the Silk Road, Viking Trail, and Danube River Trail - illustrate how shared heritage and ecological assets can foster regional cooperation and attract international travelers (Timothy & Nyaupane, 2009; Shishmanova, 2015). However, while the China–Mongolia–Russia Economic Corridor has been widely discussed in terms of trade and infrastructure, scholarly attention to its tourism dimension remains limited. This study addresses this gap by examining opportunities for thematic tourism development that can unify destinations and strengthen regional identity. While heritage narratives such as the "Tea Road" have been discussed in past literature (Egshig, 2016), this research offers a more comprehensive thematic framework, grounded in empirical insights and tailored to contemporary tourism development goals. The study also situates Mongolia not merely as

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a transit country but as a distinctive destination, leveraging its geographic remoteness, nomadic heritage, and ecological richness to differentiate itself within the region.

Mongolia's landlocked geography and relatively small population place it in a peripheral position within the Northeast Asian geopolitical landscape. This status has constrained its integration into global tourism flows, due to limited international air access, underdeveloped infrastructure, and low international visibility (UNWTO, 2018). Paradoxically, these very factors have increased its appeal among travelers seeking authentic, immersive, and less-commercialized experiences. Mongolia's vast steppe, preserved nomadic culture, and historical role as a conduit of intercontinental exchange offer substantial value for thematic tourism. Viewed through the lens of economic corridor development, tourism can be strategically aligned with infrastructure and mobility policies. When supported by efficient transport systems and harmonized border procedures, corridors can enhance tourist flows and support broader development goals, including rural revitalization, SME growth, and the preservation of cultural heritage (Hall & Page, 2014; Lopez-Guzman et al., 2014). For Mongolia, effective corridor-based tourism development requires a distinctive thematic positioning that draws on its comparative advantages. Unlike China and Russia, which command large, diversified tourism markets, Mongolia must capitalize on its unique identity as a guardian of nomadic traditions, ecological integrity, and transcontinental heritage. This study explores how cross-border thematic narratives - co-developed with neighboring countries - can serve as a catalyst for sustainable and inclusive tourism growth.

2. LITERATURE REVIEW

2.1. Transnational tourism routes and regionalism

Transnational tourism routes are increasingly recognized as instruments of regionalism and cross-border cooperation. Emerging within the paradigm of "new regionalism," these routes reflect a shift toward soft economic ties, cultural diplomacy, and non-state actor engagement (Hettne & Söderbaum, 2000). Tourism serves as a form of "soft connectivity," enabling the flow of people, ideas, and cultural narratives across borders (Alampay & Rieder, 2008). Successful examples include the revitalization of the Silk Road and the Viking Routes project, which leverage shared heritage to create coherent, symbolic tourism experiences (Timothy & Nyaupane, 2009; Swarbrooke et al., 2003). These initiatives demonstrate how thematic tourism can reinforce regional identity and contribute to integration objectives, especially when aligned with broader strategies such as transport connectivity and visa facilitation (ADB, 2020). However, scholars emphasize that thematic cohesion alone is insufficient. Effective governance, equitable resource distribution, and coordinated planning are essential for long-term sustainability (Bock et al., 2021; Dredge & Jamal, 2015). Transnational tourism routes thus represent both cultural bridges and policy tools - capable of promoting sustainable regional development when supported by inclusive, multi-level collaboration.

2.2. Tourism and the corridor development

While traditionally focused on trade and infrastructure, economic corridors increasingly intersect with tourism as a tool for regional integration and diversification (Ramirez et al., 2017; Athukorala & Narayanan, 2017; World Bank Group, 2018). In South and Southeast Asia, corridors such as the India–Myanmar–Thailand Trilateral Highway have stimulated tourism through enhanced mobility and visibility, though gaps remain in tourism-specific infrastructure and branding (Athukorala & Narayanan, 2017; Ramirez et al., 2017). For landlocked and infrastructure-challenged countries like Mongolia, economic corridors - particularly the China–Mongolia–Russia Economic Corridor (CMREC) - present an opportunity to reposition geographic peripherality as strategic connectivity (Oyunchimeg, 2022). Integration into regional corridor frameworks, when accompanied by tourism policy alignment, destination branding, and digital facilitation, can significantly enhance tourism flows and rural development. Regional case studies, such as the Greater Mekong Subregion and East Africa's Northern Corridor, underscore the need for spatial coordination and thematic coherence. However, in the absence of inclusive governance, careful consideration of socio-environmental impacts, and active community participation, such initiatives risk

exacerbating existing inequalities and contributing to the commodification of local cultures (Chen et al., 2021; Scheyvens & Biddulph, 2018). Economic corridors can serve as catalysts for tourism development, but their success depends on the intentional inclusion of tourism in corridor governance, strategic destination planning, and infrastructure alignment. For Mongolia, the opportunity lies in leveraging its cultural distinctiveness and geographic position through integrated policy frameworks that embed tourism within broader regional development agendas.

2.3. Cultural and natural themes in regional tourism

Thematic frameworks play a pivotal role in shaping coherent, marketable, and culturally meaningful cross-border tourism experiences. Whether based on cultural heritage, natural landscapes, or a hybrid of both, thematic tourism enables destinations to differentiate themselves while contributing to broader regional narratives and identity formation (Richards & Wilson, 2006; Timothy, 2011). These frameworks serve as strategic marketing tools while also acting as mechanisms for fostering cultural diplomacy and regional cohesion.

Natural themes in regional tourism similarly capitalize on shared ecological assets, including mountain ranges, river basins, deserts, and transboundary wildlife habitats. Initiatives such as the Alpine Convention, spanning eight European countries, and the Greater Virunga Transboundary Collaboration in East Africa demonstrate how environmental connectivity and joint governance can support both conservation and ecotourism (UNWTO, 2018). These models offer nature-based experiences such as trekking, birdwatching, and wildlife safaris while reinforcing sustainable management of shared ecosystems.

Cultural tourism themes often draw upon shared historical legacies such as religious networks, ancient trade routes, and patterns of human migration. Well-established examples - such as the Camino de Santiago in Europe and the Silk Road across Asia - illustrate how heritage-based narratives can transcend political boundaries to create compelling transnational tourism products (Timothy & Nyaupane, 2009). These routes promote cultural immersion, experiential learning, and cross-border collaboration in heritage preservation (UNESCO, 2013). Their success is largely attributed to their emotional resonance, perceived authenticity, and narrative continuity across diverse local contexts (Briedenhann & Wickens, 2004).

A critical factor in the success of both cultural and natural thematic tourism is the construction of narratives that resonate with local communities and appeal to international visitors. Themes must strike a balance between regional coherence and local distinctiveness (Richards & Wilson, 2006). Storytelling serves as a vital tool in this process, linking places, people, and experiences into cohesive transnational journeys that can be effectively marketed (Månsson, 2011). When themes reflect the lived experiences, values, and aspirations of local populations, they are more likely to gain community support and contribute to inclusive, sustainable tourism development (Salazar, 2012). Effective thematic development in cross-border contexts requires coordination among multiple governance levels - including national tourism authorities, local governments, heritage organizations, and private sectors. As Timothy (2011) notes, such efforts are inherently political, involving negotiations over authenticity, representation, and interpretation. Failure to address these dynamics can result in fragmented visitor experiences, contested narratives, or the commodification of sensitive cultural traditions (MacCannell, 1999). Cultural and natural themes provide a foundation for regional tourism strategies that promote transnational cooperation, strengthen regional identity, and enhance destination competitiveness. Their success depends on participatory planning, narrative authenticity, and governance structures that transcend national borders while respecting local uniqueness.

2.4. Core–periphery theory, regionalism, and place branding

Core-periphery theory explains spatial inequality in development, wherein "core" regions accumulate economic and infrastructural advantages while peripheral areas face systemic disadvantages (Krugman, 1992). Mongolia's geographical position between two dominant regional powers - China and Russia - reflects a classic peripheral condition. Its landlocked nature, low population density, and limited

transport infrastructure pose structural challenges for tourism development, resulting in restricted accessibility and reduced visibility in global tourism circuits (Oyunchimeg, 2022).

Paradoxically, the peripheral status of Mongolia also presents strategic advantages in the context of thematic tourism development. As stated by Hall and Page (2006), peripheral destinations often appeal to international travelers seeking authenticity, remoteness, and unique cultural or ecological experiences. Mongolia's vast steppe landscapes, nomadic traditions, and transboundary heritage provide fertile ground for the development of distinct thematic tourism products. By strategically aligning with its neighboring core economies through cooperative frameworks, Mongolia can reposition its peripheral status into a connective advantage, acting as a cultural and geographic bridge between China and Russia.

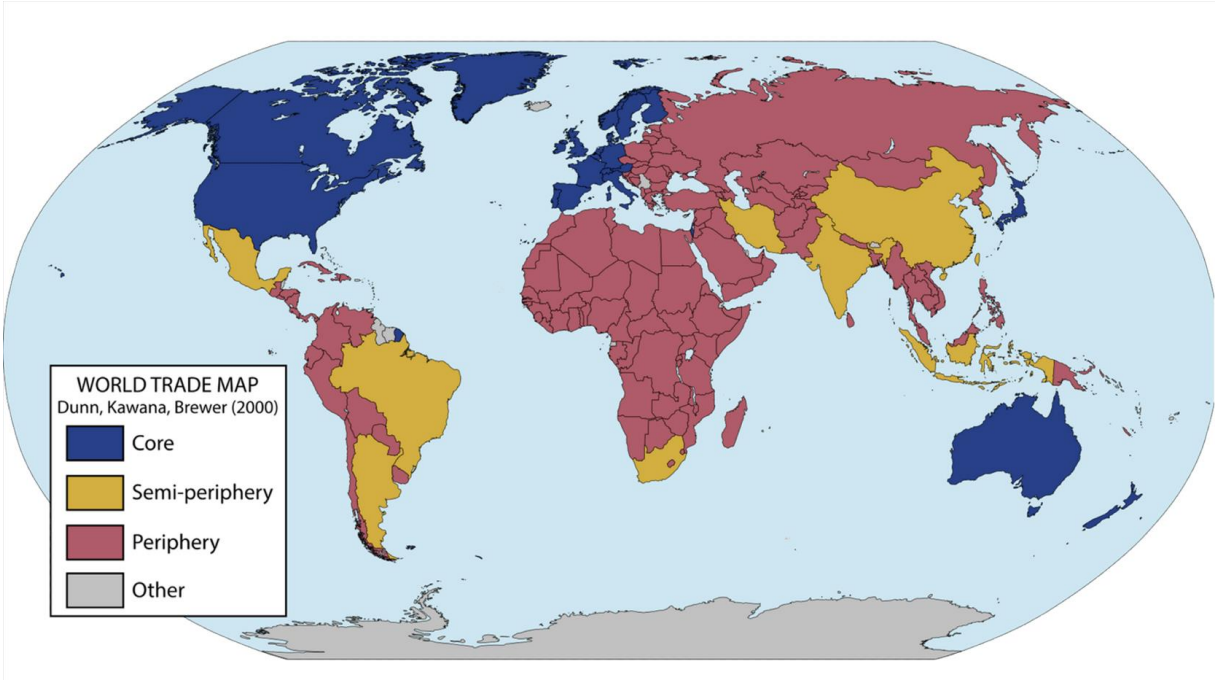

Figure 1. World Trade Map.
Source: Chase-Dunn et al., 2000.

The concept of new regionalism - distinct from earlier state-centric models emphasizes the growing importance of regional cooperation driven by non-state actors, market forces, and shared cultural or environmental interests (Hettne & Söderbaum, 2000; Keating, 2000). Within this context, cross-border tourism corridors emerge not merely as infrastructural projects but as platforms for deepening regional integration, enhancing mobility, and promoting shared narratives across national borders (Timothy, 2011). The China-Mongolia-Russia Economic Corridor (CMREC), established under the broader Belt and Road Initiative (BRI), provides a structural basis for such integration. However, to move beyond trade facilitation and extractive infrastructure, tourism must be explicitly integrated into regional policy frameworks through shared visa regimes, simplified border controls, joint product development, and thematic branding (ADB, 2020; Athukorala & Narayanan, 2017). Thematic tourism, particularly when based on cultural and natural heritage, can foster mutual understanding and economic inclusivity while reinforcing the region's collective identity. Furthermore, regional tourism initiatives can contribute to rural revitalization, environmental stewardship, and the diversification of Mongolia's economy - outcomes aligned with the goals of sustainable development and soft regionalism (Schulz et al., 2001).

2.5. Place branding and narrative coherence

Place branding plays a central role in thematic tourism corridor development, offering cohesive narratives that link cross-border destinations while highlighting their uniqueness (Kavaratzis & Ashworth, 2005; Anholt, 2007). Initiatives like "Six Countries, One Destination" in the Greater Mekong and the "Baltic Identity" campaign illustrate how joint branding enhances regional visibility and facilitates

international marketing (ADB, 2020; Clarke, 2018). Effective place branding goes beyond logos and slogans. It involves coordinated governance, local stakeholder participation, and narratives rooted in cultural and ecological authenticity. For Mongolia, developing a corridor with China and Russia offers a strategic opportunity to construct a compelling brand centered on nomadic heritage, transboundary landscapes, and cross-cultural dialogue - elements that can position the region as a meaningful and experiential destination in Northeast Asia. Yet, place branding in cross-border contexts also poses risks, including the commodification of culture, politicization of heritage, and inequitable benefit distribution (MacCannell, 1999; Scheyvens & Biddulph, 2018). These challenges necessitate participatory branding processes that involve local communities, ensure authenticity, and avoid imposing homogenized narratives. For Mongolia, developing branding strategies that resonate locally while appealing globally is essential to avoid marginalization within the tri-national corridor initiative.

By integrating insights from core-periphery theory, regionalism, and place branding, this research conceptualizes the China-Mongolia-Russia tourism corridor as both a functional transport route and a spatially and symbolically constructed region. Mongolia's peripheral status becomes an asset when reimagined through regional tourism cooperation and narrative cohesion. However, realizing this potential requires intentional policies, infrastructure alignment, and thematic development that reflect both shared regional visions and local authenticity.

2.6. Regional tourism market potentials

Chinese market - China continues to hold a dominant position as one of the world's leading outbound tourism markets, driven by rising household incomes, progressive liberalization of outbound travel policies, and increased international accessibility. According to the China Outbound Tourism Research Institute (COTRI, 2024), Chinese households made approximately 101 million cross-border trips in 2023, though this figure represents only 36.3% of pre-pandemic levels, primarily due to lingering COVID-19 measures, inflationary pressures, and growing interest in domestic tourism alternatives. Historically, outbound travel has been concentrated in affluent southeastern provinces, with Hong Kong, Macau, and Taiwan among the most frequented destinations. However, the Chinese tourism market has evolved to reflect more diversified preferences, with a rise in family-based travel, technology-assisted planning, and increased demand for cultural, culinary, and scenic experiences, coupled with a strong emphasis on safety and value for money (COTRI, 2024; Sysoeva & Rudneva, 2021). Notably, countries that have adopted visa facilitation policies have experienced significant growth in Chinese arrivals. For example, Singapore recorded a 45% monthly increase and a 388% year-on-year increase in Chinese tourist arrivals following the introduction of a visa waiver during the 2024 Chinese New Year holiday (COTRI, 2024). Mongolia, owing to its geographic proximity and cultural-historical ties, has increasingly attracted Chinese tourists, particularly those interested in heritage and cultural tourism rather than adventure travel (Oyunchimeg & Gantuya, 2021; Zhao et al., 2018). However, complex visa procedures and limited transport infrastructure remain significant barriers to unlocking the full potential of this market segment. If Mongolia were to introduce simplified visa regimes, improve border infrastructure, and offer well-branded thematic tourism products, it could capitalize on China’s growing middle class and regional outbound travel flows.

Mongolian market - Mongolia's outbound tourism sector, though relatively young, has grown significantly over the past decade, reflecting the country’s socioeconomic transformation. The emergence of a young, urbanizing middle class, combined with increased disposable income - largely fueled by mining-led economic growth has contributed to greater international mobility among Mongolian citizens (Oyunchimeg & Gantuya, 2021). According to the National Statistical Office of Mongolia (2024), over 2 million outbound departures were recorded in 2023, with travel for leisure, personal, and medical purposes comprising a growing share. Popular outbound destinations include China, South Korea, Thailand, Turkey, and, more recently, Vietnam. Regional travel remains particularly significant within the tri-national tourism network formed by Mongolia, China, and Russia, with more than 5 million cross-border visits reported annually before the COVID-19 pandemic (Oyunchimeg & Gantuya, 2021). For example, in 2018, over 1.9 million Mongolian travelers visited China, while a substantial volume of

tourism flows was also recorded in the reverse direction (NSO, 2024). Developing a thematic tourism corridor among China, Mongolia, and Russia, based on shared cultural narratives and transboundary natural assets, represents a strategic opportunity to promote economic integration, strengthen regional connectivity, and advance people-to-people exchanges. While earlier initiatives such as the Tea Road Corridor garnered governmental attention, their momentum was disrupted by the pandemic and shifting geopolitical conditions. Revitalizing such projects is now seen as essential for promoting regional cooperation, employment generation, and the diversification of Mongolia's tourism offerings.

