Revista de Economia, Empresas e Empreendedores na CPLP
Journal of Economics, Business and Entrepreneurship in the CPLP
ISSN 2183-7201 | V12 | Special Issue, Part. 3 | 2026

From road infrastructure to territorial asset: Route tourism and sustainable development in Portugal's EN2

Eduardo Milhões Pinheiro [1, 2], **Catarina Fernandes** [1,3,4], **Maria Carlos Lopes** [5,6]

[1] Bragança Polytechnic University, Portugal
[2] The Research Centre in Basic Education (CITeD), Portugal
[3] Applied Management Research Unit (UNIAG), Portugal
[4] Center for Economics and Finance, Faculty of Economics, University of Porto, Portugal
[5] Viseu Polytechnic University, Portugal
[6] Centre for Research, Development and Innovation in Tourism, Portugal

Corresponding author: Eduardo Milhões Pinheiro | pinheiro@unipb.pt
ORCID: https://orcid.org/0000-0001-7698-3363
DOI: https://doi.org/10.29073/e3.v12i5.1306

Received: 15/09/2026 | **Accepted**: 01/11/2026 | **Published**: 10/11/2026

Abstract

Tourism can play a significant role in revitalizing low-density territories, yet transforming dispersed territorial assets into a coherent and competitive tourism offer remains a complex challenge. This study examines Portugal's Estrada Nacional 2 (EN2) as a case of route-based tourism and explores how territorial resources, collaborative governance, and digital/gamified visitor engagement can contribute to sustainable territorial development. Adopting a qualitative case study design, the research combines documentary analysis, news articles, and a semi-structured interview with a systematic examination of institutional records produced by Associação de Municípios da Rota da Estrada Nacional 2 (AMREN2), including strategic documents, reports, and promotional materials. The findings indicate that the revalorization of the EN2 has been grounded primarily in the mobilization of existing territorial capital, and AMREN2's intermunicipal coordination, Agent Network certification system, and integrated promotion have helped connect dispersed natural, cultural, and economic assets across 35 municipalities. The EN2 Route Passport further demonstrates how gamification principles can stimulate visitor engagement, territorial exploration, and local economic circulation through a predominantly physical, rather than digital, mechanism. The study also highlights the complementary potential of digital platforms and smart tourism tools to extend the route's reach and personalize visitor experiences. The findings contribute to the literature by linking territorial tourism development, route governance, and gamification within a single geographically extensive low-density destination. The study's contribution lies in a set of strategic recommendations involving data-driven visitor management, hybrid physical-digital Passport, strengthened agent-network coverage, seasonal programming, and intermunicipal coordination, offering transferable insights for the sustainable reactivation of underutilized infrastructure.

Keywords: Territorial development, low-density territories, route tourism, EN2 route Passport, smart tourism, gamification

1. Introduction

Tourism has consolidated its position as a central driver of regional economic development, particularly in peripheral and low-density territories where conventional economic activities have progressively declined (Di Matteo, 2025; García-Delgado et al., 2020; Martins & Guedes, 2026).

In this context, route-based tourism has gained renewed scholarly and policy attention as a spatially structured instrument capable of integrating dispersed territorial assets, fostering inter-municipal cohesion, and generating multiplier effects across fragmented rural landscapes (Del Pulgar et al., 2024; Sánchez-Martín et al., 2020). Route tourism has the

potential to activate linear corridors of natural, cultural, and gastronomic heritage, redistributing visitor flows toward interior regions and reinforcing territorial identity by articulating tangible and intangible resources (Battino et al., 2022; Scandiffio, 2019).

Portugal's EN2 stands as one of Europe's most distinctive examples of this model. Spanning 739 kilometers from Chaves to Faro, the EN2 is the country's longest national road and the only longitudinal axis that traverses Portugal's entire interior. The EN2 case resonates with broader theoretical frameworks linking territorial capital to place-based development strategies. Territorial competitiveness is no longer reducible to standardized infrastructure investment; it increasingly depends on the capacity of local stakeholders to mobilize distinctive natural and cultural assets, negotiate multi-level governance arrangements, and translate territorial identity into differentiated, high-quality tourism products (Buhalis, 1999; Hassan, 2000; Romão & Neuts, 2017).

Tourism routes, in this regard, operate as territorial integration mechanisms that simultaneously connect dispersed heritage resources, structure spatial continuity across administrative boundaries, and generate the flow dispersal, local value retention, and territorial visibility effects required for sustainable regional development (Bogacz-Wojtanowska & Góral, 2018; Izquierdo-Gascón & Rubio-Gil, 2022; Pedrosa et al., 2024). Yet, transforming a geographically extensive and administratively fragmented corridor into a coherent tourism product demands robust collaborative governance arrangements that align public, private, and community stakeholders across multiple jurisdictions and scales (Bichler, 2019; Jamal & Getz, 1995; Stoffelen et al., 2017).

Alongside these governance imperatives, the rapid evolution of Information and Communication Technologies (ICT) has fundamentally reshaped how tourism destinations are promoted, managed, and experienced.

Smart tourism, underpinned by digital connectivity, mobile platforms, Artificial Intelligence (AI), and Big Data, has enabled more personalized, efficient, and responsive visitor experiences (Bhuiyan et al., 2022; Gretzel et al., 2015). Gamification, understood as the application of game design elements in non-game contexts (Deterding et al., 2011), has emerged as a particularly effective mechanism for deepening visitor engagement, fostering experience co-creation, and strengthening emotional connections between tourists and destinations (Negruşa et al., 2015; Xu et al., 2017). For route tourism operating across low-density territories, these digital tools offer critical opportunities to extend the reach of destination promotion, personalize the visitor journey, and build lasting relationships with diverse market segments (Kolahkaj et al., 2020; Sarker & Dash, 2024).

Despite the growing body of literature on territorial tourism development, route governance, and digital tourism innovation, studies that holistically examine the integration of these dimensions within a single, geographically extensive route remain scarce. Most existing research either addresses territorial development strategies in isolation from governance dynamics or examines digital innovation without embedding it within the specific institutional and spatial complexities of multi-jurisdictional tourism routes. The EN2 case offers a unique empirical opportunity to bridge these gaps, given its exceptional scale, institutional maturity, and the breadth of governance, product development, and digital engagement initiatives it encompasses.

Drawing on a conceptual framework developed from the literature review and an in-depth analysis of the EN2 Route, this study advances a set of strategic recommendations for the Route's sustainable development, which constitute its principal contribution. Particular

emphasis is placed on digital innovation, notably through the development of a dedicated tourist mobile application and an enhanced, booking-enabled website, as strategic mechanisms to strengthen the destination's competitiveness, foster visitor engagement, and increase the territory's visibility and attractiveness.

Methodologically, the study adopts a qualitative research design based on documentary analysis and the systematic examination of institutional records. The empirical corpus comprises a comprehensive collection of materials produced by AMREN2, the inter-municipal association responsible for coordinating the governance, promotion, and development of the EN2 tourism product, including founding statutes, strategic plans, annual reports, certification guidelines, the Responsible Tourist Manifesto, and promotional materials. Also, a semi-structured interview with the president of AMREN2 was conducted, and media sources were analyzed.

