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"ACTIVE TOURISM IN MOUNTAIN AREAS. THE SUSTAINABILITY OF THE SMALL AND MEDIUM ENTERPRISES IN THE ADIGE VALLEY"

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Alla nonna Elvira,

per avermi fatta sempre sentire amata.

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ABSTRACT

This thesis explores the theme of sustainability in small and medium-sized enterprises (SMEs) operating in the tourism sector of Adige Valley, with a particular focus on businesses that provide services to active tourists along the Trentino cycling route, that connects the municipality of San Michele all'Adige to the city of Trento.

The primary objective of this study is to analyse the opportunities and challenges that businesses encounter in adopting sustainable practices, particularly in the context of compliance with sustainability reporting regulations based on Environmental, Social, and Governance (ESG) indicators.

Over time, the European Union has strengthened its regulatory framework on sustainability, imposing increasingly stringent reporting obligations on large enterprises. This process began with the Non-Financial Reporting Directive (NFRD) in 2014 and was recently expanded through the Corporate Sustainability Reporting Directive (CSRD) in 2022. The CSRD extends reporting obligations to a significant number of SMEs, aiming to ensure greater transparency and accountability in their operations.

One of the most significant aspects of the CSRD is the inclusion of the value chain in sustainability reporting. This means that all companies involved in the production or delivery of a product or service, from upstream suppliers to downstream distributors, must provide sustainability-related information. As a result, even businesses not directly subject to reporting obligations are increasingly required to disclose their sustainability performance as part of their participation in the supply chain.

This shift necessitates that SMEs not only familiarize themselves with ESG-related issues but also develop the capacity to measure and track their environmental and social performance to contribute to a sustainability report aligned with regulatory requirements. As confirmed by the findings of this thesis, SMEs often face cultural, economic, and operational barriers in implementing sustainability strategies and practices.

Many small enterprises do not perceive sustainability as an opportunity for growth and diversification but rather as an additional financial burden. This perception is further compounded by limited access to financial resources and a lack of specialized expertise.

To support businesses in this transition, a questionnaire was developed based on the European Voluntary Reporting Standard for SMEs (VSME). The questionnaire aims to help businesses assess their level of sustainability, identify key areas of concern, and

highlight potential improvements. Data collected from eight enterprises located in the municipalities of Lavis, Mezzocorona, Mezzolombardo, San Michele all'Adige, and Terre d'Adige provided valuable insights into their awareness and understanding of sustainability-related regulatory requirements. The responses also offered crucial information on environmental, social, and governance aspects.

The results of this study align with existing research, confirming that SMEs face significant challenges related to time constraints, expertise, and financial resources in implementing sustainability practices.

Furthermore, the analysis identified the key sustainability themes considered relevant by the surveyed businesses, revealing that most sustainability initiatives remain informal and lack a structured approach. Despite recognizing the importance of sustainability, SMEs remain hesitant to adopt concrete measures.

In conclusion, the research highlights the need to provide small and medium-sized enterprises with a clear, accessible, and user-friendly tool for sustainability reporting. Such an approach would facilitate compliance with regulatory requirements while enabling businesses to integrate sustainability into their strategic planning effectively.

1 INTRODUCTION

The increasing global focus on sustainability has driven states and international organizations to intensify their efforts in mitigating the significant negative impact that human activities have on the environment and society. However, individuals and businesses engaging with sustainability-related issues often misunderstand the true meaning of the concept.

According to the United Nations' 2030 Agenda, which outlines a series of goals agreed upon by member states, sustainability entails meeting present needs without compromising the ability of future generations to meet their own. This definition extends beyond environmental concerns to include social and governance aspects, ensuring the efficient functioning of systems in a holistic manner.

Fig.1. 1 – Sustainabile development Goals

In recent years, the European Union has reinforced its commitment to sustainability regulation, imposing obligations on businesses. The objective is to enhance transparency and measurability regarding the environmental and social impacts of economic activities, while encouraging a more responsible approach from the private sector. The regulatory trajectory in this field began with the Accounting Directive 2013/34 (European Parliament and Council, 2013), followed by the 2014 Non-Financial Reporting Directive – NFRD (European Parliament and Council, 2014), which mandated large enterprises to disclose sustainability-related information based on Environmental, Social, and Governance (ESG) criteria. A further milestone was achieved in 2024 with the implementation of the Corporate Sustainability Reporting Directive – CSRD (European Parliament and Council, 2022), which expanded the scope of companies subject to reporting requirements and introduced more detailed standards to ensure the reliability and comparability of published information across the European market.