Russian Market - Russian outbound tourism has been shaped by a combination of political dynamics, visa regimes, and regional transport infrastructure, particularly in relation to neighboring countries like Mongolia and China. The 2014 visa-free agreement between Russia and Mongolia significantly boosted bilateral mobility, resulting in 229,105 Russian tourist arrivals in Mongolia in 2023 - a marked increase from previous years (National Statistical Office, 2024). However, Russia's outbound and inbound tourism landscape has undergone profound changes since the onset of the Russia-Ukraine conflict in 2022. Inbound arrivals dropped dramatically, with only 200,100 international visitors entering Russia in 2022 - representing a 96.1% decrease from pre-pandemic levels (Pivot to Asia, 2024). Chinese arrivals, which once made up close to 30% of Russia's 5.1 million tourists, declined to fewer than 850 visitors in the same period. Meanwhile, outbound Russian travel to Europe and North America has been severely restricted due to sanctions and diplomatic tensions, resulting in a reorientation toward Asia-Pacific destinations such as Thailand, India, Vietnam, and the Philippines, where tourism campaigns and visa facilitation have played a key role in attracting Russian visitors (Pivot to Asia, 2024). Against this backdrop, there is growing momentum for Russia to strengthen tourism partnerships with Asian neighbors, including Mongolia, where geographic proximity and longstanding cultural ties support collaborative development. The expansion of regional tourism initiatives - especially those focused on shared themes such as Buddhist heritage, nomadic traditions, and Soviet-era legacies - could contribute to Russia's efforts to diversify its outbound tourism flows and reposition its role in the Asian tourism landscape.

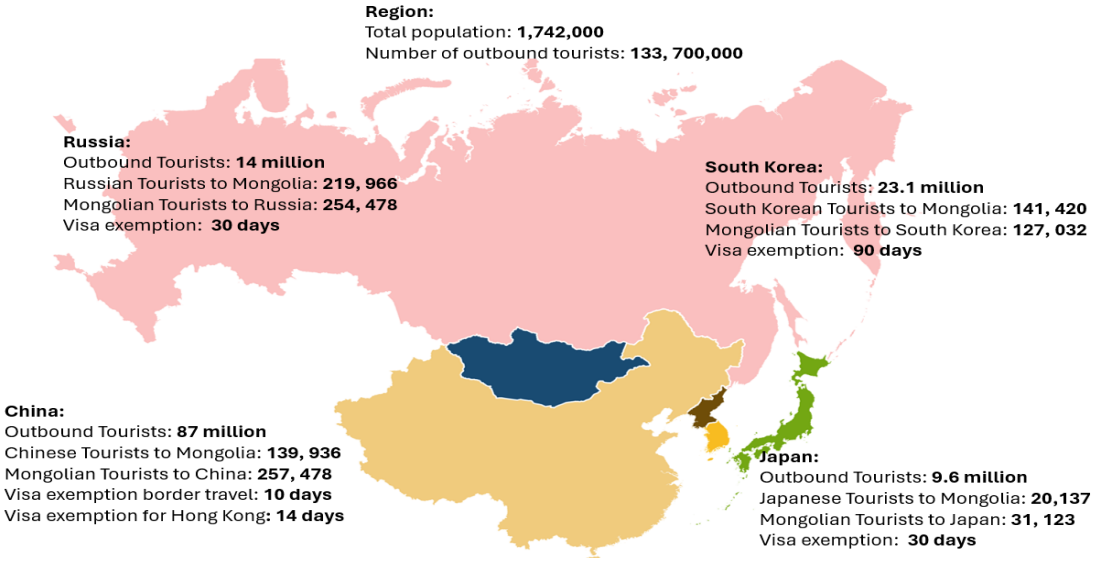

Figure 2. Regional tourism market potentials.
Source: Authors' own construct and UNWTO, 2023.

Other markets - In addition to China, Mongolia, and Russia, other East Asian countries - particularly South Korea, Japan, and emerging outbound markets such as Taiwan and Hong Kong - represent promising source markets for a future thematic tourism corridor. These countries are characterized by high outbound tourism volumes, strong purchasing power, and increasing interest in cultural and nature-based tourism experiences. For instance, South Korea ranked as the fifth largest outbound tourism market globally prior to the COVID-19 pandemic, with 28.7 million international departures recorded in 2019 (ADB, 2020). In 2023, over 20 million South Korean outbound trips were reported, driven largely by

demand for unique and safe travel experiences (ADB, 2020). Similarly, Japan registered 20.1 million outbound tourists in 2023, indicating a significant rebound from pandemic lows and reflecting strong interest in international cultural exchange (UNWTO, 2023). Notably, both Korean and Japanese travelers have demonstrated growing interest in authentic cultural encounters, heritage trails, and eco-tourism - areas in which Mongolia and its neighboring corridor partners possess a comparative advantage (UNWTO, 2023). These travelers are also responsive to improved accessibility, streamlined visa procedures, and digital travel facilitation - factors that could be integrated into corridor development strategies. For example, the introduction of e-visas or multilateral visa waivers for thematic corridor packages would likely increase appeal among time-sensitive and digitally connected East Asian travelers. Furthermore, existing aviation links between Seoul, Tokyo, and Ulaanbaatar provide a logistical foundation for integrating East Asian markets into the China-Mongolia-Russia corridor. Given the increasing diplomatic and cultural exchanges between these countries, the inclusion of East Asian source markets not only diversifies inbound tourism but also strengthens regional tourism diplomacy and economic resilience.

3. RESEARCH METHODS

A secondary data approach was employed through content analysis of documents published by the Mongolian Ministry of Nature, Environment, and Tourism (MNET), with particular emphasis on annual reports and records of trilateral initiatives involving China, Mongolia, and Russia. Supplementary materials, such as conference proceedings, were also reviewed to assess the scope and evolution of regional tourism cooperation. To complement the secondary data, qualitative data were collected through focus group interviews. Four focus groups were conducted with a total of 16 participants, comprising tourism experts, local government officials, managers, and guides from travel companies serving the Chinese and Russian markets, as well as members of professional tourism associations. Each group included 4 participants. The sessions were held in Ulaanbaatar between June and July 2023, with each lasting between 35 minutes and 1.5 hours. Participants were selected based on their active involvement in Mongolia's tourism sector and their direct experience with tourists from China and Russia. Semi-structured interviews with open-ended questions allowed for in-depth exploration of participant perspectives and ensured flexibility in responses, consistent with qualitative research methodology (Veal, 2017; Bryman, 2016). The interview guide included six types of open-ended questions (Hillman & Radel, 2018), focusing on: (1) travel experiences and behaviors, (2) sensory perceptions, (3) opinions and values, (4) knowledge, (5) emotions, and (6) demographics. Transcripts from the interviews were subjected to thematic analysis to identify recurring themes, concepts, and language used by participants. Special attention was paid to insights from managers overseeing Russian and Chinese market operations, which provided information on travel itineraries, tourist preferences, and emerging market trends. A comparative analysis was conducted to explore potential themes for developing trilateral tourism corridors, focusing on cultural heritage, ecological assets, and historical trade routes. In parallel, content analysis was applied to policy documents and tourism cooperation frameworks among the three countries to contextualize findings and assess the feasibility of corridor development. All interview responses were anonymized, and participant profiles are summarized in Table 1.

Table 1. Participant profile.

Partici-pant	Department	Organization	Experience in tourism	Experience in the organization	Place
P1	CEO	Tour operator	22	15	Ulaanbaatar
P2	Marketing manager	Tour operator	15	5	Ulaanbaatar
P3	Product manager	Tour operator	10	8	Ulaanbaatar
P4	Executive director	Tour operator	20	18	Ulaanbaatar
P5	Managing partner	Tour operator	16	5	Ulaanbaatar
P6	General Manager	Tourism Association	11	4	Ulaanbaatar
P7	Founder, CEO	Tour operator	20	11	Ulaanbaatar
P8	Vice director	Tour operator	19	7	Ulaanbaatar
P9	Manager	Tourism Association	12	4	Ulaanbaatar
P10	Asian market manager	Tour operator	15	9	Ulaanbaatar

P11	Regional manager	Tour operator	17	13	Ulaanbaatar
P12	Government official	Tour operator	10	3	Ulaanbaatar
P13	Event official	Government	7	2	Ulaanbaatar
P14	Head of Department	Government	4	4	Ulaanbaatar
P15	Officer	Government	3	2	Ulaanbaatar
P16	Tourism specialist	Government	3	7	Ulaanbaatar

This study adhered to established ethical guidelines for research involving human participants. Prior to data collection, all participants were informed of the research objectives and purpose, and informed consent was obtained in accordance with ethical protocols. A total of 20 tourism professionals were invited to participate, of whom 16 provided consent and were included in the study. The qualitative data were analyzed using NVivo software, selected for its capacity to facilitate advanced textual analysis, including automated searches for key terms, phrases, and co-occurring themes. NVivo was deemed more accurate and efficient than traditional manual methods of sorting and coding, as supported by previous literature (Hillman & Radel, 2018).

Thematic analysis was adopted as the primary analytical framework. Interview transcripts were initially subjected to open coding, allowing for the identification of recurrent patterns, concepts, and similarities within the data. Emergent codes were grouped into broader themes, which were then categorized into main themes and subcategories. These themes were systematically compared with existing literature to enhance the validity and contextual interpretation of findings. The data were coded, labeled, and consolidated based on procedures derived from prior qualitative research (Hillman & Radel, 2018). Through an iterative review process, dominant themes were refined and subsequently quantified to facilitate presentation and analysis (Table 2). To ensure analytical rigor and minimize potential researcher bias, two independent collaborators conducted a secondary round of coding to verify consistency in theme identification. This cross-validation process strengthened the reliability and credibility of the thematic structure. The methodological approach is consistent with those employed in qualitative studies by Hillman and Radel (2018), Kaushal and Srivastava (2021), and Shukla et al. (2022). As a result of the content analysis, two sub-themes were identified, which were subsequently refined into six overarching themes. These findings are presented in Table 3 and illustrated in Figure 3.

4. RESULTS

The findings of this study present the proposed thematic framework for a prospective tourism corridor connecting China, Mongolia, and Russia, as identified through the qualitative analysis. The identified themes encapsulate recurring ideas, concepts, and priorities emphasized by the participants, offering valuable insights into the perspectives and preferences of key stakeholders engaged in the corridor's development. Participants consistently identified several core themes relevant to the establishment of a transnational tourism corridor. A notable outcome of the interviews was the unanimous reference to the *Tea Road Initiative*, a concept that has been under discussion since 2016. This initiative was viewed as a central theme for the development of the tourism corridor, reflecting its perceived importance and relevance to regional integration. Although the momentum of the initiative was disrupted by the COVID-19 pandemic, leading to a period of stagnation, participants emphasized the need to revive and prioritize the Tea Road theme as a cornerstone for future tourism development. The proposed routes encompass a variety of themes derived from cultural and historical resources, while only a limited number of themes. These thematic routes can be broadly classified into two categories: natural routes and cultural routes. Table 2 provides a summary of the thematic concepts proposed for the development of a tourism corridor connecting China, Mongolia, and Russia from the respondents.

The *natural routes* category features two distinct itineraries that cross the varied landscapes of the three countries. These routes are designed to offer tourist experiences in ecological diversity and natural wilderness, combining outdoor recreational activities with opportunities for cultural engagement. The emphasis is on highlighting the environmental richness of the region while fostering appreciation for the interconnection between nature and local traditions.

Table 2. Emergent themes for transnational routes.

		Highlight	China	Mongolia	Russia	Tour activity
Natural	Steppe Tundra Route	•Stunning landscape •Ecological diversity •Vast open space •Different natural settings	•Desert landscape of Inner Mongolia •Exploring sand dunes •Exploring canyons	•Vast grassland, steppe • Green valleys • Mountains • Natural parks	•Explore Siberia •Explore Taiga •Tundra •Freshwater Lake	•Ecotourism •Trekking •Wildlife spotting •Birdwatching •National parks
	Wilderness Route	•Exploration •Remoteness •Natural beauty •Escapism •Serenity	•Tian Shan Mountain •Exploring valleys •Remote China •Rich biodiversity	• Rugged terrain • Rare wildlife • Wild horses & camels • Rare birds	•Mount Belukha •Russian Altai •Rare animals •Freshwater Lake	•Wildlife •Trekking, hiking •Sustainable adventure •Camping & stargazing
Cultural	Nomadic Route	•Nomadic culture •Tradional ger •Resilience of nomadic people •Horse culture •Cultural exchange	•Inner Mongolia •Expansive grassland •Nomadic family visit •Buryats, barga, uzemchin ethnics	•Staying in ger •Experiencing nomadic life •Visiting reindeer family	•Indigenous culture •Buryats & Evenki culture •Siberian village	• Workshops for offering nomadic skills •Ger stays •Horse riding •Camel riding •Reindeer riding
	Ancient Empire Route	•Journey through dynasty •Grandeur of civilization •Historical sites •Imperial sites	•Imperial China •Beijing •Forbidden city •Temple of Heaven •Great Wall	•Mongol Empire •Ulaanbaatar •Kharkhorin •Erdenezuu •Dadal birthplace of Chinggis Khaan	•Tsarist Russia •Irkutsk •Russian Orthodox architecture •Moscow •Red square •Kremlin	•Palace & temple visits •Museum visits •Guided tours to historical sites •Architectural heritage •Understanding of power & influence
	Fur & Cashmere Route	•Journey through trade network •Fur trade •Sustainable cashmere •Cashmere goat •Textile heritage	•Beijing •Bustling market •Historical trade sites •Hohhot, Inner Mongolia •Cashmere factories •Manchuria centre for fur production	•Traditional way of cashmere production •Cashmere goat •Combing & counting fibers •Local markets	•Irkutsk center of fur trade •Russian fur production •Russian fur culture •Fur oultlets	•Guided tour on fur trade •Cashmere tour •Goat herding family •Cashmere production workshop •Cashmere factory visits
	Sacred Route	•Religious heritage •Spirituality •Buddhism •Shamanism •Orthodox Christianity •Daoism	•Buddhist temples •Tibetan influence •Beijing •Wutai Mount •Lingfeng temple •Daoist temple	•Ulaanbaatar •Gandan monastery •Erdenezuu monastery •Amarbayasgalant monastery •Shaman rituals	•Russian Orthodox church •Irkutsk •Buryat shamans •Saint Basil Cathedral •Moscow	•Religious tour •Spiritual tour •Shaman tour •Temple visit •Church visit

Source: Author's own construct.

The Steppe and Tundra Route offers a comprehensive ecotourism experience that crosses a diverse range of ecological zones - from the arid Gobi Desert in Inner Mongolia, China, through the vast steppe grasslands of Mongolia, to the tundra and taiga regions of Siberia, Russia. This transboundary route underscores the ecological heterogeneity and cultural uniqueness characteristic of each region. In Inner

Mongolia, desert ecosystems illustrate biodiversity adapted to hyper-arid conditions, including unique oasis systems. Mongolia's steppe zone, encompassing protected areas such as Gorkhi-Terelj National Park and the Orkhon Valley Cultural Landscape, integrates natural scenery with nomadic cultural heritage and provides critical habitats for endangered species. The Russian segment of the route features the taiga-tundra interface and Lake Baikal - the deepest and one of the oldest freshwater lakes globally - renowned for its ecological significance and endemic species. Through nature-based activities such as trekking, birdwatching, and wildlife observation, the Steppe and Tundra Route promotes sustainable tourism while fostering deeper engagement with the ecological and cultural wealth of Central and Northeast Asia.