This approach enables an in-depth examination of the governance processes, strategic priorities, and tourism product development decisions shaping the EN2 initiative within its specific institutional and territorial context (Creswell & Poth, 2016; Yin, 2018).

The remainder of the article is structured as follows. The literature review is presented in Section 2. The methodology, which is based on a case study and qualitative approach, is described in Section 3. The EN2 case is analyzed in Section 4. Section 5 presents the discussion and advances the strategic recommendations. Section 6 concludes with the study's main contributions, limitations, and directions for future research.

2. Literature Review

2.1. Territorial Tourism Strategy and Development: Resources, Identity, and Differentiation

Regional tourism research has converged on understanding tourism as a spatially embedded, multidimensional territorial system best analyzed at regional rather than national scales, where the interplay of landscape, heritage, institutions, and community identity shapes competitive outcomes (e,g., Calero & Turner, 2019). Within this context, tourism can function as an endogenous driver of regional development and revitalization, particularly in peripheral areas (Di Matteo, 2025; García-Delgado et al., 2020; Martins & Guedes, 2026), with innovation through new products, technologies, and management approaches serving as a primary mechanism for enhancing long-term adaptive competitiveness (Romão & Neuts, 2017; Torre, 2025).

Territorial tourism potential is therefore conceptualized as a composite of natural endowments, cultural resources, infrastructure, human capital, and institutional frameworks, rather than a simple inventory of attractions, meaning that competitiveness assessments must account for the full configuration of both material and immaterial assets of the territory (Romão & Neuts, 2017).

Tourism strategy increasingly draws on territorial capital, i.e., natural and cultural assets, identity, and heritage, rather than standardized infrastructure investment, as the foundation for place-based development (Del Pulgar et al., 2024; Romão & Neuts, 2017). Sustainable and balanced territorial development requires qualitative and context-sensitive planning grounded in the specific characteristics and identity of each territory (Del Pulgar et al., 2024). As Hassan (2000, p. 240) argues, “Destination planning and development should focus on a systematic examination of the resource-based attributes of the destination that present a unique comparative advantage”. The distinctive territorial attributes constitute strategic assets for successful development, given their inherent difficulty of replication elsewhere.

Their strategic value lies not simply in their existence, but in the capacity of territorial stakeholders to mobilize and integrate them into the tourism offer. Differentiation relies on linking the uniqueness of a territory's resources to the tourism supply to generate high-quality products and services, while preserving those resources (Buhalis, 1999; Hassan, 2000).

The strategic use of territorial assets situates tourism strategy within broader processes of territorial development. Territorial development can be understood as the enhancement of the well-being and wealth of a territory's stakeholders, shaped by their relations of competition and cooperation, their initiatives and oppositions, and the dynamics of territorial innovation (Torre, 2025). Building on this understanding, territorial development is not only a matter of exploiting available resources, but rather a dynamic process through which local stakeholders mobilize, negotiate, and transform the distinctive assets of their territory into development opportunities. In tourism, this perspective highlights the importance of place-based strategies that build upon the specific resources, identity, and capabilities of each territory.

Moreover, in an increasingly competitive global tourism context, territorial branding plays a key role in communicating the distinctive attributes of territories, enhancing their visibility, and, consequently, attracting tourists and investors (Bose et al., 2022; Cristòfol et al., 2024).

2.2. Tourist Routes as Instruments of Territorial Integration

The literature defines a tourist route as a spatial system that aggregates heritage. In turn, an itinerary is defined as a temporal sequence of activities (Lin et al., 2024; Vada et al., 2023). Regarding methodology, spatial designs can be circular circuits (A-A), which offer high operational efficiency, and linear routes (A-B), which connect different territories (Herman & Blaga, 2022). Nevertheless, the concept of cultural itineraries rooted in historical authenticity is still distinct from that of tourist-cultural routes, which are created as functional constructs for territorial development. (Calderón-Puerta & Arcila-Garrido, 2020). Far from being mere circulation channels, routes act as spatial clusters that integrate material, immaterial, and landscape heritage into a coherent territorial experience (Scandiffio, 2019; Izquierdo-Gascón & Rubio-Gil, 2022). In rural and sparsely populated territories, greenways and soft mobility routes play a key role as ecological and social channels, interconnecting dispersed resources and energizing local communities around the "territorial commons" (Balestrieri & Congiu, 2017; Coppin & Guichard, 2024).

By assuming the role of structuring axes, linear routes prove to be crucial instruments for integrating administratively fragmented territories and promoting territorial cohesion. Also, by ensuring spatial continuity and "debordering", they integrate isolated municipalities into continuous visitor flows, thereby reinforcing urban-rural complementarity (Więckowski, 2023; Tello et al., 2026). In peripheral and low-density regions, such as the interior traveled by the National Road 2 (EN2) between Chaves and Faro, the structuring of large-scale routes consolidates assets dispersed in four dimensions of aggregation: heritage, natural, gastronomic, and mixed landscapes (Ruiz-Jaramillo et al., 2021; Battino et al., 2022; Li et al., 2023).

In addition, by connecting small urban centers with limited individual critical mass, the routes drive polycentric regional development, decentralization, and population retention (Gurría-Gascón et al., 2024; Malý, 2016). However, the mere physical linearity of the infrastructure is insufficient to induce harmonious development and cohesive growth. Without multi-scale governance, concerted inter-institutional articulation, and functional connections among

nodes, road connectivity can accentuate territorial asymmetries rather than strengthen territorial cohesion (Nogués & González-González, 2021; Seleznov & Rudytsia, 2025).

2.3. Territorial multiplier effects of tourist routes

Tourist routes generate territorial multiplier effects that manifest along three main axes. First, they promote the geographic dispersion of tourist flows, mitigating saturation in congested coastal and urban destinations (Vada et al., 2023). Second, they stimulate value retention in local economies by leveraging micro-entrepreneurship, job creation, and the strengthening of endogenous value chains in the peripheries (Izquierdo-Gascón & Rubio-Gil, 2022; Pedrosa et al., 2024). Finally, it is verified that tourist routes add intangible value to the territory, projecting its identity, its brand image (branding), and the visibility of its isolated resources (Battino et al., 2022; Splendiani et al., 2023).

In low-density territories, such as the interior of Portugal, infrastructure such as the National Road 2 (EN2) exemplifies how major transport axes can play a role in spatial articulation, interconnecting intermediate urban agglomerations and fostering territorially distributed development (Rocha et al., 2022; Seleznov & Rudytsia, 2025). However, scientific evidence shows that physical infrastructure alone does not guarantee a route's success. Thus, to achieve the full potential of integration, it is necessary to have capillarity in secondary road networks and the support of a multi-scale governance model (Opriş-Sîrca, 2024). Without concerted public-private cooperation and effective, active community participation, the mere aggregation of heritage assets is insufficient to ensure the destination's long-term sustainability (Basyar et al., 2025; Pedrosa et al., 2025).