This regulatory framework aligns with increasing demands for transparency from stakeholders, consumers, and investors, while establishing a reference model for corporate behaviour.

According to Bellini (2023), the European commitment to ESG sustainability serves as both an example and a stimulus for the rest of the world, which, driven by necessity and cultural influence, is progressively adopting more sustainable practices.

An interesting study, "Sustainability Reporting Rates of Firms Worldwide from 2011 to 2022, by Region" (Sustainability reporting rates of firms worldwide from 2011 to 2024, by region, 2024) published by Statista based on KPMG International data, provides insights into the growth rates of sustainability reporting among companies globally.

An analysis of Fig.1. 2 – Sustainability reporting rates by Statista reveals that between 2011 and 2022, Europe has progressively increased its sustainability reporting rates. However, the Asia-Pacific region has experienced the highest growth rates, securing a leading position in sustainability reporting. In contrast, the Americas have seen a decline, while the situation remains critical in the Middle East and Africa.

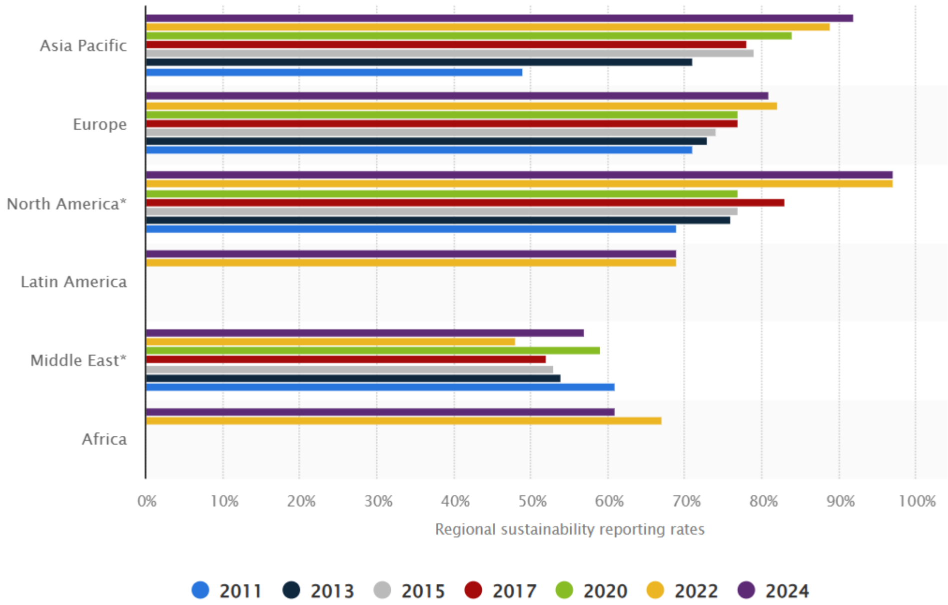

Fig.1. 2 – Sustainability reporting rates by Statista

In Fig.1. 3 – Sustainability reporting rate 1993-2022 further illustrates that the analysed companies continue to increase their reporting rates, approaching peak values. This trend indicates a growing engagement with sustainability issues, enabling businesses to align gradually with higher standards. Consequently, there is a strengthened focus on sustainability, prompting companies to enhance internal processes and refine strategic approaches.