The Wilderness Route will offer a transboundary ecotourism corridor that crosses some of the most remote landscapes of China, Mongolia, and Russia. This route encompasses a variety of ecosystems, ranging from the arid expanses of the Gobi Desert and the rugged elevations of the Altai and Tian Shan Mountain ranges to the glacial lakes and alpine meadows of Central Asia, as well as the biodiverse regions surrounding Lake Baikal and the Amur River basin. Notable ecological assets along the route include Mongolia's sand dunes, the endemic species of Lake Baikal in Russia, the rare and fragile habitats of the Altai Mountains, and the glacial and high-altitude ecosystems of the Tian Shan range in western China. The route supports environmentally responsible tourism through activities such as eco-trekking, wildlife observation, and cultural tourism experiences with local communities. By prioritizing both biodiversity conservation and community engagement, the route fosters an integrated understanding of the interdependence between cultural heritage and environmental sustainability, thereby contributing to the long-term development of sustainable tourism across the region.

Based on participant responses, four thematic cultural routes were identified within the framework of the China-Mongolia-Russia tourism corridor. These routes offer a platform for exploring the region's diverse and multilayered cultural heritage, while highlighting the historical interconnections among the three nations. Beyond the presentation of historical narratives and traditional customs, the routes are structured to facilitate experiential engagements, enabling travelers to interact with cultures and contemporary heritage. This approach fosters a dynamic understanding of diverse culture and transformation within the broader context of transnational tourism development.

The Nomad's Route provides an in-depth exploration of the nomadic cultural heritage spanning Inner Mongolia (China), Mongolia, and Siberia (Russia), with a focus on the traditions, resilience, and relationship with the natural environment that define these communities. In Inner Mongolia, visitors engage with the region's nomadic heritage through experiences on the steppe. In Mongolia, cultural experience is enhanced through traditional gers and involvement in practices such as wrestling, archery, and horse racing. The route extends into Siberia, where travelers encounter the Buryat and Evenki people, whose subsistence practices remain close to nature, particularly in the Lake Baikal. The route promotes intercultural exchange through interactive workshops on nomadic skills, participation in local festivals featuring music, dance, and opportunities for daily life engagement. Collectively, these experiences contribute to a comprehensive understanding of the living traditions and evolving identities of nomadic cultures along the transnational corridor.

The Ancient Empire Route explores the legacies of the empires and dynasties that have profoundly shaped the political, cultural, and architectural landscapes of China, Mongolia, and Russia. This transnational route highlights the imperial assets of Chinese civilization, the influence of the Mongol Empire, and the historical imprint of Russia's Tsarist era. In China, heritage sites such as the Forbidden City, the Temple of Heaven, and the Great Wall presents the administrative and architectural complexity of dynasties. In Mongolia, the route emphasizes the historical significance of Ulaanbaatar and Karakorum - the capital of the Mongol Empire - featuring cultural landmarks such as the Amarbayasgalant and Erdene Zuu Monastery. In Russia, destinations including Irkutsk and Moscow offer the legacy of Orthodox Christianity and Tsarist governance, with architectural features such as the Kremlin and Red Square symbolizing the imperial past. The Ancient Empire Route fosters an understanding of these former empires continuing to shape regional identities and collective memory.

The Fur and Cashmere Route examines both historical and contemporary trade networks connecting China, Mongolia, and Russia, with a particular focus on the role of the fur trade and cashmere production in shaping regional economies and facilitating cross-cultural exchange. In China, the route

begins in Beijing and extends to Hohhot in Inner Mongolia, where historic trading hubs coexist with modern cashmere manufacturing facilities that demonstrate the technological evolution of the textile industry. In Mongolia, travelers are introduced to the full cashmere value chain - from the herding of goats to fiber harvesting and processing - while also exploring the socio-economic dimensions of the industry through visits to local markets and cooperatives. In Russia, the city of Irkutsk, located near Lake Baikal, serves as a center of the fur trade, offering cultural experiences such as traditional samovar tea ceremonies that reflect the region's commercial heritage. Activities along the route include tea tastings, artisanal workshops, guided tours of cashmere and fur production sites, and visits to traditional marketplaces. A comprehensive perspective on how trade has historically influenced, and continues to shape, the cultural and economic landscapes of this transnational corridor is provided through these experiences.

The Sacred Route presents the diverse religious traditions that crosses the China-Mongolia-Russia corridor, emphasizing the historical interconnections among Buddhism, Shamanism, and Orthodox Christianity. In Inner Mongolia, China, visitors encounter Buddhist temples and monasteries shaped by Tibetan influences, particularly in the spiritual hub of Hohhot. In Mongolia, the route offers access to both Buddhist and Shamanic traditions, with sites including the Gandan Monastery in Ulaanbaatar and sacred natural locations, where nature-based spiritual practices are integral to Shamanism. In Russia, the route incorporates Orthodox Christian landmarks in cities such as Irkutsk and Moscow, alongside opportunities to engage with the shamanic traditions of the Buryat people, whose spiritual practices remain closely tied to the nature. Through guided visits to temples and churches, participation in spiritual ceremonies, meditation, the Sacred Route provides an exploration of the region's multifaceted spiritual heritage. This approach reveals the relationship between religion, culture, and identity across diverse cultural and ecological settings. Figure 3 presents the spatial distribution and thematic development of these cultural routes within the broader China-Mongolia-Russia tourism corridor.

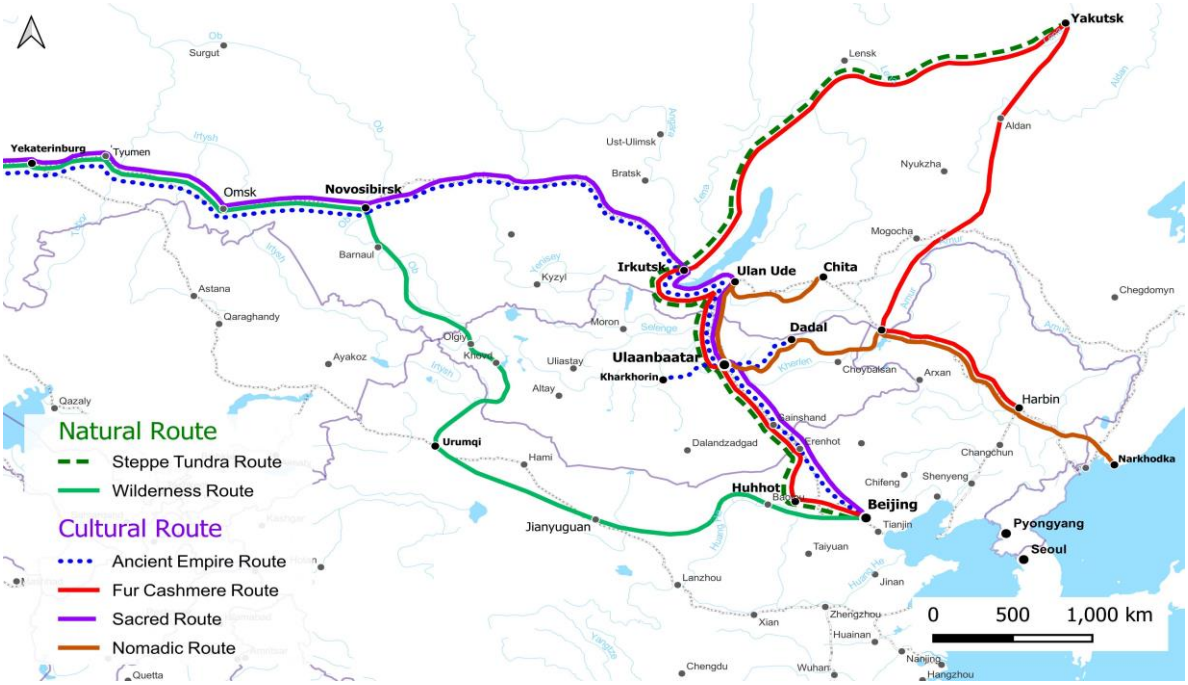

Figure 3. Proposed emergent theme routes.
Source: Author's own construct.

5. DISCUSSION

Regional collaboration plays a vital role in fostering mutual understanding among nations, driving economic development, and promoting sustainable growth. One effective approach to achieving these objectives is the establishment of economic corridors between countries. Numerous successful examples of such corridors exist worldwide (Standing Committee for Economic and Commercial Cooperation, 2019;

Lopez-Guzman et al., 2014). In recent years, countries seeking to enhance their tourism industry have increasingly turned to the concept of tourism corridors as a means of cross-border cooperation. A critical element in the development of a tourism corridor is the identification of a unifying and relevant theme (Alampay & Rieder, 2008; Nagy, 2012). This theme must be carefully defined based on the shared cultural and natural resources of the participating countries, as well as the existing tourism infrastructure.

Establishing a thematic tourism corridor between China, Mongolia, and Russia faces significant challenges due to the need for extensive cross-border coordination and diplomacy. Although common cultural and historical ties are shared among these countries, cooperation can be complicated by political differences, varying governance structures, and divergent policy priorities (Gu et al., 2020; Clarke, 2018; Ye et al., 2024; Barahona et al., 2021). The flow of tourists may be impeded by issues such as visa policies, travel restrictions, and customs regulations. The standardization of travel policies and the facilitation of the movement of people, goods, and services must be supported through diplomatic negotiations. Furthermore, the existence of distinct tourism regulations in each country has resulted in inconsistencies in service standards, safety protocols, and environmental protections. To address these challenges, dialogue must be initiated by the governments of China, Mongolia, and Russia to develop common frameworks for visa issuance, environmental conservation, and the promotion of cross-border tourism.

The success of a thematic tourism corridor between these three countries is contingent upon the development of adequate infrastructure to support tourist flows and logistics. Considerable challenges related to transportation and accessibility are posed by the region's vast and remote areas, including the Gobi Desert, Siberia, and the Altai Mountains. The improvement of transportation networks - such as roads, railways, and air routes - is regarded as essential; however, the construction of infrastructure in rugged terrains is associated with high costs and necessitates careful environmental planning. Furthermore, a lack of tourist facilities has been observed in many remote areas, particularly for those seeking eco-friendly cultural experiences. The expansion of accommodation options, including hotels, guesthouses, and eco-lodges equipped with essential amenities, is therefore considered vital for enhancing the tourist experience and ensuring the corridor's overall success.

The natural environments along the proposed tourism corridor - including the Mongolian steppe, the Gobi Desert, and Siberia's Lake Baikal - are recognized as ecologically sensitive areas that host unique and often endangered flora and fauna. As tourism development intensifies, increased risks of environmental degradation, including pollution, habitat destruction, and resource exploitation, are anticipated. To mitigate such impacts, the implementation of sustainable tourism practices is required, with an emphasis on eco-tourism that respects local ecosystems, supports biodiversity conservation, and provides economic benefits to local communities. The engagement of tourists in conservation activities, such as wildlife monitoring and habitat restoration, is recommended. Moreover, the adherence of tourism businesses to green standards and the minimization of environmental footprints are regarded as essential components for ensuring long-term sustainability.

While the thematic tourism corridor presents an opportunity for the celebration of the region's cultural heritage, concerns regarding cultural exploitation or misrepresentation have been raised (Bender, 2001; Baimoratova et al., 2023). The traditions, languages, and lifestyles of nomadic communities, indigenous peoples, and ethnic groups along the corridor must be respected and represented with authenticity. Risks associated with the commodification of local traditions for tourism purposes may lead to the erosion of cultural integrity. To mitigate such risks, the involvement of local communities in the planning and development of tourism experiences is deemed essential. Engagement with nomadic populations in the co-creation of tourism products is encouraged to ensure that cultural heritage is accurately portrayed and that economic benefits are equitably distributed. Cultural exchange is to be framed around principles of mutual respect and reciprocal learning, rather than fulfilling superficial or exoticized tourist expectations. Furthermore, the provision of cultural sensitivity training for tourism stakeholders is considered critical for fostering cultural respect and enhancing cross-cultural understanding.

The establishment of a thematic tourism corridor spanning China, Mongolia, and Russia is viewed as a unique opportunity for regional collaboration, particularly in the context of recent challenges posed by the COVID-19 pandemic and the ongoing Russia-Ukraine conflict. The tourism sector, a vital component

of the economies of all three countries, has been significantly affected, with declines observed due to cross-border travel restrictions, geopolitical tensions, and evolving global travel trends. Through the development of a thematic tourism corridor that leverages the region's cultural, historical, and ecological resources, opportunities are expected to be created for accessing new and diverse tourist markets. In this way, the revitalization of national tourism industries may be supported, while long-term economic development and regional cooperation are promoted.

Since the Russia-Ukraine conflict, the flow of Western tourists traveling through Russia to Mongolia has significantly declined due to airspace closures, sanctions, and political tensions, creating a gap in tourism revenue. In response, Mongolia has an opportunity to adjust its tourism strategy by attracting European tourists through alternative routes, bypassing Russia. By developing a travel corridor through China and Mongolia, European travelers can avoid geopolitical risks while still experiencing Mongolia's cultural heritage, landscapes, and nomadic traditions. Mongolia can also create more appealing tourism packages, promoting these experiences as part of a broader multi-country journey that includes China, helping to rekindle European interest in Mongolia despite the uncertainties surrounding Russia's role in global tourism.

An opportunity for creating a thematic tourism corridor lies in targeting affluent Chinese tourists, particularly from economically prosperous southeastern regions like Shanghai, Beijing, and Guangdong. With rising disposable incomes and a growing middle and upper class, these tourists seek unique travel experiences. The proximity of Mongolia and Russia, with their distinct cultures and natural landscapes, presents the corridor an attractive option for affluent Chinese travelers. By positioning the corridor as a high-end route with luxury accommodations, private tours, cultural exchanges, and eco-friendly experiences, China, Mongolia, and Russia can cater to this market segment.

The thematic tourism corridor offers an opportunity for China, Mongolia, and Russia to strengthen regional cooperation and economic integration. As China and Russia diversify their economic partnerships due to sanctions, Mongolia stands to benefit from closer ties with its larger neighbors through enhanced cross-border tourism. This corridor can improve infrastructure, regional connectivity, and marketing efforts, fostering economic integration and creating new business opportunities. For Mongolia, it presents a chance to diversify its economy, traditionally reliant on mining and agriculture, by developing a tourism sector that can create jobs, generate foreign exchange, and stimulate local economies. In addition, the corridor could support broader regional development projects in areas such as sustainable agriculture, renewable energy, and infrastructure, reinforcing cooperation among the three countries.

6. CONCLUSION

The development of a thematic tourism corridor linking China, Mongolia, and Russia presents a strategic opportunity for sustainable tourism and revitalizing the post-pandemic tourism sector at a regional level. By leveraging the cultural, historical, and ecological resources of these countries, the corridor could become a major attraction for travelers seeking diverse and quality experiences. This initiative is particularly relevant for countries such as Mongolia, which has experienced a decline in arrivals from traditional markets - especially Europe - due to evolving geopolitical conditions. Beyond its economic potential, the corridor offers a platform for fostering intercultural dialogue and enhancing trilateral cooperation among the participating nations.

The proposed corridor would comprise a series of thematic routes encompassing ecological exploration, cultural heritage, and spiritual traditions, thus offering an integrated travel experience. The research identified six core themes - two centered on natural resource-based tourism and four on cultural diversity. However, the study's scope was limited to the perspectives of Mongolian tourism experts and businesses. To obtain a more holistic understanding of the corridor's potential, further research involving stakeholders and experts from China and Russia is essential.

Thematic tourism, by its nature, promotes responsible travel that encourages authentic engagement with local communities while aiming to minimize environmental degradation. Through a focus on ecotourism, cultural preservation, and community-based tourism initiatives, the corridor can generate long-term economic benefits while safeguarding the region's distinctive cultural and ecological

heritage. Furthermore, it holds the potential to serve as a replicable model for other transnational tourism initiatives seeking to address global challenges such as climate change, political instability, and regional economic disparities.

Future research is essential to explore visitor perceptions and assess demand across the thematic routes, with particular attention to the motivations and expectations of key target segments, including affluent Chinese tourists, cultural travelers, and eco-tourists. Pilot projects are recommended to evaluate the corridor's impact on local economies, environmental sustainability, and community well-being. With strategic planning, stakeholder collaboration, and adherence to sustainable tourism principles, the China–Mongolia–Russia thematic tourism corridor has the potential to become a regionally significant model for cross-border tourism development that benefits both travelers and host communities.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Author contributions

All authors contributed equally to this work. All authors read and approved the final manuscript.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Tesemash Abebe Makuria, Leta Bekele Gudina

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The Editor-in-Chief has withdrawn this article because we have clear evidence to that effect. Following the report made through the Turnitin Software, in which the similarity index is 42% for strings of <5 words, the article ID - CEJGSD-0108: *''Long term climate variability, trend and drought occurrence: the case of Loka Abaya, Ethiopia*'', authors: Tesemash Abebe Makuria, Ethiopian Forest Development, Department of Natural Forest and Climate Science, Addis Ababa, Ethiopia and Leta Bekele Gudina, Department of Meteorological Data and Climatology, Ethiopian Meteorology Institute, Addis Ababa, Ethiopia, published online on April 29, 2025, is retracted from the portfolio of volume 7, issue 1, 2025 of the Central European Journal of Geography and Sustainable Development (CEJGSD), being suspected of plagiarism.