2.4 Collaborative Governance and strategic coordination.

The transition from a dispersed network of cultural and natural resources to a structured tourism offering presupposes a robust collaborative governance framework and strategic coordination across multiple decision-making levels. On linear routes that cross several municipalities, heritage dispersion and a lack of political alignment trigger management discontinuities and often lead to multi-jurisdictional frictions (Bramwell & Lane, 2011; Stoffelen et al., 2017). These challenges manifest at the operational level, translating into a conflict of competences, an absence of integrative leadership, and weak involvement of local communities (Bichler, 2019; Gruber et al., 2024).

The long-term viability of these routes therefore requires a dedicated coordination body, able to articulate the interests of public, private, and community actors (Bichler, 2019; Leite et al., 2023). For governance to be successful, it must formalize instruments for partnership and cooperation, strengthen bonds of trust, and actively involve residents (Barandiarán et al. (2019). In practice, strategic management can be supported by territorial metrics, such as vulnerability indices and territorial potential, which are essential for guiding investment and consolidating inter-municipal governance (Balestrieri & Congiu, 2017; Pysareva et al., 2026).

2.5. E-tourism, Smart Tourism, and Gamification

In recent years, the tourism sector has benefited from the rapid evolution of ICT. ICT reshaped how destinations are promoted, managed, and experienced by facilitating the distribution and management of tourism products and destinations (Buhalis & O'Connor, 2005), and transforming how tourists search for information, plan trips, and interact with tourism providers (Kolahkaj et al., 2020; Sarker & Dash, 2024). In parallel, digital platforms enable more targeted marketing, personalized communication, and interactive tourist experiences.

Within this broader digital advancement, smart tourism enhances technology's role by integrating digital connectivity, innovation, and sustainability to improve destination management and visitor experiences. Smart tourism relies on technological enablers such as the Internet of Things (IoT), AI, Big Data, and mobile platforms to create more connected, efficient, and responsive tourism ecosystems (Alsharif et al., 2024; Astanakulov et al., 2025; Bhuiyan et al., 2022; Gretzel et al., 2015).

Beyond technological efficiency, the value of smart tourism increasingly depends on its ability to engage visitors and foster meaningful interactions with destinations. In this context, gamification has emerged as an effective mechanism for translating digital and smart tourism capabilities into more engaging and participatory experiences. Although there is no universally accepted definition, gamification is commonly understood as the application of game design elements in non-game contexts (Deterding et al., 2011; Koivisto & Hamari, 2019; Pradhan et al., 2025; Roinioti et al., 2022).

Building on mechanisms traditionally associated with loyalty and reward programs, such as points, incentives, and recognition (Pasca et al., 2021), gamification can stimulate motivation, participation, and behavioral engagement (Sigala, 2015). In tourism, these mechanisms can enhance the social, emotional, and immersive aspects of the visitor experience (Xu et al., 2017). Location-based games and other gamified applications can encourage tourists to explore destinations, engage with their sociocultural environments, and participate in destination-related activities (Roinioti et al., 2022).

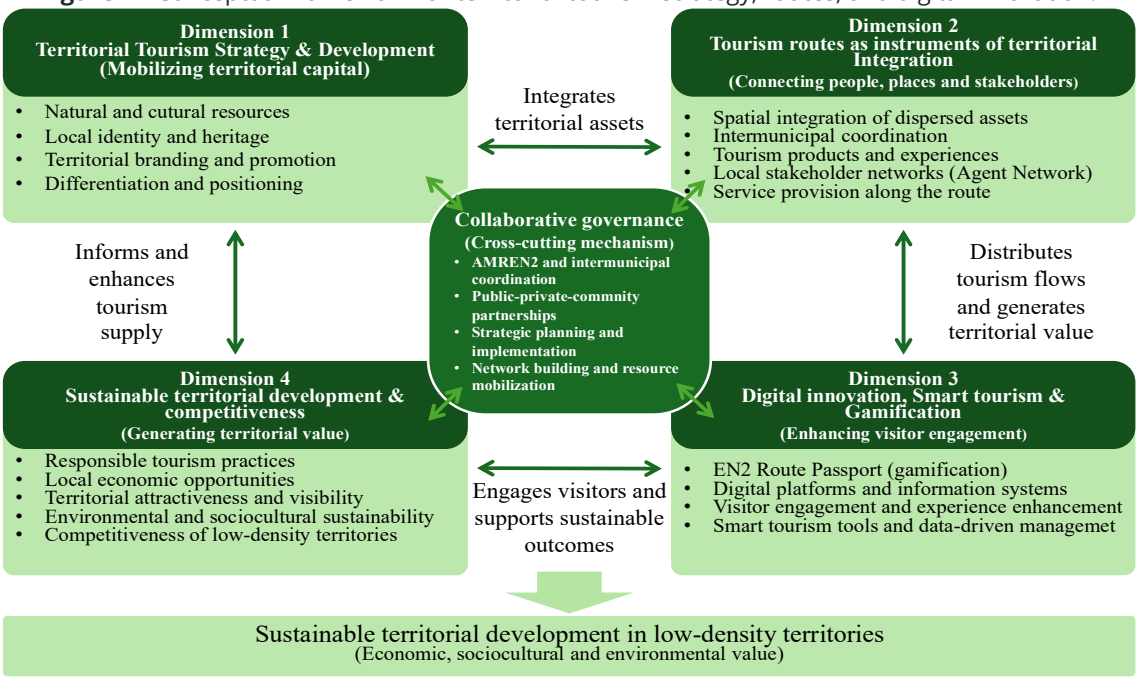
Gamification may also promote experience co-creation by fostering positive emotions, a sense of belonging, and connections with local communities (Aebli, 2019). Additionally, it motivates users to create digital content, share reviews, and interact with destination platforms by offering rewards such as badges and recognition (Pasca et al., 2021). As a result, gamification should not be seen merely as an entertainment feature, but as an essential component of e-tourism and smart tourism ecosystems.

By merging digital connectivity with motivational and participatory mechanisms, gamification can lead to more engaging, educational, and memorable tourist experiences. It simultaneously supports destination promotion, encourages sustainable behaviors, and strengthens relationships among tourists, tourism businesses, destinations, and local communities (Negruşa et al., 2015; Pasca et al., 2021; Roinioti et al., 2022; Xu et al., 2017).

2.6. Conceptual Framework

Based on the literature review, a conceptual framework is presented (Figure 1) within a systemic approach that uses territorial resources as a foundation, integrates them through tourism routes, and leverages digital innovation and gamification to create meaningful experiences and engagement, ultimately contributing to fostering sustainable development and strengthening territorial competitiveness. The collaborative governance mechanisms operate as a cross-cutting enabling layer across all these dimensions.

Figure 1 - Conceptual framework for territorial tourism strategy, routes, and digital innovation.



Source: Authors' own elaboration.

The framework integrates four interconnected dimensions:

1. Territorial tourism strategy and development: territorial capital, including natural and cultural resources, identity, infrastructure, human capital, institutions, and governance, provides the basis for place-based differentiation and territorial branding.
2. Tourism routes as instruments of territorial integration: routes connect dispersed tangible, landscape, and intangible assets, creating spatial continuity, strengthening territorial cohesion, and generating multiplier effects through the dispersion of tourist flows, local value retention, and territorial visibility.
3. Digital innovation, smart tourism, and gamification: e-tourism, smart technologies, and gamification reinforce destination promotion, visitor engagement, experience co-creation, and interaction with local communities.
4. Sustainable territorial development and competitiveness: the combined mobilization, integration, and digital enhancement of territorial assets is expected to strengthen competitiveness and attractiveness while supporting economic development, environmental and cultural sustainability, social cohesion, and territorial resilience.

Beyond synthesizing the theoretical perspectives discussed above, the conceptual framework serves as the analytical structure guiding the empirical examination of the EN2 Route. Its four dimensions are operationalized through specific analytical categories that connect theoretical constructs with observable institutional practices, tourism initiatives, and reported territorial outcomes. The first dimension examines how territorial resources and identity are mobilized to support tourism differentiation. The second investigates how the route integrates geographically dispersed resources, municipalities, and local stakeholders into a coordinated tourism offering. The third focuses on the contributions of digital information systems and gamification mechanisms to visitor engagement and the enhancement of the tourism experience enhancement. The fourth examines sustainability-oriented practices, territorial competitiveness, and reported development outcomes, while acknowledging the limitations of the available evidence for establishing causal impacts. Collaborative governance is treated as a cross-cutting mechanism influencing the articulation of these dimensions. This operationalization enables the framework to function

as an analytical instrument for interpreting the EN2 case and deriving evidence-informed strategic recommendations, rather than solely as a synthesis of the literature.

Collaborative governance and strategic coordination should be seen as crosscutting mechanisms rather than isolated stages. This is consistent with the literature's focus on coordination between public, private, and community stakeholders, particularly in instances where touristic routes cross municipal and jurisdictional boundaries.

Such a positioning is especially adequate for the EN2 case, given that the route value, such as territory, does not come just from the road itself but comes from connecting municipalities, resources, and stakeholders, as well as tourism products and digital experiences across a geographically extensive and administratively fragmented territory.

Building on the conceptual framework, this study proposes a strategic set of recommendations to promote the development of the EN2 Route and, consequently, the broader territory in which it is embedded. These recommendations constitute the article's core contribution, translating theoretical insights into practical steps for the sustainable development of the route and its surrounding territories.

The proposed strategies emphasize the importance of territorial promotion, highlighting how the EN2 can act as a catalyst for regional economic growth, tourism enhancement, and community engagement. By aligning the development initiatives with sustainability principles, the article advocates for a balanced approach that respects environmental integrity while fostering socio-economic benefits.

Furthermore, the proposed recommendations may therefore serve as a reference for other territories seeking to leverage their distinctive cultural, natural, and socioeconomic assets while strengthening local well-being, enhancing territorial attractiveness, and fostering sustainable tourism development.

3. METHODOLOGY

This study adopts a qualitative research design that combines documentary analysis, institutional records, and a semi-structured interview within an in-depth case study framework. A qualitative approach is particularly appropriate for exploring complex social phenomena, as it enables the interpretation of meanings, practices, and processes within their specific institutional and territorial contexts (Creswell & Poth, 2016; Flick, 2022). The case study strategy is equally well suited to examining contemporary phenomena in their real-world settings, particularly when the boundaries between the phenomenon and its context are not clearly defined and when multiple sources of evidence can contribute to a more comprehensive understanding of the case (Yin, 2018). In this regard, case study research provides a valuable basis for examining the EN2 initiative in depth and for understanding how tourism, gamification, and territorial marketing are articulated within a broader territorial development strategy (Paré, 2004).

The EN2 Route represents a particularly relevant case of route tourism as an instrument of territorial development. Its scale, institutional organization, and territorial reach make it a distinctive example of road-based tourism in Portugal, spanning a clearly defined corridor and engaging multiple municipalities and local stakeholders.

To strengthen the robustness of the analysis and reduce the risk of relying exclusively on a single type of evidence, data were collected from complementary sources. These comprised institutional documents produced by the Association of Municipalities of the EN2 Route (AMREN2), publicly available documentation concerning the route and its development, and

a semi-structured interview with the president of AMREN2 conducted in September 2025. The primary documentary corpus included institutional materials such as the association's founding statutes, strategic plans, annual reports, certification guidelines, the Responsible Tourist Manifesto, promotional materials, official communications, and working documents produced by the association. Publicly available documentation was also examined to contextualize the route, its institutional development, and its tourism-related initiatives. These materials provided insights into the route's governance arrangements, strategic priorities, tourism product development, stakeholder engagement, and investment decisions. Documentary analysis is particularly valuable in tourism research because it allows researchers to examine institutional practices, governance processes, and planning priorities while preserving the organizational and territorial context in which these initiatives are developed.

The semi-structured interview with the president of AMREN2 was conducted in September 2025 to obtain an institutional perspective on the development, management, and promotion of the EN2 Route. The interview complemented the documentary analysis by providing contextual information on the association's activities, strategic priorities, implementation processes, and reported results. The semi-structured format allowed the discussion to follow a consistent set of topics while providing sufficient flexibility to explore issues emerging during the conversation. The interview was not audio-recorded; instead, written notes were taken during the interview to document the information provided by the interviewee. These notes were subsequently examined in relation to the study's analytical dimensions and compared with the documentary evidence. Accordingly, the interview was treated as a source of contextual institutional information rather than as a verbatim record of the interviewee's statements. Given the interviewee's institutional position, the resulting account was considered relevant to understanding AMREN2's strategic and operational perspective, while recognizing that it represents the perspective of a key institutional informant rather than an independent assessment of the initiative's outcomes.

The corpus is therefore varied in document type but has limited provenance, mostly from institutional sources, as a result, there is limited triangulation across independent sources.

3.1. Documentary corpus and selection criteria

The document corpus was assembled from materials produced by AMREN2, published through its official EN2 channels, and media sources. Documents were considered relevant when they (i) directly concerned the EN2 route or its tourism product, (ii) had identifiable institutional provenance or appeared on an official AMREN2 channel, and (iii) contained information relevant to at least one of the study's analytical concerns: territorial resources and identity, governance, tourism-product development, promotion, visitor engagement, digital information, or sustainability. Materials with no substantive connection to these dimensions were excluded. The corpus is therefore an institutionally bounded documentary corpus, not a representative sample of all perspectives on the route.

The document types and their intended analytical use are summarized in Table 1. The final inventory should identify the specific items analyzed, rather than document categories alone.

The temporal scope of the documentary analysis was determined by the dates of the documents available in the research corpus and their relevance to the development of the EN2 Route initiative. The interview was conducted in September 2025. The dates of individual documents were recorded where available, and undated documents were identified as such. The documentary analysis was therefore guided by substantive relevance and institutional

significance rather than by the assumption that all source categories covered the same period.