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Understanding social acceptability in coastal wetland restoration. A socio-ecological perspective of the Danube Delta Biosphere Reserve

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ABSTRACT: In this study, the Danube Delta Biosphere Reserve (DDBR) provides the geographical context for applying an interdisciplinary socio-ecological approach to the analysis of wetland restoration based on the analytical lens of social acceptability (SA). Especially in large-scale interventions, social acceptability emerges as an underrated multidimensional concept influencing both the viability and the success of the restoration. As the Horizon RESTORE4Cs project shows, social acceptability reflects how the local community perceives and supports the decision to restore. Even technically and ecologically sound actions may face resistance if local perceptions and expectations are neglected. However, these aspects are multifaceted, depending on place-specific factors. In this study, the socio-economic, cultural and environmental features of the DDBR are examined according to the eight components of SA, which include the territorial conditions of the local context and the presence of specific values and beliefs, environmental and societal impacts, risks, and local levels of knowledge, trust, and participation. The objective is to provide a novel, socio-ecological reading of the Danube Delta system, filtered through the factors that shape the local acceptance of wetland restoration and management. Via a mixed-method approach, the SA reading of the Danube Delta reserve confirms that, even in a mostly natural socio-ecological system, the factors influencing acceptability also include some relevant institutional and cultural aspects. The assessment of these aspects, however, remains ambiguous, since DDBR experts identify trust as the weakest cultural component that locally supports the acceptability of restoration. In RESTORE4Cs, this underestimation of the cultural determinants of SA is likewise confirmed by the views of local stakeholders. This result is taken as evidence of the validity of the SA lens as a filter for an ex-ante reading of the territorial aspects that characterize a wetland socio-ecological system and its restoration management.

KEYWORDS: Danube Delta, coastal wetlands, social acceptability, socio-ecological systems, nature restoration, transdisciplinary environmental management.

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1. INTRODUCTION

Within the European Union, coastal wetlands (Figure 1) constitute crucial habitats that deliver a wide range of ecosystem services, including biodiversity conservation, carbon sequestration, nutrient cycling,

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and climate regulation. In addition to these benefits, which extend far beyond their immediate geographical boundaries, European coastal wetlands also contribute significantly to the well-being and economic prosperity of local communities (European Union, 2024; Kampa et al., 2025; Tegetmeyer et al., 2025), while safeguarding them from coastal erosion, floods, and extreme weather events (Isaac et al., 2025). They also function as natural filters, improving air and water quality for both ecosystems and human populations (Lee et al., 2006; Robbe et al., 2024). Moreover, in many wetland regions, protection and research functions coexist with economic activities such as rice cultivation, salt extraction, fishing, hunting, harvesting, and tourism which support local livelihoods and household incomes (Tănăsescu & Constantinescu, 2020). In this sense, coastal wetlands can also be regarded as cultural landscapes reflecting the complex and dynamic interactions between society and the natural environment. To maintain their multifunctional benefits, wetlands must remain ecologically healthy and well preserved. However, this objective is becoming increasingly difficult to achieve due to the combined pressures of urbanisation, overtourism, and climate change, which threaten habitat integrity and disrupt the delicate hydrological balance between freshwater and saltwater (Babaniyi et al., 2025a; Saito et al., 2025; Lee et al., 2006). Consequently, an increasing number of coastal wetlands require restoration interventions to re-establish ecological equilibrium.

In some cases, such interventions are low-impact and small-scale, including the construction of temporary fencing or barriers, the planting of native vegetation, or the removal of invasive species. When interventions are particularly low-intensity, they may scarcely be recognized as restoration efforts. Instead, they are considered routine preservation and management measures. In other cases, restoration takes the form of large-scale projects that substantially affect local land uses, livelihoods, and identities, often generating social tensions and opposition (Skrimizea et al., 2025). This is the case, for instance, when wetlands are restored after having been converted to other uses or when habitats have been ecologically degraded by human activities or natural processes.

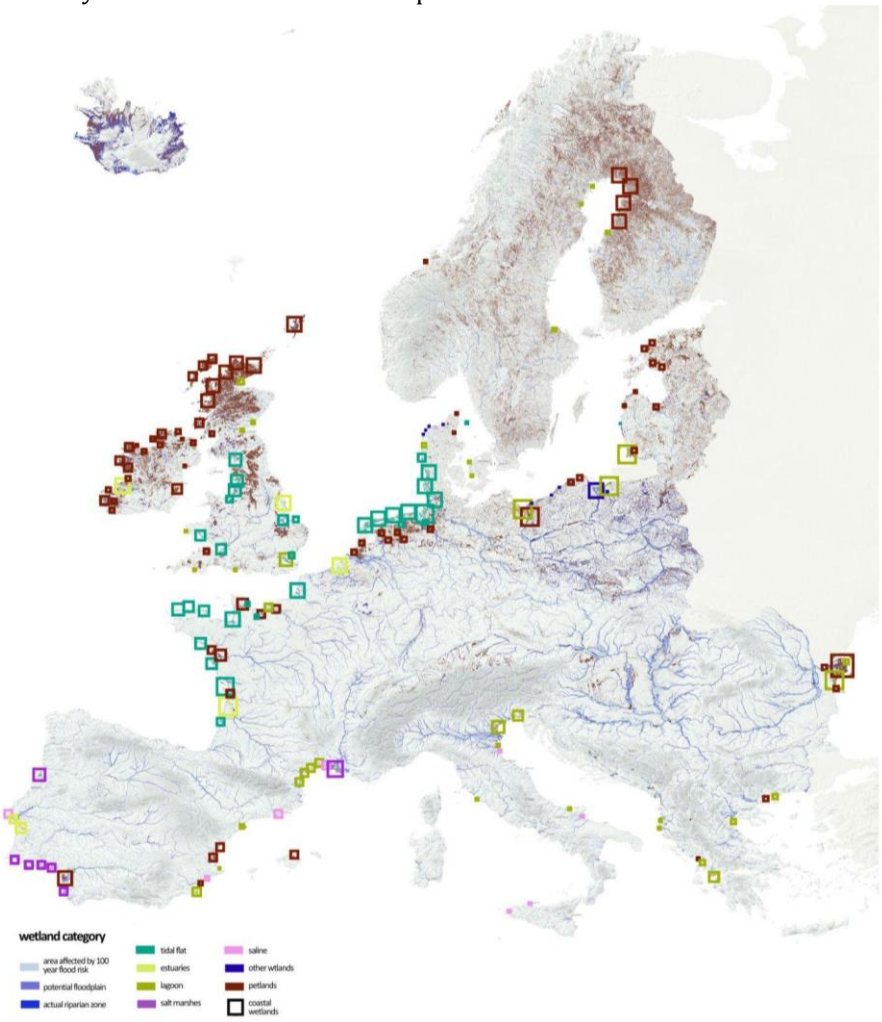


Figure 1. European wetlands, with a focus on coastal wetlands.
Source: modified from Tegetmeyer et al., 2025; squares indicating coastal wetlands added by the authors.

In this context, public acceptance of restoration decisions - here referred to as social acceptability - emerges as a key condition for effective wetland governance and for securing benefits at all scales. Within the European Union (EU), the relevance of this perspective has increased following the adoption of the Nature Restoration Law (European Commission, 2024), which positions nature restoration and management at the core of policy action across Member States, promotes a more active and integrated approach to the management of degraded ecosystems, and considers local stakeholders as pivotal actors to the success of restoration initiatives (Kampa et al., 2025). As shown in Figure 1, coastal wetlands (including tidal flats, estuaries, lagoons, salt marshes, and salines) are widely distributed across Europe and are frequently located in close proximity to areas of human settlement and activity. Relevant changes in the management of European wetlands, such as restoration decisions, may therefore affect a wide range of stakeholders and generate dissatisfaction and local opposition (Holmgaard, 2024). Accordingly, the perceptions and preferences of local stakeholders emerge as key prerequisites shaping the feasibility and effectiveness of restoration initiatives (Garcia et al., 2020).

Literature across several natural and social science disciplines recognizes that a fundamental challenge in nature restoration lies in how land-use changes are perceived and accepted within local territorial systems (Picon et al., 2025; Pearce et al., 2023). Encompassing local priorities and assessing the opinions and values of stakeholders through an inclusive and holistic territorial approach (socio-economic, cultural and environmental) is therefore essential (Sella et al., 2024). In this context, the notion of social acceptability provides a valuable interpretive lens for managers and policymakers seeking to implement effective restoration strategies (Rota et al., 2025).

However, a single, universally accepted conceptualisation of SA has not yet been established, and definitions remain tentative and heterogeneous (Sella et al., 2024). To address this gap, this study discusses an innovative multidimensional analytical framework - developed within the Horizon Europe project RESTORE4Cs to assess the social acceptability (SA) of wetland restoration strategies - and applies it to an ex-ante analysis of the Danube Delta Biosphere Reserve (DDBR).

Section 2 outlines the main premises and methodological foundations of the RESTORE4Cs project and explains how social acceptability (SA) can be used as a framework for the ex-ante interpretation of the territorial systems in which targeted wetlands are embedded. Section 3 introduces the SA concept and identifies the eight key elements - also referred to as the “petals” of the social acceptability “flower” - proposed in this study to interpret the socio-economic, cultural, and environmental features of wetland systems that may shape restoration decisions. Section 4 illustrates the SA flower of the DDBR socio-ecological system (i.e., context, knowledge, values, risks, environmental impacts, societal impacts, participation, and trust). Section 5 summarises and discusses the findings of the study from both scientific and practical perspectives, also reflecting on the strengths and limitations of the proposed approach.

2. THE ASSESSMENT OF COASTAL WETLANDS RESTORATION: PROPOSALS FROM THE PROJECT RESTORE4Cs

This study discusses selected results of the socio-economic analysis carried out within the Horizon Europe project RESTORE4Cs “Modelling restoration of wetlands for carbon pathways, climate change mitigation and adaptation, ecosystem services, and biodiversity co-benefits” to reflect on the methodologies currently available to assess the acceptability of restoration decisions in coastal wetland contexts.

RESTORE4Cs aims to provide standardized tools to assess the pressures and impacts on coastal wetland ecosystems at multiple scales, linking them to climate change mitigation, biodiversity, and other related co-benefits. To this end, six pilot sites were selected across six European countries, each representing a distinct type of threatened coastal wetland habitat (Figure 2).

Specifically, hydrolittoral mud/sand beds in the Curonian Lagoon, intertidal salt marshes in the Dutch Delta, intertidal seagrass belts in Ria de Aveiro Lagoon, brackish marshes in Marjal dels Moros, freshwater ponds and marshes in Camargue, and freshwater ponds in the Danube Delta were selected to assess the ecosystem services and co-benefits of restored areas in comparison with altered and well-preserved ones.

Figure 2. RESTORE4Cs case pilots.
Source: https://www.restore4cs.eu/

At the core of the project is the recognition that healthy coastal wetlands provide crucial regulatory functions related to climate regulation and biodiversity protection. Beyond the ecological functions, RESTORE4Cs also recognises that coastal wetlands support local communities by delivering material goods, such as food, water, and income, as well as intangible co-benefits including cultural identity, education, and well-being.

RESTORE4Cs conceptualises wetlands as complex socio-ecological assets (Gobster et al., 2007) and adopts an integrated transdisciplinary approach based on the direct involvement of scientific experts and local stakeholders across the selected pilot sites. Within this framework, a fundamental role is attributed to the assessment of the socio-economic and cultural aspects that shape the decision to undertake restoration actions.

Within RESTORE4Cs, this study introduces an innovative overarching methodology designed to assess the relative relevance of the constituent components of social acceptability (SA) in restoration decision-making through a participatory Multi-Criteria Analysis (MCA). The SA analytical framework applied here to the analysis of the DDBR represents a key element of this broader assessment approach. The general idea is to combine experts' identification of the most relevant environmental, socio-economic, and cultural impacts of restoration with local stakeholders' preferences through a novel MCA–SAA procedural approach that translates MCA results into the SA assessment (Sella et al., 2025).

Further investigation of the MCA-SAA approach is beyond the scope of this paper, which instead focuses on presenting and discussing an innovative analytical framework to assess social acceptability in ecosystem restoration management. Building on this premise, the paper identifies eight main components that shape social acceptability (see Section 3) and applies the SA lens to interpret the socio-ecological dynamics shaping restoration decisions in the Danube Delta case study (see Section 4). As the conceptual scheme in Figure 3 shows, the eight SA dimensions can serve both ex-ante, to provide a preliminary interpretation of the relevant SA dimensions in the territorial socio-ecological system, and ex-post, to translate the outcomes of the direct elicitation of local experts and stakeholders into a prioritisation of the SA components.

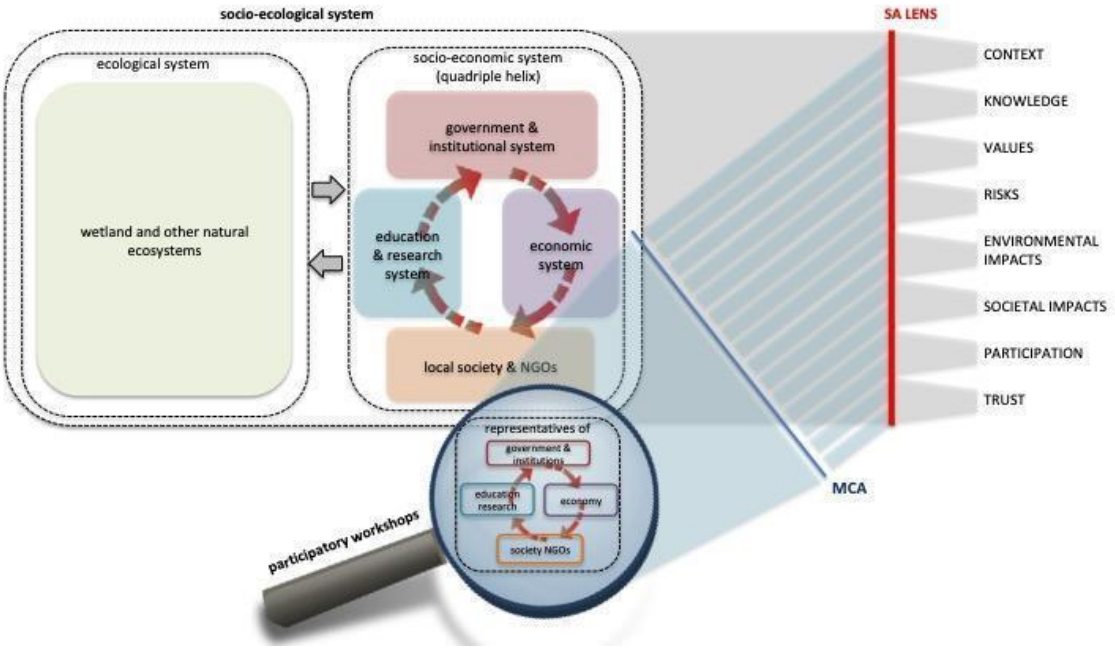


Figure 3. The SA analytical framework used in RESTORE4Cs for both analysing socio-ecological contexts and interpreting the results of the multi-criteria analysis.
Source: authors' elaboration.

Given the heterogeneity of restoration impacts on local communities and the unpredictability of long-term outcomes arising from complex socio-ecological dynamics, local stakeholders' engagement in co-designing appropriate solutions emerges as a pragmatic approach. Moreover, assessing the varying degrees of SA across different solutions (ranging from 'business as usual' to high-impact and extensive actions) provides a practical foundation for informed decision-making and for building trust, local commitment, and acceptance.

The starting point of the territorial investigation proposed in RESTORE4Cs is therefore the identification of the SA components that account for different levels of social acceptance and the clarification of their relationships with the socio-economic, cultural, and environmental aspects of the socio-ecological system. The next section explains the choice proposed in RESTORE4Cs to operationalise the SA concept.

3. THE SOCIAL ACCEPTABILITY OF RESTORATION DECISIONS: A REFERENCE FRAMEWORK

Social acceptability (SA) can be defined as "the outcome of a collective judgment or collective opinion of a project, plan or policy" which often emerges at the local or regional level (Gouvernement du Québec, 2025). The concept of social acceptability has been operationalised through several analytical and operational tools that emphasize stakeholders' involvement to foster consensus, commitment, and conflict prevention (Santaoja et al., 2025; Wang et al., 2025; International Union for Conservation of Nature, 2020). However, most of these studies are qualitative and descriptive (Ellis et al., 2023). Studies proposing a structured approach to investigate the SA of restoration decisions are rare, often tailored to specific case studies (Sella et al., 2024), and characterised by limited transferability.

In this study, we aim to fill this gap by operationalising the theoretical understanding of SA in the form of an analytical framework suited to investigate ecosystem management issues. We build our approach upon the classification used by the Ministère de l'Énergie et des Ressources Naturelles of Québec (MERN). This framework, which draws on a conceptualisation proposed by Stankey and Shindler (2006), modified by Yelle (2013), and subsequently elaborated by MERN, is currently adopted by the Gouvernement du Québec to ensure broad consideration of SA in its projects and policies, fostering long-term sustainability (MERN, 2017). The MERN classification identifies eight factors driving social acceptability: i. The social, economic, territorial and geographic contexts; ii. Local knowledge; iii. Values, beliefs, and expectations; iv. Real or perceived risks and uncertainties; v. Impacts on the living environment and the environment; vi. Benefits and repercussions for local communities; vii. Participation in decision-making; viii. Trust in the promoters and institutions.

Compared with other proposals, the MERN classification offers several strengths that motivated our attention. These can be summarised as follows:

- It is consistent with a socio-ecological approach and integrates socio-economic, cultural, and environmental factors;
- It accounts for both tangible and intangible elements, considering directly observable phenomena as well as values and other non-material dimensions;
- It places emphasis on the components of the local system that reflect perceptions;
- It considers the assessment of SA (SAA) as a process that helps ensure a stronger relationship with the community;
- It considers that SAA must accompany all phases of the project.

At the same time, this approach reflects the mission of the Québec government, which is focused on "financial and social risk management" (MERN, 2018), and marked by a strong managerial perspective.

In this study, we reformulated and consolidated the categories proposed by the MERN framework to improve conceptual clarity and operational applicability, and to align more closely with the specific characteristics of wetland habitats in need of restoration. The SA dimensions here adopted - namely context, knowledge, values, risks, environmental impacts, societal impacts, participation, and trust - are referred to as the "petals" of a flower-shaped representation, hereafter referred to as the "social acceptability flower" (Figure 4).

Figure 4. The social acceptability flower.
Authors' elaboration, adapted from MERN, 2018 (see also Rota et al., 2025).

The MERN classification already covers most of the issues that environmental land-use management literature identifies as relevant in shaping social acceptability (Shindler et al., 2002). However, the MERN dimensions are defined too broadly, limiting their usefulness for classification and analytical purposes. For example, the component described as "the social, economic, territorial and geographic contexts" includes a collection of information on various cultural, historical, and governance background aspects (MERN, 2018), which overlaps significantly with the components "local knowledge" and "participation in policy-making".

SA drivers are inherently complex, hybrid, and multifaceted. Nonetheless, we aim to define the SA petals as precisely as possible, while assuming that the assessment methodology is applied at the broadest geographical scale at which wetlands influence the socio-ecological system, i.e. typically the aquifer or, as in the case of the Danube Delta, the Biosphere Reserve scale.

As a result, this study develops a multidimensional, comprehensive, flower-shaped analytical framework to investigate social acceptability and its underlying socio-ecological dynamics. The proposed framework is operationally useful both in ex-ante desk analysis of socio-ecological systems, which is carried out before involving local stakeholders, and in ex-post elaboration of participatory MCA co-design activities. In the text that follows, the multiple drivers characterising each petal of the SA flower are explained and discussed in comparison with the MERN approach.

3.1. The *Context* petal

Compared to the MERN approach, our analysis redefines this petal to focus on tangible aspects such as the local economy, the settlement system, and the territorial characteristics of the natural environment. The literature shows that the social acceptability (SA) of coastal wetland restoration depends on how economic, social, and ecological contexts shape community perceptions - both regarding individual interests (e.g., traditional activities like agriculture, livestock rearing, fishing, salt extraction, or industrial, harbour, and energy sectors) and collective interests, including slow or green tourism and nature conservation (Babaniyi et al., 2025b). Economic factors often prevail, as local communities are frequently not fully aware of wetlands' multifunctional services (see Section 1) and tend to assess restoration mainly in terms of its direct economic impacts (see the societal impacts petal).

Furthermore, wetlands' geographic and ecological specificity makes one-size-fits-all approaches unsuitable (Shindler et al., 2002). For instance, Atlantic wetlands differ substantially from Mediterranean or Central European ones, not only in terms of ecosystem conditions (e.g., pollution, eutrophication, fragmentation, sea-level rise, or salinisation), but also in the scale and scope of ecosystem services (e.g., flood and erosion protection, water regulation, and biodiversity support). Thus, analysing wetlands within their socio-ecological systems requires considering all relevant factors and their interconnections.

The context petal also includes material conditions related to land use and accessibility, participatory initiatives, local networks, and policy projects shaping the community. Understanding these ex-ante contextual factors is complex (MERN, 2017), especially at the aquifer or biosphere scale, but essential for strategies that ensure both ecological integrity and community well-being.

3.2. The *Knowledge* petal

This petal addresses the role of different forms of knowledge in shaping the social acceptability of wetland restoration. Unlike MERN, which emphasizes local expertise to improve projects and secure local stakeholders' commitment, this petal encompasses a wider range of knowledge, including both scientific knowledge related to ecological processes, environmental management, and local knowledge rooted in traditional practices, historical processes, everyday activities, and long-term observations.

In the context of wetland management, these forms of knowledge are essential and mutually complementary (Shindler et al., 2002). Scientific knowledge supports restoration decisions, clarifies risks (erosion, runoff, and flooding), and highlights the 'hidden' benefits of restoration (nutrient cycling, climate-change mitigation, water quality). Educational knowledge also contributes to shaping social acceptability, since scientific research, participatory environmental monitoring, and educational programmes raise citizens' awareness, promote appreciation for wetland ecosystems, strengthen public legitimacy and trust in decision-making.

Local knowledge is closely linked to traditional practices and cultural heritage. In wetlands, it represents an experiential memory of traditional activities (agriculture, fishing, hunting, salt extraction, and nature conservation practices), together with lived experiences of landscape management. This knowledge provides insight into the effects of restoration on livelihoods and captures site-specific dynamics that scientific models generally overlook.

With regard to social acceptability, local knowledge quality and circulation influence community perceptions of restoration projects. Since SA judgments integrate cognitive information with socially shared norms (Stankey and Shindler, 2006), a better understanding of ecological processes and restoration rationales tends to encourage support, while limited, fragmented, or contradictory information increases mistrust and opposition. Despite differing epistemic assumptions and communicative styles, the effective integration of scientific and local knowledge enhances context-sensitive interventions while reinforcing credibility, legitimacy, and relevance. Strengthening knowledge exchange reduces uncertainty, builds trust, and improves social acceptance of restoration initiatives (Gamborg et al., 2019).

3.3. The *Values* petal

This petal concerns individual and community beliefs, priorities, and expectations regarding the human-nature relationship, which significantly shape perceptions about restoration and its legitimacy (Dai et al., 2024; Schultz et al., 2022). While MERN highlights the importance of values in shaping community expectations after restoration, we understand values as influencing individual identity, the relationship with the natural environment, and views on natural resource management (Lengieza et al., 2025), including the balance between community needs and ecological systems (Shindler et al., 1996).

Values include aesthetic and cultural attachment, ecological worldviews, recreational preferences, physical and mental well-being, commitment to nature conservation, support for sustainable tourism, and trust in institutions. In particular, acceptability is value-dependent when restoration alters landscape aesthetic or symbolic qualities. In this sense, values reflect socially shared meanings, collective identities, and long-standing relationships between communities and their environments.

Furthermore, values vary considerably across social groups. For example, economic actors may value wetlands for fisheries or tourism opportunities, while conservation-oriented stakeholders may prioritize habitat quality, biodiversity, and landscape integrity. Understanding this heterogeneity is essential to anticipate conflicts, and to design widely supported interventions. Since greater value heterogeneity complicates agreement on restoration strategies, institutional capacity to facilitate dialogue and negotiation becomes key. For this reason, a comprehensive mapping of local stakeholders aimed at distinguishing their interests and influence on restoration emerges as critical. Hence, a thorough understanding of the "values" petal enables decision-makers to align restoration strategies with the cultural identity of local communities, strengthening legitimacy and long-term social acceptance.

3.4. The *Risks* petal

Public and individual perceptions of risk are among the strongest predictors of social acceptability (Anderson et al., 2021). This petal addresses both real and perceived risks and uncertainties associated with wetland restoration, including ecological, socio-economic, and health-related aspects. This dimension is fundamental, since wetland restoration operates under high uncertainty regarding ecosystem responses and intervention outcomes (Shindler et al., 2002; Brunson, 1996).

Risk perception - shaped by experience, cultural norms, information, and trust - plays a critical role in determining communities' attitudes toward restoration, often more than objective risk. Understanding the full range of economic, ecological, hydrological, and health-related risks allows project promoters to address community concerns, design targeted communication strategies, and develop mitigation or compensation measures. Clear communication about uncertainties and potentially negative outcomes builds trust and reduces conflict. Hence, effective management of perceived and objective risks is key for local community support.

Common concerns in wetland restoration include flooding, land-use restrictions, job or economic losses, habitat alteration, invasive species, health and safety issues. Restoration can also pose operational risks, such as disturbance during implementation, maintenance costs, or technical failures.

Risk perception varies significantly both across individuals and contexts (Garcia et al., 2020). A measure perceived as protective by pro-environment groups may be viewed as threatening by farmers or fishers. Furthermore, socio-demographic factors, such as gender, influence perceptions of risk and vulnerability (Bauer et al., 2015).

Transparency and stakeholder inclusion are essential: lack of information or exclusion increases scepticism and resistance (MERN, 2017; Pueyo-Ros et al., 2018).

3.5. The *Environmental impacts* petal

This petal concerns how wetland restoration affects ecosystem and functional characteristics of the natural environment. Environmental impacts are among the strongest drivers of social acceptability (MERN, 2018). These impacts can be either positive or negative, direct or indirect, and include changes in habitat quality, biodiversity, hydrological regulation, and ecosystem services. Common positive effects often include improved water quality, flood regulation, erosion control, and biodiversity recovery, which may support recreational and economic opportunities (Suren et al., 2010; Lovelock et al., 2022). However, ecological recovery often unfolds slowly, and ecosystem services may remain partially compromised (Browne et al., 2018). Transparent communication about short- and long-term impacts is therefore essential.

The assessment of wetland-related environmental impacts concerns both the ecological dynamics, such as documenting the condition of aquatic and terrestrial habitats and species (including the presence of invasive species), and hydrological dynamics (including climate regulation functions, flood control, coastal protection, and groundwater recharge) (Suren et al., 2010; Lovelock et al., 2022).

Broader environmental impacts include cultural connections, landscape modifications, noise, and pollution. These are often underestimated, yet they can generate immediate concern and opposition. Finally, environmental impacts that extend beyond the boundaries of the socio-ecological system also shape social acceptability.

In conclusion, environmental impacts shape expectations and social acceptance. Clear explanations of benefits and potential drawbacks increase social acceptability, while uncertainty, delays, or negative

impacts foster scepticism (Breber et al., 2008). Once again, effective communication and continuous ecological assessment are crucial elements to ensure sustained long-term community support (Browne et al., 2018; MERN, 2018).

3.6. The *Societal impacts* petal

This petal concerns how wetland restoration affects communities' livelihoods, cultural practices, land accessibility, connectivity, and well-being. Communities assess restoration not only in terms of its ecological benefits, but also in terms of its consequences on everyday life, cultural identity, and economic conditions. Social acceptability increases when benefits are clear, losses are mitigated, and restoration aligns with local priorities.

Societal impacts include economic opportunities or losses, changes in traditional activities, land-use restrictions, costs, and effects on competitiveness (Breber et al., 2008). Benefits may include job creation, recreational opportunities, cultural revitalisation, and cleaner and more attractive landscapes.

Since societal impacts are often unevenly distributed across groups, conflicts may arise. Long-term support requires early and clear communication. Consistent with this interpretation, key elements of the "societal impacts" petal include: i. Foreseeable economic repercussions of restoration, ii. Environmental–social linkages influenced by restoration (flood protection, water quality); iii. Cultural and spatial aspects (heritage, accessibility, disturbances); iv. Well-being concerns (physical and mental health). Together, these elements shape how communities experience the social consequences of restoration and, ultimately, the degree of social acceptability.

3.7. The *Participation* petal

This petal refers to the involvement of local stakeholders in planning, decision-making, and implementation, as participation shapes perceptions of fairness, legitimacy, and shared ownership, all of which are key to social acceptability. In the MERN framework, participation is considered a SA driver since communities want to take part in decisions affecting the quality of life and the environment (MERN, 2018). This aspect is particularly relevant in the case of wetland restoration, which impacts local well-being while serving global climate regulation goals. Consistent with this, government agencies often justify restoration decisions based on broader policy frameworks (e.g., the EU Water Framework Directive and the Nature Restoration Law), which are often poorly known to the general public, and communities often feel overruled and excluded from decision-making processes (Schumacher et al., 2021).

In coastal wetland and ecosystem management, continuous engagement of local communities builds trust and ensures support, preventing conflicts and aligning restoration outcomes with local needs (Reed et al., 2017). Active participation also fosters a sense of ownership and long-term cooperation.

In the social acceptability assessment of wetland management, the participation petal addresses the level of involvement of key local actors - e.g., fishers, farmers, livestock holders, industrial actors, municipalities, pro-environmental activists, and residents - in governance and planning initiatives. This information is often difficult to capture, as it depends on the mapping of participatory initiatives or institutionalised inclusive decision-making, as well as on the cultural indirect aspects of participation, such as place attachment, sense of place, community identity, and local engagement or activism, which are even harder to measure. Another participation indicator concerns knowledge-sharing activities in research, education, and recreation, measured through the degree of local involvement.

Across all participation facets, transparency and fairness emerge as crucial enablers of acceptability. Communities support restoration interventions when they feel genuinely involved (Schumacher et al., 2021). Continuous and inclusive engagement prevents resistance and supports collaborative governance, essential for overcoming scepticism and ensuring long-term success (Reed et al., 2017).

3.8. The *Trust* petal

This petal addresses stakeholders' trust in institutions, scientists, and organisations promoting restoration. Trust strongly influences how risks and benefits are perceived and is considered a key predictor of SA (Reed et al., 2017; Scholte et al., 2016). In wetland restoration, trust is critical because interventions often involve costly land-use changes immediately affecting private interests, while promising long-term collective benefits (such as ecosystem services) that are frequently unclear, uncertain, and slow to emerge (Prasanya et al., 2024). As a result, risk perception often outweighs benefit perception.

Low trust in wetland policymakers and planners, combined with poor understanding of restoration motivations and lack of consultation, often leads to opposition to (even ecologically sound) projects,

particularly when they are perceived as top-down impositions threatening traditional rights and practices (Scholte et al., 2016). For example, some degraded wetland areas have traditionally been used for harvesting, which is generally restricted under nature protection regulations, thereby causing conflicts. Conversely, institutional transparency, accountability, and engagement with local knowledge build trust (Gupta et al., 2011, Sibley et al., 2024). Early stakeholder engagement in decision-making processes is among the most effective trust-building measures, fostering acceptance (Benson et al., 2017).

Operationally, trust as a component of SA in restoration encompasses governance quality, economic transparency, clarity on job impacts, and costs - including maintenance. These aspects are crucial in fostering long-term support and legitimacy.

4. THE SOCIO-ECOLOGICAL SYSTEM OF THE DANUBE DELTA BIOSHERE RESERVE

Based on the methodology discussed in Section 3, the text that follows illustrates the main features of the socio-ecological system of the Danube Delta Biosphere Reserve (DDBR) through the lens of social acceptability. More specifically, Section 4.1 provides a preliminary presentation of the case study, while Section 4.2 contains a layered analysis of the DDBR based on the eight components (petals) of the flower-shaped social acceptability framework.

The analysed information derives mainly from a review of studies and reports offering specific investigations into the socio-economic, cultural, and environmental features of the Danube Delta region (among the most relevant: Misteli et al., 2024; ECOPOTENTIAL project, 2019; Văidianu et al., 2014). In addition, the analysis has benefited from the expertise of the researchers from the University of Bucharest (i.e., the RESTORE4Cs partner responsible for the Romanian case study), who were directly involved in the construction of a fact sheet dedicated to the DDBR, as well as in the validation of the collected evidence. A limited number of interviews were also conducted with scientific experts, local managers, and administrators (Table 1), primarily from Tulcea County, where most of the Danube Delta wetlands are located.