Table 1 - Inventory of documentary and interview sources

Source type	Date	Author / issuing body	Purpose of the source	Analytical use
Founding statutes	2016	AMREN2	Establish the association's mandate, membership, structure, and responsibilities	Analysis of governance structure, institutional roles and coordination
Strategic plan	2022	AMREN2	Define strategic priorities, objectives, and planned actions 2022-2029	Analysis of territorial development strategy and organizational priorities
Annual reports and activity reports	2025	AMREN2	Document activities, implementation progress, and reported results	Identification of activities, outputs, and reported performance
Internal working documents	2025	AMREN2	Support the planning, implementation, and monitoring of association activities	Examination of operational processes and implementation decisions
Certification guidelines	2021	AMREN2	Define certification-related principles, requirements, and commitments	Analysis of sustainability, stakeholder engagement, and the certification framework
Responsible Tourist Manifesto	2021	AMREN2	Communicate principles for responsible tourism	Sustainability framing, visitor conduct, institutional values
Promotional materials and official communications	n.d.	AMREN2	Communicate the route's tourism offer, initiatives, and reported achievements	Analysis of territorial marketing, tourism product development, and promotional claims
Source type	**Date**	**Author / issuing body**	**Purpose of the source**	**Analytical use**
Public news article	2016	RTP / Lusa	Report the establishment of AMREN2 and its initial objectives.	Institutional governance and territorial development.
Public news article	2016	Renascença	Describe the association's tourism development and international positioning objectives.	Territorial marketing and destination positioning.
Public news article	2018	Diário de Notícias (DN)	Report on the allocation of €400,000 to a project aimed at enhancing the tourism value of the EN2 Route.	Analysis of tourism development initiatives, investment in route valorization, and institutional efforts to strengthen the route's tourism appeal.
Institutional announcement	2020	Banco BPI	Describe the commercial agreement supporting businesses in the EN2 Agent Network.	Partnerships and business support mechanisms.
Public news article	2022	Tribuna do Alentejo	Report the strategic plan and its proposed investment.	Comparison of reported strategic commitments.

Public news article	2025	Barlavento	Report the route's recognition at the 2025 Mototurismo Awards.	External recognition and destination positioning.
Public news article	2025	A Voz de Trás-os-Montes	Discuss the EN2 Route's symbolic role in connecting northern and southern Portugal.	Territorial identity and destination narratives.
Semi-structured interview	September 2025	President of AMREN2; interview conducted by one of researchers	Obtain an institutional account of the route's development, management, strategic priorities, and reported results	Contextual interpretation of documentary evidence and identification of convergences and differences

Source: Authors' own elaboration

3.2. Analytical procedure

The materials were examined through a qualitative thematic analysis approach. The analytical procedure involved four stages: corpus organization, familiarization with the material, thematic coding, and cross-source interpretation. The interview notes were reviewed alongside the documentary corpus and organized according to the study's analytical categories. The analysis was guided by the study's conceptual framing and research focus, while remaining open to themes emerging from the documents. The analytical dimensions comprised: (1) territorial capital, including natural and cultural resources, identity, and infrastructure; (2) governance and intermunicipal coordination; (3) tourism products and the Agent Network; (4) branding, promotion, and marketing; (5) visitor engagement, gamification, and the EN2 Passport; (6) digital innovation and information provision; and (7) sustainability and anticipated territorial effects. Relevant passages were interpreted in relation to these dimensions and compared across document types to identify recurring themes, complementarities, tensions, and omissions. In interpreting the material, the analysis distinguished descriptions of reported activities from institutional objectives or intentions; promotional claims were treated as institutional representations rather than independent evidence of impact.

All documents were read in full, and relevant passages were recorded, taking into account the mentioned dimensions. Since the interview was not audio-recorded, the analysis did not involve transcription or systematic coding of a complete interview transcript. The interpretation of the interview evidence therefore focused on the substantive information documented in the notes, rather than on the precise wording of individual statements. This procedure enabled the interview to contribute to the contextual interpretation of the case while acknowledging the limitations posed by the absence of an audio recording. A coding sheet was used in this process.

The coding procedure was conducted by one researcher. As the analysis involved a single coder, inter-coder agreement was not calculated, and no disagreements between independent coders arose. To support analytical consistency, the same thematic categories were applied to the documentary material and the written interview notes. Relevant interpretations were checked against the original documents or the corresponding interview notes and considered in relation to the research questions. Given the absence of an audio recording, the interview analysis was limited to the information documented in the written notes.

3.3. Source triangulation and methodological limitations

The combination of internal institutional documents, publicly available documentation, news articles, and a semi-structured interview provided complementary perspectives on the EN2 Route initiative. However, the diversity of source types should not be interpreted as equivalent to independent empirical verification. A substantial part of the documentary evidence originated from AMREN2, and the interviewee held a senior position within the same organization. Consequently, these sources are institutionally related and may reflect a shared organizational perspective.

The study therefore acknowledges that the evidence does not constitute a triangulation in the conventional sense of independent corroboration by multiple unrelated sources. Rather, the research uses source comparison to contextualize institutional accounts, examine consistency across different documentary formats, and identify claims that require more cautious interpretation. Publicly available documentation contributes to contextualization and potential corroboration where it provides relevant evidence, but it cannot automatically be treated as independent confirmation of information reproduced from AMREN2.

The study's findings are consequently interpreted in light of the qualitative and institutional nature of the evidence. The combination of documentary analysis and an interview with a key institutional informant enables an in-depth understanding of the association's strategy, activities, and reported achievements, while the explicit recognition of source dependence establishes appropriate boundaries for interpreting empirical claims. Future research could strengthen independent verification by incorporating interviews with participating municipalities, certified establishments, and tourism operators, as well as independently collected visitor data and other external measures of tourism performance.

4. Case Study: EN2 Route, AMREN2 Website and EN2 Passport

4.1 The EN2: Historical Background, Route Profile, and Territorial Scope

The EN2 traces its origins to Portugal's ancient Royal Roads, which served as the country's primary arteries for governance, military movement, and commercial exchange throughout the monarchical period. Its modern form was officially established in 1945 under the National Road Plan, an infrastructure initiative to strengthen national connectivity and integrate Portugal's peripheral interior territories into the broader national network (AMREN2, n. d.). Spanning 739 kilometers from Chaves to Faro, the EN2 is both Portugal's longest national road and Europe's longest road to traverse a single country along its full longitudinal extent. Conceived as a north–south inland corridor, it complemented the coastal EN1 by providing a continuous axis across Portugal's diverse interior regions, threading through the mountainous north, the central highlands of Beira Interior and Alto Alentejo, the expansive southern plains, and the Mediterranean coastline of the Algarve.

For several decades, the EN2 served as an essential transport corridor supporting local mobility, regional trade, and access to services. The 35 municipalities along the route, home to an estimated resident population of 676 478 inhabitants (Instituto Nacional de Estatística, 2022), developed economic ecosystems directly tied to road traffic, spanning accommodation, food service, fuel supply, and local commerce. From the 1980s onward, however, the expansion of the national motorway network steadily diverted long-distance traffic away from the road, producing a significant decline in economic activity and reinforcing the depopulation trends that have long affected Portugal's interior. Many municipalities along the corridor face persistent demographic pressures, including population decline, aging, and youth out-migration, challenges that are broadly representative of rural Europe.

The route's physical and cultural endowment, however, remained largely intact. The EN2 traverses 11 mountain ranges and crosses 11 rivers, yielding dramatic topographic transitions and a continuously varied landscape of forests, river valleys, agricultural land, and protected natural areas. Its cultural landscape is equally rich, connecting military and religious monuments, Roman roads and bridges, archaeological sites, historic villages, vernacular architecture, and living intangible traditions, each region retaining distinctive gastronomic identities, artisanal production, and localized knowledge systems. This layered natural and cultural heritage ultimately provided the foundation for the route's revalorization. Beginning in the mid-2010s, a coalition of municipal authorities, local entrepreneurs, and community actors reframed the EN2 not as obsolete infrastructure but as a strategic tourism asset capable of supporting extended, multi-day experiential itineraries. According to AMREN2 (n. d.), this vision was institutionalized in 2016 with the establishment of AMREN2, an inter-municipal association that currently comprises 34 of the 35 EN2 municipalities and the parish of Torrão in Alcácer do Sal, the only municipality that does not integrate the association. Allegedly due to the distance from the route, which crosses the municipality only at its easternmost point (kilometer 565 of the route), the entire municipality of Alcácer do Sal is not formally integrated into the association's structure. To address this issue and ensure that travelers are not inconvenienced, AMREN2 ultimately incorporated the parish of Torrão itself, through a specific protocol, allowing the EN2 Passport to include a stop to collect stamps and promote local heritage.

Since its foundation, AMREN2 has coordinated the route's transformation into a certified, branded tourism corridor under the identity "The Road that Unites Us" (AMREN2, n.d.).

4.2 Tourism Products and Initiatives

Since its establishment, AMREN2 has progressively developed a broad portfolio of tourism products and management initiatives aimed at strengthening the EN2 as a distinctive and high-quality tourism route. To enhance the route's attractiveness and overall tourism experience, AMREN2's strategy focuses on improving information channels, territorial valorization, infrastructure, and integrated promotion (AMREN2, 2016, 2025a; Rádio Renascença, 2016; RTP, 2016). The 30 million euros "Plano Estratégico de Investimento e Valorização da Rota da Estrada Nacional 2" (strategic investment and valorization plan of EN2 route) 2022-2029, and the 400 thousand euros allocated to a 2018-2019 tourism promotion project aimed at enhancing the tourism value of the EN2 Route, which will provide additional signage, training, and information about the municipalities, are concrete examples of this strategy (AMREN2, 2022; Diário de Notícias, 2018; Tribuna Alentejo, 2022).

Alongside these initiatives, AMREN2 has placed considerable emphasis on strengthening the capabilities of actors within its Agent Network. Through targeted training and capacity-building activities, network members have been supported in areas such as service quality, sustainable tourism practices, digital marketing, and visitor management (AMREN2, n. d., 2022, 2025a, 2025b). Funding protocols were also established by AMREN2 in collaboration with a Portuguese financial institution to support its agents' initiatives (Banco BPI, 2020). Together, these efforts reflect a more integrated approach to route management, combining territorial development, stakeholder capacity building, and destination promotion.

4.2.1 Creation of Information Channels

AMREN2 has built a digital presence and information infrastructure anchored by a multilingual website (rotan2.pt), serving as the primary gateway for route information. The platform provides interactive route maps, attraction listings, directories of certified Agent Network members, event calendars, and practical trip-planning tools accessible to a broad

international audience. Digital promotional content, including video productions and coordinated social media campaigns, extends the route's visibility to both national and international markets. This digital ecosystem is complemented by physical information points located at tourist offices and certified establishments, creating an integrated informational environment that supports independent travel planning. This latter function is particularly critical, given that EN2 visitors overwhelmingly organize their journeys independently, without relying on packaged tour operators.

4.2.2 Territorial Valorization and Qualification

Launched in September 2020, the Agent Network represents a novel approach to service quality assurance and to integrating sustainability along the route. AMREN2 developed an Agent Network Certification System that accredits establishments and service providers in accordance with uniform quality and sustainability standards. The certification scheme is structured into nine operational categories: Tourist Accommodation; Restaurants and Similar Establishments; Tourist Animation; Local Products and Endogenous Resources; Heritage Sites and Points of Interest; Pharmacies; Mechanics and Fuel Services; Bicycle Shops; and Other Typologies (AMREN2, n. d.). This broad categorization ensures that certified service provision covers all essential traveler needs throughout the journey. According to AMREN2, as of 2024, more than 1 000 entities had achieved certification, resulting in a dense, geographically distributed network of quality-assured service providers along the corridor (AMREN2, n. d.).

The certification system integrates sustainability criteria aligned with the United Nations Sustainable Development Goals, addressing dimensions including fair labor conditions, gender equality, local sourcing, energy efficiency, waste management, and heritage conservation. This dual emphasis on service quality and sustainability positions the EN2 as a reference model for responsible route tourism development.

Complementing the certification framework, AMREN2 developed a Responsible Tourism Framework operationalized as the “Responsible Tourist Manifesto” (AMREN2, 2021). The manifesto actively promotes sustainable visitor behavior by encouraging travelers to respect local communities and natural environments, patronize local businesses, consume locally produced goods, minimize waste generation, and engage respectfully with cultural heritage. This normative framework is disseminated through the route's digital platforms, passport materials, and the physical environments of certified establishments, thereby cultivating a behavioral environment conducive to sustainable visitation.

4.2.3 Integrated Route Promotion

Launched in 2017, the EN2 Route Passport has emerged as the flagship tourism product and a powerful instrument for visitor engagement and systematic data collection. The passport is a physical booklet that travelers purchase and carry throughout their EN2 journey, progressively accumulating stamps at designated points distributed along the route, including tourist offices, certified Agent Network establishments, heritage sites, and other strategically identified locations. The passport mechanism fulfills several simultaneous functions: it incentivizes thorough territorial exploration rather than rapid, superficial transit; it provides a tangible commemorative object and achievement record for the visitor; it generates granular visitor flow data useful for ongoing route monitoring and planning; and it channels foot traffic to participating establishments, thereby sustaining local economic activity. According to AMREN2 (2025a), since its launch, more than 150,000 passport units have been sold, suggesting robust and sustained market demand for the EN2 experience.

Furthermore, AMREN2 has expanded the EN2 tourism offering through events, experiential products, and media initiatives, enhancing its year-round appeal. Cycling events, gastronomic and cultural festivals, thematic tours, and specialized itineraries help diversify the tourism experience, manage seasonality, and engage local communities. Complementing these activities, the documentary "N2: A Estrada que nos Une" (N2: The Road That Unites Us), broadcast on national television and awarded internationally in 2024, has strengthened the route's visibility while documenting its landscapes, communities, and cultural heritage. Together, these initiatives promote the destination, preserve culture, and engage the community (AMREN2, 2025a).