Table 1. The interviewed experts, local managers, and administrators. All interviews were conducted online in September 2024, as a joint activity of different work packages within RESTORE4Cs.

ID	Profession	Role	Position
1	Researcher	Public	Danube Delta National Institute for Research and Development
2	Researcher	Public	Danube Delta National Institute for Research and Development
3	Fisherman	Private	Local Entrepreneur (Somova region)
4	Activist	Private	WWF Representative (Manager)
5	Administrator	Public	Danube Delta Biosphere Reserve Administration (Governor)
6	Researcher	Public	University of Bucharest
7	Researcher	Public	Tulcea Environmental Protection Agency, DDBRA Department

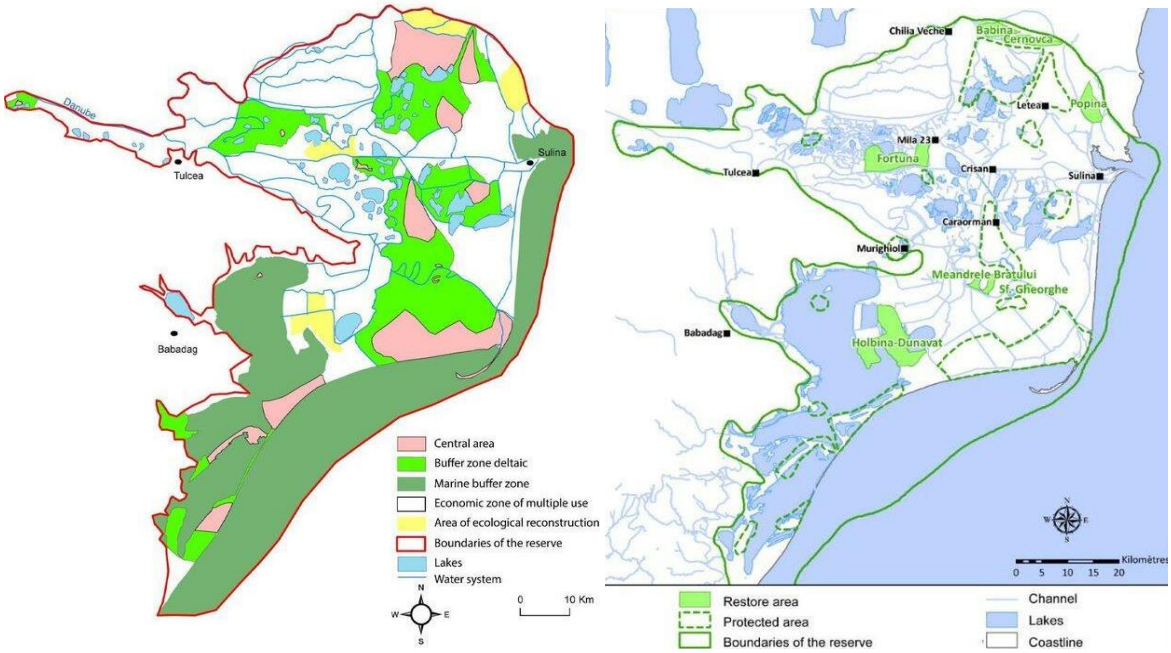
Source: authors' elaboration.

4.1. The geographical and institutional contextualisation of the Danube Delta Biosphere Reserve

The Danube Delta was designated as a Biosphere Reserve in 1990 under the UNESCO Man and the Biosphere (MAB) Programme. Its protection and management are regulated at the national level by Romanian Law No. 82/1993, which established the institutional framework for its administration. The Danube Delta Biosphere Reserve (DDBR) is located at the confluence of the Danube River and the Black Sea, covering approximately 5,800 km^2. This area, shared between Romania (82% of the DDBR) and Ukraine (18%), hosts the second largest delta in Europe (around 580,000 ha) and the third richest biosphere in the world. Its highly dynamic socio-ecological system is composed of river channels, lakes, reed beds, marshes, alluvial forests, sand dunes, and coastal lagoons. The DDBR hosts exceptional biodiversity, with over 5,500 recorded species of flora and fauna and internationally important populations of migratory birds and fish. Its ecological significance is reflected in multiple international designations, including UNESCO Biosphere Reserve, Ramsar Wetland of International Importance, World Natural Heritage Site, and Natura 2000 site. The current landscape of the DDBR has been strongly shaped by land use and land cover transformations implemented during the communist period (approximately 1950–1989). Large-scale hydrotechnical and land reclamation projects were carried out with the objective of increasing agricultural, forestry, and fish production. Extensive areas of natural wetlands were drained and embanked, creating polders for intensive agriculture, fish farms, and poplar and willow plantations. These interventions altered natural hydrological regimes, sediment dynamics, and ecological connectivity, leading to habitat loss, reduced biodiversity, and changes in ecosystem functioning. Although

some polders were abandoned or partially restored after 1990, the legacy of these transformations continues to influence present-day ecological processes and management challenges.

As the maps in Figure 5 show, in the region, zones under different levels of protection (protected zones, deltaic and marine buffer zones) are intermingled with areas of economic activities (Figure 5a). The region is also the object of numerous wetland restoration interventions (Figure 5b), making it an insightful case to study the decision-making process for the management of the natural ecosystems.



(a) **(b)**

Figure 5. Danube Delta Biosphere Reserve: (**a**) protected zones, deltaic and marine buffer zones, economic zones; (**b**) protected and restored areas within the boundaries of the reserve. Source: Niculescu et al., 2017: 35 (**a**); Niculescu et al., 2017: 32 (**b**).

The area has undergone numerous restoration projects aimed at recovering altered habitats. Since the 1990s, a major ecological reconstruction initiative has been underway to restore wetlands and the original hydrological regime in Babina (12,000 ha) and Cernovca (1,580 ha). In 2015, the Mahmudia area (900 ha) was converted from agricultural land into a wetland rich in biodiversity thanks to an EU-funded project. More recently, between 2019 and 2023, a plan supported by the Endangered Landscapes Programme sought to redevelop the wetlands of the Danube Delta, which had been primarily degraded by climate change, eutrophication, tourism, and alterations to the river's natural hydrological regime.

Socially, the Danube Delta is sparsely populated, with small and often isolated settlements primarily accessible by water. Local communities are ethnically diverse, including Romanians, Lipovans, Ukrainians, and other groups, whose livelihoods and cultural practices are closely linked to the deltaic environment. Traditional activities such as fishing, reed harvesting, and small-scale agriculture have declined due to environmental regulations, economic restructuring, and demographic aging. Economically, the region remains one of the least developed in Romania. Following the fall of communism, the centralized economic activities shifted toward subsistence and semi-subsistence practices, with nature-based tourism emerging as a key economic sector, offering alternative income opportunities while generating new pressures on fragile ecosystems. The site is managed by the Danube Delta Biosphere Reserve Administration, a public body that also regulates access. Admission is generally granted, except in strictly protected areas, but there is a fee of approximately €3, valid for one week; specific rates also apply for access by boat or private vehicle. According to official data reported by Baştcău et al. (2023), the site receives approximately 115,000 visitors each year. Within the DDBR, economic activities are subject to strict conservation regulations, requiring an ongoing balance between ecosystem protection, restoration of altered landscapes, and the socio-economic needs of local communities.

4.2. The social acceptability flower of the Danube Delta

4.2.1. Context

The socio-economic and territorial profile of the Danube Delta that we see today is the product of a long, uneven history, shaped by changes that never really happened all at once but accumulated over time. These layers of change still influence how people living in the Delta interpret restoration initiatives, sometimes cautiously and sometimes with hope. To understand why reactions differ so much, it is useful to consider the mixture of economic constraints, demographic patterns, ecological pressures, and institutional arrangements that frame everyday life in the region.

The legacy of the communist period is still noticeable, even if not always openly discussed. Forced industrialisation went on for decades, and when it suddenly collapsed in the early 1990s, it left behind unemployment, an ageing population, and fewer opportunities for younger generations (Stan & Hărmănescu, 2021). These historical and economic dynamics shape not only individual interests linked to traditional activities, but also broader collective expectations regarding tourism, conservation, and future development opportunities.

Today the economy revolves mostly around fishing, tourism, and agriculture (Lazar et al., 2022). Yet traditional fishing and reed harvesting, which were once taken for granted, have become more difficult to sustain, partly because of environmental change and partly because of new regulations. Agriculture itself often depends on European subsidies (Interview 6). In this setting, economic considerations tend to dominate how local communities assess restoration measures, particularly when their immediate livelihood prospects appear uncertain.

Demographically, the Delta remains a sparsely populated and relatively isolated place. About 11,500 inhabitants live across small villages that are scattered over a wide and sometimes difficult terrain (Başcău et al., 2023). A few settlements, such as Sulina or Murighiol, function as small local centres, but Tulcea, the nearest urban hub, sits outside the protected area. Geography plays a major role here. Limited accessibility and long distances shape daily routines and influence how people perceive new policies. The steady outmigration of young residents, who leave for larger cities, interrupts the transmission of traditional knowledge and weakens the networks that once supported local forms of territorial management (Interviews 1 and 2).

Ecological and territorial transformations further complicate this context. During the communist period, drainage projects, land reclamation, and embankment works altered the hydrological functioning of the Delta, reshaping canals and influencing water circulation (Constantinescu et al., 2015). These interventions affected fish stocks, which in turn influenced the activities tied to them. Meanwhile, tourism has grown quickly. Many see it as the most promising economic alternative, but unregulated practices such as high-speed boating create environmental pressure and disturb wildlife (Interview 5). These transformations highlight the highly specific ecological and hydrological features of the Delta, which make generalised restoration models unsuitable and require context-sensitive approaches. For this reason, the ecological setting is not merely a natural backdrop; it is a key factor in shaping how risks are perceived and how conservation is discussed locally.

Institutional conditions, too, play an important part in shaping local perceptions. Romania adopted a National Wetlands Strategy in 1996, but it has been implemented only partially because of administrative and financial limitations (Ramsar Secretariat, 2014; 2020). Another complication comes from the lack of a clear legal definition for brackish and estuarine habitats, which creates uncertainty for local authorities (Gogaladze et al., 2022). These ambiguities sometimes translate into disputes on the ground, for example regarding land use, fishing rights or tourism development (Interview 6). Attempts to improve coordination exist, such as the Integrated Territorial Investment programme, although many actors consider the results incomplete (Interview 4).

Territorial and land-use conditions reinforce some of these attitudes. Industrialisation and landscape changes have altered the relationship between people and the river, reducing familiarity with environmental management and reshaping how communities relate to the landscape (Stan & Hărmănescu, 2021). When traditional activities become harder or less viable, support for further change may weaken.

Taken together, these elements form the lens through which restoration projects are usually interpreted. The context does not dictate reactions in a mechanical way, but it definitely influences how people position themselves. Interventions that appear aligned with local needs and identities tend to receive more support, whereas uncertainty and vulnerability often lead to hesitation or resistance.

4.2.2. Knowledge

In the Danube Delta, the social acceptability of restoration is shaped by the interaction between different forms of knowledge, including scientific, institutional, and local ecological knowledge. These

knowledge types play complementary roles in how communities understand ecological change, evaluate restoration measures, and interpret their implications for everyday life.

Local ecological knowledge represents one of the most distinctive assets of the region. For generations, fishing communities have cultivated place-based expertise related to fish migration and reproduction periods, preferred habitats, reed bed dynamics, and the use of wetland resources, forming a system of ecological understanding embedded in cultural heritage and expressed through architecture, fishing practices, cuisine, music, dances, and clothing (Interview 7; Van Assche et al., 2012; 2025). However, this heritage is increasingly fragile. Younger residents show declining interest in traditional activities, while regulatory changes and the decline of fishing and reed harvesting have weakened opportunities to maintain and transmit customary ecological knowledge (Interview 3; Morris and Polese, 2015). Historical land-use transformations and hydrological interventions have further disrupted these relationships, reshaping canals and wetlands and constraining the practical conditions required to sustain traditional practices (Tănăsescu and Constantinescu, 2020).

Institutional and scientific knowledge have also become important in shaping public understanding of restoration. The Tulcea Environmental Protection Agency works to raise awareness of the benefits of protected areas, while WWF Romania has engaged local stakeholders to better align restoration projects with specific territorial needs, demonstrating the potential of integrating scientific assessments and locally grounded observations (Interviews 4 and 7). Yet these efforts also reveal persistent barriers. Many economic actors express scepticism toward institutional procedures and scientific expertise, partly due to perceptions of insufficient transparency and the distance between institutional actors and everyday realities (Interview 6).

The circulation, accessibility, and perceived credibility of information, therefore shape how restoration is interpreted. While scientific and institutional actors underline the ecological rationale for restoration, limited or uneven dissemination of information contributes to misunderstandings and mistrust, complicating the integration of knowledge systems. At the same time, community perceptions remain influenced by lived experiences of environmental change, regulatory constraints, and livelihood uncertainties. These dynamics confirm the theoretical insight that social acceptability depends not only on the availability of knowledge, but also on its legitimacy, its perceived relevance to local conditions, and the degree to which different knowledge forms are integrated into decision-making (Stankey and Shindler, 2006).

In conclusion, the knowledge landscape of the Danube Delta is characterised by strong traditional ecological expertise, increasing scientific engagement, and evolving institutional efforts to support awareness. Strengthening connections among these knowledge systems, and recognising the socio-historical processes that have weakened traditional practices, appears essential for building long-term support for restoration and enhancing the socio-ecological resilience of the region.

4.2.3. Values

In the Danube Delta, the values that guide the relationship between local communities and the environment reflect a complex set of beliefs, priorities, and expectations that influence perceptions of resource management and the legitimacy of conservation measures. The area is widely recognized for its high ecological, cultural, and identity value, as it is home to extraordinary biodiversity, with numerous aquatic and terrestrial species, important colonies of pelicans and cormorants, and a significant number of fish species that have both economic and ecological value (Interview 7; ECOPOTENTIAL project, 2019). At the same time, culinary traditions, multicultural heritage, and ecotourism potential contribute to building a strong cultural attachment to the territory, in line with the aesthetic and symbolic dimension of values described in the theoretical framework.

Alongside these ecological and cultural values, values linked to livelihoods and the daily use of natural resources emerge strongly. Many residents recall with nostalgia a past perceived as richer in opportunities and environmental abundance, a reference that becomes a point of comparison with contemporary economic difficulties (Interview 3).

In this context, practices such as fishing and hunting play a central role not only in material terms but also as components of the historical relationship between communities and the environment, consistent with the theoretical idea that values influence identities and visions of resource management.

The plurality of values present in the Delta translates into divergent perceptions of conservation measures. Restrictions on specific traditional practices, such as fishing with certain types of nets or hunting wild boar, are often perceived as penalising and as tools that benefit external actors rather than protecting local communities, generating friction between residents and authorities (Morris and Polese 2015). This heterogeneity of values, which includes more conservationist orientations on the part of

institutions and NGOs and priorities more related to livelihoods on the part of residents, reflects what is highlighted in the theoretical framework with regard to the need to recognize value differences in order to understand the emergence of conflicts and the difficulty in building consensus.

Values also influence perceptions of the legitimacy of conservation policies, as residents express resistance when regulations are perceived as inconsistent with local needs or traditional knowledge (Interview 3). Furthermore, difficult socioeconomic conditions, linked to geographical isolation and the high cost of living in the Delta, contribute to shaping expectations and priorities, as highlighted by WWF Romania (Interview 4).

Despite these tensions, there are signs of transformation in the values attributed to the territory. Some residents show a growing awareness of the importance of sustainable resource management, while recognizing that the transition requires time, education, and adequate institutional support (Interviews 1 and 2). In line with the theoretical framework, these changes suggest that values are not static but evolve in relation to the socio-economic conditions and institutional dynamics that influence how communities imagine the future of the Delta.

Overall, the values observed in the Danube Delta include ecological, cultural, and identity elements, along with economic and livelihood values. This heterogeneity reflects the complexity of the relationships between communities and the environment and is fundamental to interpreting how local actors perceive restoration policies and to designing conservation interventions that are more consistent with the priorities, meanings, and expectations of resident populations.

4.2.4. Risks

In the Danube Delta, the risks associated with wetland management and restoration initiatives arise from a combination of ecological, economic, and institutional factors, and are perceived differently by various local groups.