These events and initiatives have strengthened the tourism product and increased the route's visibility at both national and international levels. The EN2 Route has received several distinctions that have contributed to its international visibility and recognition as a tourism destination. The referred documentary "N2: The Road That Unites Us" received several awards at the 2024 Finisterra Brasil Film Art & Tourism Festival, winning first place in the Mountain, Travel, Places in History, and Human Life categories, second place in Touristic Cities, and third place in Destination, among 97 films from 20 countries. It also secured third place in the Mountain Tourism category at the 12th Finisterra Arrábida Film Art & Tourism Festival, held from October 7 to 10 in Palmela and Sesimbra.

In 2025, EN2 Route was named International Route of the Year at the fourth edition of the 2025 Mototourism Awards, one of the most prestigious events in the sector held in Spain, which annually recognizes the best initiatives for promoting motorcycle tourism (Barlavento, 2025).

In 2019, the American travel publisher Frommer's selected the EN2 route as one of the 19 places to visit worldwide, making it the only Portuguese destination included in that selection. In the same year, the route received an honorable mention for Best Stand at the BTL tourism fair during its first participation and, through AMREN2, won the Public Project category at the inaugural National Tourism Awards, recognizing initiatives with regional benefits. The route was also recognized by Evasões magazine as a destination to visit in 2020 (AMREN2, n.d.). Collectively, these distinctions reflect the route's growing prominence in destination promotion and highlight the role of institutional coordination, tourism marketing, and territorial valorization in positioning the EN2 as a distinctive travel experience across Portugal's diverse landscapes and communities.

5. Discussion of Results and Recommendations

5.1. Discussion of Results

The AMREN2 website (rotan2.pt) and the EN2 Route Passport illustrate how route-based tourism can be strategically used in low-density territories to support regional development and promote more sustainable forms of tourism. By guiding visitors along the EN2 and its associated itineraries, these initiatives facilitate access to and engagement with the route's distinctive natural and cultural resources, while strengthening their visibility and contribution to the wider territorial tourism offer.

The example of the EN2 illustrates how a road, emptied of its role in traffic, can be transformed into an asset for the territory. The natural and cultural heritage of the corridor has remained preserved through decades of economic recession. It was this dormant potential, and not the creation of new resources, that has underpinned the tourism revaluation led by AMREN2 since 2016, in the light of the literature on territorial capital: the competitive advantage is not in the existence of resources, but in the ability of territorial

actors to mobilize and integrate them into a coherent and cohesive offer (Del Pulgar et al., 2024; Romão & Neuts, 2017).

The route acts as a connecting element in an administratively divided region. The literature identifies four dimensions of aggregation in linear routes: heritage, natural, gastronomic, and mixed (Battino et al., 2022; Li et al., 2023; Ruiz-Jaramillo et al., 2021). The EN2 combines these dimensions over 739 kilometers, articulating 34 municipalities under the brand "The Road that Unites Us", approaching the concept of debordering, through which isolated municipalities become part of a continuous sequence of flows (Tello et al., 2026), and sustaining a polycentric model between intermediate centers of limited critical mass (Gurría-Gascón et al., 2024; Malý, 2016).

This scale also presents the risks of institutional fragmentation typical of multi-municipal routes: lack of objective alignment, duplication of functions among institutions, and poor community integration due to ineffective collaborative governance (Bramwell & Lane, 2011; Pedrosa et al., 2025; Stoffelen et al., 2017). To mitigate this risk, AMREN2 establishes itself as a dedicated coordinating entity, in line with the recommendations of Bichler (2019) and Pedrosa et al. (2025). The Agent Network's certification system, which comprises more than a thousand qualified entities across nine categories, is the instrument that enables this coordination, linking the quality of service to sustainability criteria aligned with the Sustainable Development Goals.

The EN2 Passport is the most crucial element in gamification. Despite the material support, it replicates key elements described in the literature: progression through obtaining stamps, a symbolic reward upon registering an achievement, and encouragement to thoroughly explore the territory rather than a quick passage (Deterding et al., 2011; Pasca et al., 2021). With more than 150 thousand units reportedly sold by AMREN2 since 2017 (AMREN2, 2025a), this demonstrates that gamification can work very well without relying on digital technology, which is important in areas where such technology is not yet widely used.

5.2. Comparative Analysis of EN2 Route and Douro Passport/ Discover Douro Platform

Like the EN2 route, the Douro Passport, launched in 2021, and the Discover Douro platform and digital passport, launched in 2024, by CIMDOURO (Intermunicipal Community of Douro), are pertinent points of comparison. Like the EN2, the Discover Douro also uses a passport that encourages travelers to take a broader route, featuring 76 places of interest and helping distribute tourism beyond the main points. Despite similarities, both initiatives differ at several levels, as shown in Table 2 below.

Table 2 - EN2 Route and Douro Passport / Discover Douro platform Comparison

	Launch year	Governance	Funding	Scale	Passport Support	Website	Outcomes
EN2 Route Passport / rotaen2.pt	2017	AMREN2: -public entity, municipalities association	Public - national and EU	35 municipalities, 676 478 inhabitants, from North to South of Portugal's interior region	Physical	Institutional information POI Agent network Suggested routes Agenda News Multilingual interface - PT, ES, EN,FR, DE Online store	• 150 000 passports reportedly issued by AMREN2 • From 3 688 808 overnight stays in 2015, in all 35 municipalities, to 5 377 930 in 2025, at a compound annual growth rate of 3.84% in that period • Overnight stays annual growth rate in the AMREN2 municipalities exceeded Portugal's growth rates after EN2 Route Passport launch, in the years 2018, 2019, and 2024 • Network of over 1 000 certified agents reported by AMREN2
Douro Passport/ Discover Douro platform	2021 / 2024	CIMDOURO: - public entity, intermunicipal community	Public - national and EU	NUT III Douro 19 municipalities, 186 738 inhabitants, from Douro Region Estimated GDP (2024) of 3 781 338 thousand €	Physical & digital (web and mobile app)	Institutional information POI Municipalities Suggested routes and activities Blog Agenda News Online store Multilingual interface-PT, ES, EN,FR	• 25 000 passports issued (physical) + Discover Douro app downloads (unavailable number) • From 337 664 overnight stays in 2015, in all 19 municipalities, to 668 247 in 2025, at a compound annual growth rate of 7.06% in that period • Overnight stays annual growth rate in the CIMDOURO municipalities exceeded Portugal's growth rates after Douro Passport launch, in the years 2024 and 2025

Source: Authors' own elaboration

In terms of governance, both AMREN2 and CIMDOURO are public entities: the first is an association of 35 municipalities with the specific aim of developing a common touristic and cultural product, the EN2 Route; the second. comprises 19 geographically adjacent municipalities that make up the Douro statistical subregion (NUTS III), with a broader focus on managing public networks, regional strategic planning, intermunicipal transportation, and management of European funds (e.g., Douro 2030).

To pursue its objectives, both entities mobilize public funding from their own budget or from national and EU programs. As an example, AMREN2´s tourism promotion project was funded with a 90% grant from Turismo de Portugal (National Tourism Authority) under the Valorizar program. The Douro Passport and the Discover Douro Platform are funded through the Integrated Territorial Development Strategy, managed by CIMDOURO under the Norte 2020 and Norte 2030 programs, which support the promotion of regional tourism and digital development. The Discover Douro website and app, along with the initial printing of the passport, were eligible for EU co-financing through the European Regional Development Fund (ERDF), covering up to 85% of eligible costs, with the remaining amount funded by CIMDOURO.