From an ecological perspective, the area is exposed to risks related to climate change, such as increased droughts and reduced water levels, which affect ecosystem functionality and the availability of natural resources (ICPDR, 2015). The variability of the Danube's flow, influenced by both climate and hydroelectric infrastructure and navigation systems, is an additional source of uncertainty for water management. Added to these factors are salinisation and sedimentation processes that can reduce agricultural productivity and compromise fish habitats (Interview 6).

Alongside ecological risks, there are economic risks perceived mainly by traditional operators. Fishers fear that the decline in fish stocks could permanently compromise the sector, putting their livelihoods at risk (Interview 3). For farmers, flooding of land and the collapse of weakened embankments are interpreted as negative consequences of the conversion processes, to the point of prompting legal action and requests for the conversion of restored areas back to agricultural use (Interview 6). These episodes show how uncertainties about the effects of restoration can fuel perceptions of economic vulnerability.

Institutional and governance risks are also relevant. Disputes over land use, the need for compensation for leaseholders, and the initiation of legal proceedings highlight a context in which rules, competences, and responsibilities are not always clear to local actors. In this context, WWF Romania has also reported the problem of water extraction for irrigation as an additional pressure factor, which can exacerbate the effects of drought and accentuate the sense of uncertainty regarding resource management (Interview 4).

These risks, as perceived by different categories of actors, influence the way citizens and economic operators evaluate conservation initiatives. Concerns about loss of income, disputes over water management, and fears related to land use changes can reduce support for restoration measures, especially when such interventions are perceived as potentially harmful or when their effects are not fully understood. In this sense, risk perception is a key element in interpreting the dynamics of social acceptance in the Danube Delta.

4.2.5. Environmental impacts

As described in Section 4.1, the Danube Delta in Romania is an example of altered and progressively restored coastal wetlands. In this region, “human intervention has manifested itself in more than one-quarter of the entire Danube surface. This intervention was brutal and has rendered ecosystem restoration very difficult. Studies for rehabilitation/re-vegetation were begun immediately after the Danube Delta was declared a Biosphere Reserve in 1990” (Niculescu et al., 2017, p. 513).

These wetland restoration initiatives produced notable ecological improvements. Particularly, the reconversion to wetland enhanced biodiversity and attracted migratory birds (Interview 6). Past restoration processes were also associated with the conservation of species and habitats, greater ecological functionality, and a healthier environment, as well as hydrological improvement, such as enhanced water circulation and improved water quality (Interview 6). One of the key ecological actions

involved reconverting a large abandoned agricultural area into wetland and reconnecting it to the Danube River through a channel (Interview 6). Environmental impacts may therefore play a key role in increasing local acceptance of restoration interventions in the Danube Delta. However, as discussed in Section 4.2.2, awareness and understanding of these positive outcomes remain partial. Monitoring activities are also lacking, particularly following restoration (Interviews 1 and 2), making it difficult to fully assess ecological changes over time. Remote sensing, in particular, now provides accurate methods for detecting changes in vegetative cover and using them as indicators of restoration success (Niculescu et al., 2017). Yet the dissemination of these assessments largely occurs within academic or research-driven initiatives (including EU-funded projects such as RESTORE4Cs), with limited reach to the general public. In addition, the Governor of the DDBR notes that fish population recovery initiatives require funding that the EU currently does not provide, limiting the scope of conservation efforts (Interview 5).

4.2.6. Societal impacts

In addition to the ecological benefits, past restoration initiatives in the Danube Delta produced notable social and economic benefits for local communities. A relevant example is the 2015 EU-funded project in Mahmudia, implemented by WWF Romania and the local council, which reconverted a large abandoned agricultural area into wetland. The initiative gained support from the local population, largely due to its anticipated positive effects on tourism and fishing-related activities (Interview 6). According to a survey conducted by WWF Romania, 67% of residents perceived economic gains associated with the intervention, particularly as a result of increased ecotourism (Interview 4).

Land ownership patterns also influence the social dynamics of restoration. Environmental management is facilitated by the predominance of public land, held by municipalities and the state, but the presence of privately owned parcels can give rise to compensation claims and local tensions (Interview 6). Despite earlier successes, financial constraints continue to hinder the implementation and long-term maintenance of restoration activities. Since previous interventions relied primarily on EU structural funds, the DDBR Authority faces significant limitations in sustaining existing restoration work and requires additional external financing (Interview 6). Moreover, stakeholders have expressed concerns about the distribution of funds. For example, local fishers reported that financial resources allocated to their associations are not reaching individual members (Interview 3).

These issues highlight the broader governance challenges shaping social outcomes in the region. While attitudes toward conservation are gradually shifting, with an increasing awareness of its long-term advantages, effective sustainable management depends on addressing economic pressures, integrating local knowledge, and strengthening trust between institutions and communities (Interviews 1 and 2).

4.2.7. Participation

The governance and management of the Danube Delta Biosphere Reserve (DDBR) provide a particularly useful context for analyzing the role of participation in the social acceptability (SA) of conservation and ecological restoration interventions. Consistent with what is discussed in the participation petal of the MERN model, participation is a key driver of acceptability, as it influences perceptions of fairness, legitimacy, transparency, and shared ownership (MERN, 2018; Reed et al., 2017). In the Delta, as in many environmental management contexts, the involvement, or lack thereof, of local actors significantly influences the social response to restoration projects.

The reserve is administered by the Danube Delta Biosphere Reserve Authority, under the Ministry of Environment, which is responsible for implementing the management plan (Interview 6). This places most decisions at a higher institutional level, a dynamic that the literature associates with perceptions of distance and limited inclusion of local communities in decision-making processes (Schumacher et al., 2021). As observed for other environmental policies, such as the Water Framework Directive (WFD) or the more recent Nature Restoration Law (2024), the public's lack of knowledge of the regulatory frameworks that guide environmental choices can weaken the perception of procedural legitimacy and fuel forms of local resistance (Schumacher et al., 2021).

This institutional backdrop provides the context for the long-standing conflict between two models of landscape management: the Conservative Model, which favors maintaining agricultural activities despite low soil productivity, and the Ecological Model, which advocates removing the hydraulic infrastructure built during the communist period in order to restore the natural water regime (Constantinescu et al., 2015). This contrast reflects the tension, widely discussed in the literature on SA, between immediate local interests and broader environmental and climate objectives (Reed et al., 2017; MERN, 2018), showing how the quality of participation becomes crucial to ensuring procedural fairness and mitigating perceptions of top-down imposition.

The plurality of actors involved in the Delta further underscores the importance of inclusive participatory mechanisms. These include: fishers calling for restrictions on tourism to reduce disturbance, and pollution; landowners discouraged by low soil productivity; municipalities and the state in favor of converting agricultural land into wetlands; tourists and residents attracted by new economic opportunities but often disrespectful of the rules; NGOs and research institutes engaged in conservation (Interview 6; Prelz & Tanasescu, 2019). This diversity of interests highlights the need for participation that can generate transparency, trust, and collective ownership.

Although forms of engagement are provided for, institutions such as the Tulcea Environmental Protection Agency face a widespread trust deficit, as many residents perceive protected areas as constraints rather than opportunities (Interview 7). This phenomenon is consistent with the findings of Schumacher et al. (2021), according to whom the lack of meaningful participatory processes reduces the social legitimacy of conservation policies, especially when regulations are complex, poorly enforced, or difficult to interpret. Burdensome administrative procedures—such as obtaining licenses—reinforce this perception, contributing to participation that is more formal than substantive (Prelz & Tanasescu, 2019).

Similar to what was discussed in the participation petal, difficulties also arise in the Delta in assessing the more intangible aspects of participation, such as attachment to place, community identity, forms of local activism, or knowledge sharing (MERN, 2018). Furthermore, the memory of the profound hydrological transformations carried out during the communist period continues to influence the way communities interpret current restoration proposals (Constantinescu et al., 2015), showing how cultural and historical dimensions contribute to social acceptability.

A case study that clearly demonstrates the potential of meaningful participation is the Mahmudia restoration project. Here, WWF Romania engaged the local community from the earliest planning and implementation stages, securing strong long-term acceptance and support (Interview 4). The project provides empirical confirmation of Reed et al. (2017): ongoing, transparent, and inclusive participatory processes help align local expectations with ecological objectives, mitigate conflicts, and reinforce social legitimacy and community ownership.

4.2.8. Trust

Trust plays an important role in how communities in the Danube Delta evaluate conservation and restoration initiatives. The theoretical framework shows that it shapes perceptions of risks and benefits, influences how legitimate institutions appear, and affects whether residents are willing to support measures whose ecological outcomes may take years to materialise. On the ground, however, trust does not present itself as a single, stable attitude. It shifts depending on personal histories, regulatory experiences, and encounters with authorities.

Many residents associate protected areas with constraints rather than opportunities. This view is strongly linked to earlier development projects that were introduced with minimal consultation and that disrupted familiar livelihoods (Interview 7). Such memories remain present and help explain a general caution toward institutional decision-making. Regulatory frameworks can also feel distant or uneven. Even when European directives are regarded positively, their implementation locally is not always convincing for residents, partly because procedures have been inconsistent or difficult to interpret (Interview 5).

Tensions among stakeholder groups contribute to this picture. Tourism has grown quickly, creating opportunities but also sharpening disagreements over how tightly activities should be regulated. Fishers ask for stricter controls to protect fish stocks and reduce disturbance, while tourism operators prefer a more flexible approach that supports mobility and expansion (Prelz & Tănăsescu, 2019). These contrasting demands make it difficult for institutions to appear neutral, and they influence how fairness and credibility are assessed.

Trust, though, can change. Recent restoration projects supported by WWF Romania indicate that attitudes improve when interventions produce visible benefits or align with local expectations. A survey reports that 97% of residents viewed recent efforts favourably (Interview 4). This suggests that ecological improvements, coupled with engagement, can build trust. Yet the opposite is also possible. Conflicts over compensation for submerged land show how quickly trust can erode when economic effects are unclear or perceived as unfair, especially for those already facing precarious livelihoods.

Overall, trust in the Delta emerges from a combination of historical experience, institutional performance, economic pressures, and the ways in which information is communicated and followed up. Rebuilding trust is less a matter of one-off transparency than of continuity, responsiveness, and the capacity to remain present in community life. Without this, support for restoration can weaken, even where ecological benefits are widely recognised.

5. CONCLUDING REMARKS

The analytical perspective adopted in this study is the first part of a two-phase methodological approach developed within the RESTORE4Cs project to assess the social acceptability (SA) of wetland restoration (see Figure 3). This first phase consists of an ex-ante socio-ecological reading of the territorial system of the Danube Delta, aimed at identifying the contextual factors that shape the social acceptability of wetland restoration initiatives. Before engaging local stakeholders, this phase uses the eight dimensions (petals) of a flower-shaped SA framework revised from MERN (2018) as an interpretive lens to describe the ecological, socio-economic, cultural, and institutional features of the area. The second phase, to be implemented in subsequent research, consists of a participatory assessment that integrates stakeholders' opinions through a Multi-Criteria Analysis (MCA) with the aim of prioritising SA dimensions.

As the RESTORE4Cs project deliverables presenting the results of the MCA–SA analysis (Sella et al., 2025) have not yet been released, a definitive and fully comparative assessment between the SA reading of the DDBR and the evaluation of stakeholder preferences is not possible at this stage. Nevertheless, preliminary results from the MCA indicate that most of the narratives identified through the eight SA petals are also present in local perceptions. In particular, they highlight the coexistence of different, sometimes competing, interests within the local context represented by the traditional economic activities of agriculture and fishing, and the rapidly expanding sectors of tourism and recreation (see Section 4.2.1).

Moreover, local preferences in the Danube Delta appear to be relatively evenly distributed across the different SA dimensions, pointing to a high degree of heterogeneity in stakeholder priorities. This pattern is consistent with the SA profile emerging from the analysis of the petals Risks (Section 4.2.4), Environmental impacts (Section 4.2.5), and Societal impacts (Section 4.2.6), which reveals a distinctive combination of concerns when restoration decisions are considered. Societal concerns, in particular, are deeply embedded in Romania's post-communist economic history (Section 4.2.1), while environmental concerns are rooted in the exceptional ecological value of the area and its long-standing tradition of environmental protection (Section 4.2.3).

In parallel, this shared awareness contributes to a common understanding of the complexity of the DDBR and to a collective commitment among local actors to preserving biodiversity, habitats, hydrological regimes, and water quality, while also addressing climate change challenges. At the same time, the Delta hosts multiple forms of knowledge—practical, experiential, and scientific—which currently coexist with limited integration and persistent mutual distrust, as highlighted by the SA petals. Overall, the case of the DDBR is characterised by strong values and environmental awareness, but comparatively weaker levels of trust and participation, which hinder effective knowledge integration.

These results can be interpreted as the proof that the proposed approach provides both conceptual clarity and operational guidance, outlining a scalable methodology that can be replicated across different wetlands and territorial contexts. More specifically, the study of DDBR contributes to the growing body of literature that highlights the multidimensionality of social acceptability (SA) in environmental management (Shindler et al., 2002; MERN, 2017; 2018; Stankey & Shindler, 2006), showing that understanding the social, cultural, and institutional dimensions of restoration is as crucial as assessing its biophysical feasibility. Inspired by socio-ecological perspectives emphasising the continuous negotiation among actors within territorial systems (Rota, 2024), the paper advances a comprehensive analytical lens for interpreting restoration decisions in coastal wetlands.

This approach is innovative, as it both embeds existing SA framework within a broader methodological effort which integrates it into participatory Multi-Criteria Analysis (MCA) and adapts to the specific characteristics of wetland socio-ecological systems. Applied to the Danube Delta Biosphere Reserve, the framework reveals how social acceptability emerges from the intersection of ecological pressures, socio-economic vulnerabilities, cultural values, and institutional conditions. Despite the local specificity of the case, the results echo broader observations in the literature on wetland governance, where social acceptance depends on how interventions align with place-based knowledge, identities, and expectations (Gamborg et al., 2019; Ellis et al., 2023; Schultz et al., 2022). The findings confirm that affective and cultural attachments - often underestimated in policy debates - play a fundamental role in shaping support or resistance to restoration (Dai et al., 2024; Van Assche et al., 2012, 2025). In the DDBR, values linked to traditional fishing, hunting, and landscape identity strongly influence how communities interpret regulatory changes, echoing concerns raised in other socio-ecological contexts where restoration may alter symbolic or livelihood-related dimensions of local life (Pearce et al., 2023).

The study also demonstrates that risk perception - long recognised as a key determinant of SA (Anderson et al., 2021) - is shaped not only by biophysical uncertainties, such as hydrological change or climate variability, but also by socio-economic fragilities, unclear compensation mechanisms, and institutional ambiguities. As other authors have noted (Scholte et al., 2016; Reed et al., 2017), perceived

risks often weigh more heavily than scientifically estimated risks, and mismatches between institutional narratives and local experiences can generate resistance even when restoration is ecologically justified. In the DDBR, for instance, environmental improvements following past restoration efforts remain insufficiently communicated or monitored, limiting their potential to strengthen public trust and support.

Trust and participation emerge as pivotal components of social acceptability, in line with a vast body of research on restoration governance (Reed et al., 2017; Schumacher et al., 2021; MERN, 2018). The Danube Delta case confirms that limited transparency, administrative complexity, and insufficient involvement of local actors undermine confidence in institutions and weaken restoration legitimacy. Conversely, RESTORE4Cs promotes early engagement, shared decision-making, and clear communication as effective means to foster acceptance and community ownership. The existence of an EU project explicitly dedicated to promoting stakeholder involvement and registering local views on restoration in the Mahmudia region has been perceived as a positive element, helping rebuild confidence and commitment. This aligns with the international literature emphasising participatory approaches and co-design as essential conditions for successful nature-based solutions (IUCN, 2020). These experiences underscore the importance of designing governance structures that promote fairness, inclusiveness, and continuity in institutional–community relations.

From a methodological standpoint, the analytical framework proposed complements existing works that call for more systematic, transferable tools to study social acceptance in nature restoration (Sella et al., 2024) and provides a twofold added value. First, it offers a structured tool for conducting ex-ante territorial analyses, helping researchers and practitioners anticipate which SA dimensions are likely to be most sensitive in a given socio-ecological context. Second, by being compatible with ex-post participatory assessments through its integration into the MCA–SAA approach (Sella et al., 2025), it facilitates a more holistic understanding of how expert knowledge and stakeholder preferences interact. The dual ex-ante/ex-post usability enhances the operational relevance of the framework, making it a practical contribution to restoration planning and environmental governance debates.

Although the single-case nature of the study limits the generalisability of its conclusions, it simultaneously represents one of its strengths: the depth of the socio-ecological reading enabled by the eight-petal SA framework demonstrates how context-specific insights can meaningfully inform wider conceptual and policy discussions. The Danube Delta, with its hybrid ecology, cultural richness, and institutional complexity, exemplifies the types of socio-ecological systems where restoration must balance environmental goals, economic needs, and community expectations. As stressed in international literature, wetland restoration under climate change demands integrated approaches capable of addressing such complexity (Kampa et al., 2025; Saito et al., 2025; Prasanya et al., 2024). This study contributes to such integration by bridging qualitative socio-ecological interpretation with a structured analytical modelling of acceptability.

In conclusion, the findings suggest that the success of wetland restoration initiatives in the DDBR - and more broadly in European coastal wetlands - will depend on the capacity of institutions to enhance trust, integrate local and scientific knowledge, and design participatory processes that reflect community values and priorities. Social acceptability thus emerges not merely as a condition for implementation but as a diagnostic and interpretive tool for governance, guiding the alignment between restoration objectives and the lived reality of socio-ecological systems. By demonstrating how a refined SA framework can reveal hidden dynamics, anticipate conflict, and inform participatory decision-making, the study offers both conceptual and operational contributions to restoration science. Strengthening these dimensions will be key for advancing sustainable wetland governance and ensuring the long-term resilience of ecosystems whose benefits extend well beyond their geographical boundaries. Finally, the added value of the proposed methodology also lies in its procedural nature: it actively involves local stakeholders in the construction of a shared narrative and a common knowledge base, which can then serve as a foundation for the co-development of restoration options.

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Use of AI tools declaration

The authors declare limited use of Artificial Intelligence (AI) tools for English proofreading.

Author contributions
All authors contributed equally to this work, integrating perspectives from their respective disciplinary backgrounds in economics, geography, sociology, and environmental studies. All authors read and approved the final manuscript.

Consent to participate to the study
The study draws upon interviews collected by the RESTORE4Cs project consortium as part of the tasks dedicated to producing a video documentary series and building a Community of Practice. Prior to participation, all interviewees were informed of the investigative purpose of the study and notified of their right to withdraw at any time, and they provided their consent. In accordance with the Guidelines for Research Integrity (2019) issued by the Italian National Research Council (CNR), because the interviews address non-sensitive content, refer to publicly known facts, involve minimal risk, contain no identifiable data, and serve exclusively scientific purposes, they are exempt from formal ethics committee review.

Conflicts of interest
The authors declare no conflict of interest.

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- The petrographic composition of the massif explains this type of relief (Ielenicz 2003; Posea 2005).

If three or fewer authors are cited from the same citation then all should be listed. If four or more authors are part of the citation then 'et al.' should follow the first author's name.

- (Ielenicz, Comanescu & Nedelea 2010)
- (Ielenicz et al.2008)

If multipe sources are used from the same author and the same year, then a lowercase letter, starting from 'a', should be placed after the year.

- (Ielenicz 2003a; Ielenicz 2003b)

If you are directly quoting from a work, you will need to include the author, year of publication, and page number for the reference (preceded by "p." for a single page and "pp." for a span of multiple pages, with the page numbers separated by an en dash).

You can introduce the quotation with a signal phrase that includes the author's last name followed by the date of publication in parentheses.

- According to Ielenicz (2003), "quoted text" (p. 199).
- Ielenicz (2003) found "quoted text" (pp. 199-202).

If you do not include the author's name in the text of the sentence, place the author's last name, the year of publication, and the page number in parentheses after the quotation.

- The author stated, "quoted text" (Ielenicz, 2003, p. 199), but he did not offer an explanation as to why.

Authors with the Same Last Name: To prevent confusion, use first initials with the last names.

- (D. Privitera, 2004; A.C. Privitera, 2019)

The names of groups that serve as authors (corporate authors) are usually written out each time they appear in a text reference.

- (European Environment Agency [EEA], 2018)

When appropriate, the names of some corporate authors are spelled out in the first reference and abbreviated in all subsequent citations. The general rule for abbreviating in this manner is to supply enough information in the text citation for a reader to locate its source in the Reference List without difficulty.

- (EEA, 2018)

If the name of the group first appears in the narrative, put the abbreviation, a comma, and the year for the citation in parentheses after it.

- The European Environment Agency (EEA, 2023) state that extreme weather threat makes climate change adaptation a top priority.

When a paper has no author, use the first two or three words of the paper's title (using the first few words of the reference list entry, usually the title) as your text reference, capitalizing each word. Place the title in quotation marks if it refers to an article, chapter of a book, or Web page. Italicize the title if it refers to a book, periodical, brochure, or report.

- On climate change ("Climate and Weather", 2010) …
- Guide to Hydrological Practices (2008)

Please do not include URLs in parenthetical citations.

(Cambria, 10pt, Normal).

- ***Reference list***: References follow the 7th edition of the APA style, which includes a dedicated section to the citation of electronic resources.

We strongly recommend the use of reference management software such as Mendeley or Zotero. The official APA style manual can be purchased through their website. (Cambria, 9pt, Normal, Idendation, Special: Hanging; By: 1cm; Line spacing: Single).

Triple-check your references details and their correspondence with the in-text citation. Be aware that despite doing our best to remediate possible issues, authors are responsible for the accuracy of references.

Some examples of references in APA style (7th edition) are included below.

Book with one author:

Fennell, D. (2008). *Ecotourism.* Third edition. Routledge.

Book with two authors:

Jones, R., & Shaw, B.J. (2007). *Geographies of Australian Heritages: Loving a Sunburnt Country?* Routledge. https://doi.org/10.4324/9781351157520

Book with more than two authors:

Carter, T., Harvey, D., Jones, R., & Robertson, I. (Eds.). (2019). *Creating Heritage: Unrecognised Pasts and Rejected Futures*. Routledge. https://doi.org/10.4324/9781351168526

Journal article with DOI:

Leimgruber, W. (2021). Tourism in Switzerland – How can the future be? *Research in Globalization, 3*, Article 100058. https://doi.org/10.1016/j.resglo.2021.100058

Journal article without DOI (when DOI is not available):

Ianos, I., Sirodoev, I., & Pascariu, G. (2012). Land-use conflicts and environmental policies in two post-socialist urban agglomerations: Bucharest and Chişinău. *Carpathian Journal of Earth and Environmental Sciences, 7*(4), 125–136. https://www.cjees.ro/viewTopic.php?topicId=276

Journal article with an article number or eLocator:

Ivona, A., Rinella, A., Rinella, F., Epifani, F., & Nocco, S. (2021). Resilient Rural Areas and Tourism Development Paths: A Comparison of Case Studies. *Sustainability, 13*(6), Article 3022. https://doi.org/10.3390/su13063022

Article in a magazine or newspaper:

Benabent Fernández de Córdoba, M., & Mata Olmo, R. (2007, July 13). El futuro de la geografía. *El País.* https://elpais.com/diario/2007/07/13/opinion/1184277607_850215.html

Edited book:

Yang, P. (Ed.) 2018. *Cases on Green Energy and Sustainable Development.* IGI Global.

Chapter in an edited book:

Privitera, D., Štetić, S., Baran, T., & Nedelcu, A. (2019). Food, Rural Heritage, and Tourism in the Local Economy: Case Studies in Serbia, Romania, Italy, and Turkey. In J. V. Andrei, J. Subic, A. Grubor & D. Privitera (Eds.), *Handbook of Research on Agricultural Policy, Rural Development, and Entrepreneurship in Contemporary Economies* (pp.189-219). IGI Global. DOI: 10.4018/978-1-5225-9837-4.ch010

Conference proceedings (published):

García Palomares, J. C., Gutiérrez Puebla, J., Romanillos Arroyo, G., & Salas-Olmedo, H. (2016). Patrones espaciales de concentración de turistas en Madrid a partir de datos geolocalizados de redes sociales: Panoramio y Twitter. In *Aplicaciones de las Tecnologías de la Información Geográfica (TIG) para el desarrollo económico sostenible* (pp. 131-139). Actas del XVII Congreso Nacional de Tecnologías de Información Geográfica. Málaga, June 29-30 and July 1. http://congresotig2016.uma.es/downloads/separadas/lt1/García%20Palomares.pdf

Working paper (more than twenty authors):

De Stefano, L., Urquijo Reguera, J., Acácio, V., Andreu, J., Assimacopolus, D., Bifulco, C., De Carli, A., De Paoli, L., Dias, S., Gad, F., Haro Monteagudo, D., Kampragou, E., Keller, C., Lekkas, D., Manoli, E., Massarutto, A., Miguel Ayala, L., Musolino, D., Paredes Arquiola, J., … Wolters, W. (2012). *Policy and drought responses–Case Study scale* (Technical report no. 4). DROUGHT-R&SPI project. http://www.isa.ulisboa.pt/ceabn/uploads/docs/projectos/drought/DROUGHT_TR_4.pdf

Webpage or piece of online content:

Vasile Loghin – Geographical Works. *Volcano Island. Geological, geomorphological and volcanological features*.

https://vasileloghin.files.wordpress.com/2015/02/insula-vulcano-cu-foto-final.pdf

Facebook page:

American Association of Geographers - Home [Facebook page]. Facebook. Retrieved September 19, 2022 from https://www.facebook.com/geographers

Non-English references should contain, at the end, additional explanation in which language it was written. If the article contains English summary it should be mentioned. For example:

Grahovac, M., Pivac, T. & Nedelcu, A. (2018). Značaj internet prezentacije za razvoj vinskog turizma Banata(Srpski i Rumunski Banat), *SINTEZA 2017, International Scientific Conference on Information Technology and Data Related Research.* (in Serbian with English abstract & summary)

Dinu, M. (2002). *Geografia turismului [Tourism Geography]*. Editura Didactică și Pedagogică. (in Romanian)

Language and Text

Foreign concepts, proper nouns, names of institutions etc.

If the article discusses foreign institutions or businesses, the original name should be provided in parentheses. Foreign terms and phrases should be set in italics and followed by an English translation enclosed in parentheses; for example, *griko* (the good food).

Spelling

Submissions must be made in English. Authors are welcome to use American or British spellings as long as they are used consistently throughout the whole of the submission.

- colour (UK) *vs.* color (US)

When referring to proper nouns and normal institutional titles, the official, original spelling must be used.

- World Health Organization, *NOT* World Health Organisation

Grammar

American or English grammar rules may be used as long as they are used consistently and match the spelling format (see above). For instance, you may use a serial comma or not.

- red, white, and blue *OR* red, white and blue

Authors not proficient in English should have their manuscripts checked before submission by a competent or native English speaker. Presenting your work in a well-structured manuscript and in well-written English gives it its best chance for editors and reviewers to understand it and evaluate it fairly.

Font

The font used should be commonly available and in an easily readable size. This may be changed during the typesetting process.

Underlined text should be avoided whenever possible.

The use of bold or italicised text to emphasise a point is permitted, although it should be restricted to minimal occurrences to maximise its impact.

Lists

Use bullet points to denote a list without a hierarchy or order of value. If the list indicates a specific sequence then a numbered list must be used.

Lists should be used sparingly to maximise their impact.

Acronyms and Abbreviations

Except for units' measurement, abbreviations are strongly discouraged. With abbreviations, the crucial goal is to ensure that the reader – particularly one who may not be fully familiar with the topic or context being addressed – is able to follow along. Spell out almost all acronyms on first use, indicating the acronym in parentheses immediately thereafter. Use the acronym for all subsequent references.

- Research completed by the International Geographical Union (IGU) shows …

A number of abbreviations are so common that they do not require the full text on the first instance of use. Examples of these can be found **here**.

Abbreviations should usually be in capital letters without full stops.

- USA, *NOT* U.S.A.

Common examples from Latin do not follow this rule, should be lower case and can include full stops.

- e.g., i.e., etc.

Use of footnotes/endnotes

Use endnotes rather than footnotes (we refer to these as 'Notes' in the online publication). These will appear at the end of the main text, before 'References'.

Notes should be used only where crucial, clarifying information needs to be conveyed.

Avoid using notes for the purposes of referencing; use in-text citations instead.

Symbols

Symbols are permitted within the main text and datasets as long as they are commonly in use or an explanatory definition is included on their first usage.

Hyphenation, em and en dashes

For guidelines on hyphenation, please refer to an authoritative style guide, such as The Chicago Manual of Style (16th ed.) (US English) or Oxford's New Hart's Rules (UK English). Be consistent in your style of hyphenation.

Em dashes should be used sparingly. If they are present they should denote emphasis, change of thought or interruption to the main sentence; em dashes can replace commas, parentheses, colons or semicolons.

En dashes can be used to replace 'to' when indicating a range. No space should surround the dash.

- 10–25 years *OR* pp. 10–65

Numbers

For numbers zero to nine please spell the whole words. Use figures for numbers 10 or higher. We are happy for authors to use either words or numbers to represent large whole numbers (i.e. one million or 1,000,000) as long as the usage is consistent throughout the text.

If the sentence includes a series of numbers then figures must be used in each instance.

- Thermal springs were found in the north of Bucharest at depths of 100, 175, and 230 m.

If the number appears as part of a dataset, in conjunction with a symbol or as part of a table then a figure must be used.

- This study confirmed that 7% of…

If a sentence starts with a number it must be spelt, or the sentence should be re-written so that it no longer starts with the number.

- Fifteen examples were found to exist… *RE-WRITTEN*: The result showed that 15 examples existed…

Do not use a comma for a decimal place.

- 2.56 *NOT* 2,56

For numbers that are less than one a '0' must precede the decimal point.

- 0.29 *NOT* .29

Units of measurement

Symbols following a figure to denote a unit of measurement must be taken from the latest **SI brochure**.

Formulae

Formulae must be proofed carefully by the author. Editors will not edit formulae. If special software has been used to create formulae, the way it is laid out is the way it will appear in the publication.

Tables

Tables must be created using a word processor's table function, not tabbed text.

Tables should be included in the manuscript. The final layout will place the tables as close to their first citation as possible.

All tables must be cited within the main text and numbered with Arabic numerals in consecutive order (e.g. Table 1, Table 2, etc.).

Each table must have an accompanying descriptive title. This should clearly and concisely summarise the content and/or use of the table. A short additional table legend is optional to offer a further description of the table.

The title should be above the table (font 10pt) and the source of the data below (font 10pt).

Example:

Table 1. This is a table. Tables should be placed in the main text near to the first time they are cited

Year	Number of foreign tourists (millions)	Foreign currency cashing (USD billions)	Cashing increase compared to 1950
1950	25,3	2,1	-
1990	410,4	300,4	143,0
2010	940,0	919,0	437,6
2013	1, 087,0	1, 159,0	551,9

Source: UNWTO, 2015

Tables should not include:

- Rotated text
- Images
- Vertical and Diagonal lines
- Multiple parts (e.g. 'Table 1a' and 'Table 1b'). These should either be merged into one table, or separated into 'Table 1' and 'Table 2'.

NOTE: *If there are more columns than can be fitted on a single page, then the table will be placed horizontally on the page. If it still cannot be fitted horizontally on a page, the table will be broken into two.*

Figures

All photographs, maps and graphs have to be named as Figure. The figures have to be enclosed in the text, in their order of appearance and should be numbered consecutively using Arabic numbers. The title (font10pt) has to be below the figure. All figures (photographs and maps) have to be submitted as a separate file. All graphs have to be submitted as a separate file in MS Excel format with all the data needed for making the graph. The file should be named as the number of the figure in the main text. Example: Figure 1, Figure 2, etc. If a figure has been previously published, acknowledge the original source. Example:

(a) **(b)**

Figure 1. This is a figure. Schemes follow the same formatting. If there are multiple panels, they should be listed as: (**a**) Description of what is contained in the first panel; (**b**) Description of what is contained in the second panel. Figures should be placed in the main text near to the first time they are cited. A caption on a single line should be centered.
Source: Adrian Nedelcu, 2014.

Figure 1. Sardinia. La Pelosa beach with marine abrasion forms.
Source: Adrian Nedelcu (2019).

NOTE: *All figures must be uploaded separately as supplementary files during the submission process, if possible in colour and at a resolution of at least 300dpi. Each file should not be more than 20MB. Standard formats accepted are: JPG, TIFF, GIF and PNG. For line drawings, please provide the original vector file (e.g. .ai or .eps).*

Reviewer Suggestions

During the submission process, please suggest three potential reviewers with the appropriate expertise to review the manuscript. The editors will not necessarily approach these referees. Please provide detailed contact information (address, phone, e-mail address). The proposed referees should neither be current collaborators of the co-authors nor have published with any of the co-authors of the manuscript within the last five years. Proposed reviewers should be from different institutions to the authors. You may suggest reviewers from among the authors that you frequently cite in your paper.

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