EN2 Route links Portugal's interior regions, from North to South, crossing 35 municipalities, with an estimated population of 676 478 inhabitants (Instituto Nacional de Estatística, 2022). On a smaller scale, the Douro Passport and the Discover Douro Platform refer to the 19 municipalities that comprise the NUT III Douro region. According to Instituto Nacional de Estatística (2022, 2025), the estimated population of the Douro region is 186 738 inhabitants, and the region's Estimated GDP (2024) is 3 781 338 thousand €.

In terms of support, the EN2 passport is a physical booklet, while the Discover Douro also integrates rewards into a digital app, following the smart tourism trend driven by UNESCO status and the region's internationalized wine economy. Both initiatives have online platforms: www.rotan2.pt and https://discoverdouro.pt, which complement physical passports and help tourists plan their journeys. Although they offer similar functionality, the Discover Douro platform provides a more up-to-date and user-friendly interface, with a Blog that offers suggestions for trips and activities in the region. Regarding passports, the mobile app provided by CIMDOURO allows users to collect stamps at any time at the 76 Points of Interest (POIs) via georeferencing, without needing to find an open agent. These virtual stamps have the same value as the physical ones, allowing tourists in both cases to receive the reward of a personalized bottle of Port Wine and a certificate upon completing 76 POI stamps. The convenience for mobile app users is even more relevant, given that all the platform's functionalities are available on tourists' own mobile devices. Therefore, booking hotels, restaurants, or events directly through the mobile app, or getting suggestions for what to visit and where to eat, becomes easier, enhancing visitors' engagement and experience. However, because some interior territories have limited connectivity, physical passports should be maintained.

Regarding the outcomes of these tourism products, according to AMREN2, approximately 150,000 EN2 Route Passports have been issued, alongside the development of a network of over 1,000 certified agents. Tourism activity across the 35 municipalities has also grown, with overnight stays increasing from 3 688 808 in 2015 to 5 377 930 in 2025, representing a reported compound annual growth rate of 3.84%. Notably, following the launch of the EN2 Route Passport, the annual growth rate of overnight stays in these municipalities exceeded the national average in 2018, 2019, and 2024. The Douro Passport and the Discover Douro platform appear to have helped strengthen tourism activity across the region's 19

municipalities. Reported official data concerning Douro Passport indicates that over 25 000 physical passports were issued until 2024 (Brigas, 2024), and the Discover Douro app has been developed, although the number of downloads remains unavailable. Between 2015 and 2025, overnight stays increased from 337 664 to 668 247, representing a compound annual growth rate of 7.06%. Notably, following the launch of the Douro Passport, annual growth in overnight stays across CIMDOURO municipalities exceeded the national rate in both 2024 and 2025, suggesting that these initiatives may have supported the region's tourism growth and visibility. On the other hand, tourists' use of mobile apps allows CIMDOURO to obtain valuable information on itineraries, most- and least-visited POIs, seasonality, and tourist flows, among others, that can help it manage the destination.

This comparison indicates that the decision between using physical or digital support must align with the region's connectivity profile. In both situations, collaborative governance is essential for success. Like AMREN2, CIMDOURO leads the initiative, emphasizing that the mere aggregation of heritage alone is insufficient to ensure a route's success without a coordinating entity with leadership capacity (Pedrosa et al., 2025; Valderrama & Polanco, 2024).

5.2. Recommendations

Framed by the literature review and informed by the EN2 case analysis and discussion, five practical recommendations for EN2 Route management and promotion are proposed. First, AMREN2 should use data from the EN2 Passport to monitor flows and seasonality, thereby overcoming data limitations associated with booklet passports. Digital passports provide real-time information to route's management. Second, the physical Passport could be enhanced with an optional digital layer, capturing the international market without omitting the physical support, which is effective in areas with less connectivity. Third, the agent network must also be used as a territorial diagnostic tool, identifying gaps in certified coverage along the 739 km and directing investment and recruitment where this coverage is most fragile. Fourth, the EN2 Route website (rotan2.pt) should be updated to provide a more user-friendly interface and more up-to-date information, and thematic events should be systematized in an annual calendar to distribute tourist flows and reduce seasonality. Finally, the AMREN2 intermunicipal coordination system could serve as a national model for reactivating other underutilized historic roads, which, in some cases, have already informal or less structured routes. (e.g. EN222).

6. Conclusion

This study conducted a territorial analysis of the EN2, considering it both a tourist route and an instrument for territorial development in low-density areas. The results showed that its reassessment was based on the mobilization of pre-existing territorial capital, on the institutional coordination ensured by AMREN2, and on mechanisms for qualification and visitor involvement, thereby favoring the EN2 Passport as an example that replicates gamification in physical format. The study contributed to the literature on tourist routes by presenting an attempt in which a large linear infrastructure is reappropriated as a regional asset by several municipalities that coordinate their actions, while informing the debate on gamification through experiences applicable to non-digital media. The comparison with the Douro Passport demonstrates that the choice between physical and digital support must adapt to the territory's connectivity profile and that, in both cases, dedicated collaborative governance is an indispensable condition for success. From a practical point of view, the EN2 model can be replicated in other regions with low population density and underused roads. This approach proposes an alternative to smart tourism, which relies almost exclusively on digital media.

The methodological limitations of the study stem mainly from the exclusive use of secondary data, primarily from institutional AMREN2 sources or related to it, and from a unique case design focused on the Rota da EN2 website (rotan2.pt) and the EN2 Route Passport initiatives. The distinct characteristics of low-density territories along the EN2 Route, their geographic, economic, cultural, and social diversity, and a specific governance framework make the case unique but also pose challenges for generalization to other tourist contexts. The cross-cutting approach also restricts the ability to assess long-term impacts, seasonal trends, and evolving user behaviors. Future research should also include primary data, e.g., surveys applied to tourists, route agents, and other relevant stakeholders. Furthermore, a comparison with similar routes (multiple case studies) may be conducted to identify good practices that could be benchmarked to the EN2 Route to enhance its sustainable development.

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AUTHORS' CONTRIBUTIONS (CREDIT)

Conceptualization, EMP, CF, MCL; methodology, EMP, CF, MCL; formal analysis, EMP, CF, MCL; investigation, EMP, CF, MCL; resources, EMP, CF, MCL; writing—original draft preparation, EMP, CF, MCL; writing—review and editing, EMP, CF, MCL; funding acquisition, CF. All authors have read and agreed to the published version of the manuscript.

FUNDING

This work is funded by National Funds through the FCT – Foundation for Science and Technology, I.P., within the scope of project UNIAG UID/04752/2025 (DOI 10.54499/UID/04752/2025).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available upon reasonable request.

ETHICS STATEMENT

This study did not involve human participants or animals and therefore did not require ethical approval.

ACKNOWLEDGEMENTS

The authors declare no acknowledgements.