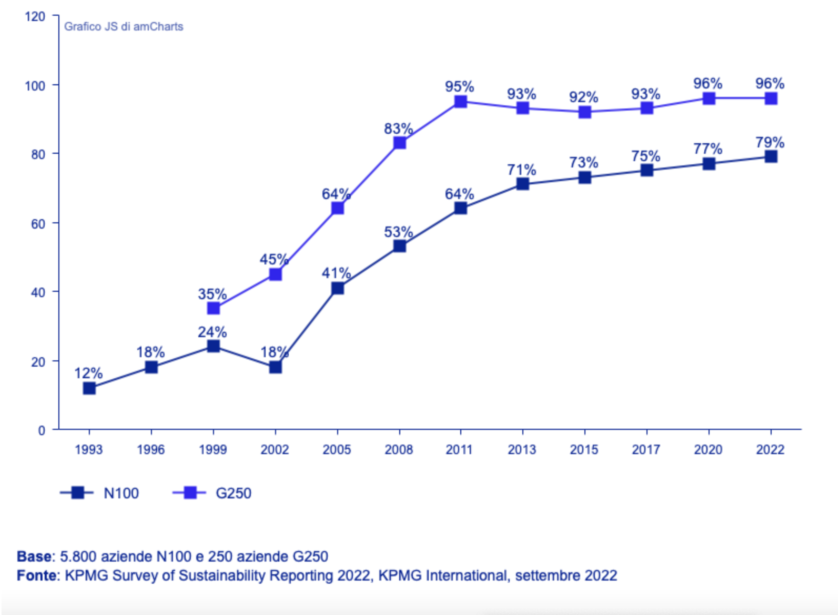

Fig.1. 3 – Sustainability reporting rate 1993-2022

2 NORMATIVE FRAMEWORK, REGULATIONS AND CERTIFICATIONS

2.1 MANDATORY SUSTAINABILITY ASSESSMENT SYSTEMS

Mandatory sustainability assessment systems vary across countries and sectors, with some being established through government regulations aimed at enhancing sustainability standards, while others stem from international agreements. The most significant frameworks can be categorized based on their geographical implementation, with key systems originating from major global regions.

2.1.1 European Union

In the European Union, several regulatory frameworks govern sustainability reporting and investment. The Non-Financial Reporting Directive (NFRD) (European Parliament and Council, 2014)mandates large companies to disclose information related to their environmental, social, and governance (ESG) impacts. Complementing this, the Sustainable Finance Disclosure Regulation (European Parliament and Council, 2019) is part of the EU's broader strategy to redirect investments toward sustainability. It provides a formal definition of sustainable investment, emphasizing contributions to environmental and social objectives, such as resource efficiency, renewable energy use, biodiversity conservation, and social equity, while ensuring that these investments do not cause significant harm to other sustainability goals.

Another key regulation is the EU Taxonomy Regulation (2020/852/EU) (European Parliament and Council, 2020), which serves as a classification system for assessing the sustainability of economic activities. Designed as a "sustainability scorecard" for businesses, it aids investors in identifying investments aligned with the EU's sustainability objectives. The Corporate Sustainability Reporting Directive (CSRD) builds upon and expands the NFRD, introducing new reporting requirements that will be further explored in the following section. Additionally, the Corporate Sustainability Due Diligence Directive (CSDDD) (European Parliament and Council, 2024) mandates large corporations to integrate due diligence processes into their governance structures to prevent, mitigate, and reduce negative impacts on human rights and the environment. This directive aligns with and extends the CSRD’s objectives (Assolombarda, n.d.).

2.1.2 United States

In the United States, the U.S. Securities and Exchange Commission (SEC) has taken steps to enhance transparency in ESG reporting. In 2022, the SEC proposed regulations requiring funds and investment advisors to disclose the incorporation of ESG factors into financial reporting to promote sustainable finance. As of 2024, the SEC has implemented the first federal rule requiring all publicly traded companies to disclose climate-related financial risks. However, the United States’ potential withdrawal from the Paris Agreement in 2025 may significantly alter the country's approach to sustainable development. A similar decision in 2016 led to significant corporate pushback, with 600 multinational corporations advocating for continued commitment to the agreement. These companies emphasized that the green transition would enable businesses and investors to transform existing low-carbon investments into the substantial funding needed to drive clean energy initiatives and global prosperity, reinforcing sustainability as a key financial opportunity (Swissinfo).

2.1.3 Across the World

The increasing demand for ESG-related disclosures in Western markets has influenced other major economies, such as China and India, to adopt similar sustainability reporting systems.

In China, the Green Bond Standards have been introduced to promote sustainable finance. From 2026, three major Chinese stock exchanges—Beijing, Shanghai, and Shenzhen—will require listed companies to adhere to new sustainability guidelines. These regulations will impact approximately 450 large enterprises, including those listed on major indices such as the Shanghai Stock Exchange 180 Index (SSE 180), Shenzhen Stock Exchange 100 Index (Shenzhen 100), and Shanghai Science and Technology Innovation 50 Index (STAR 50). Additionally, these requirements will extend to companies listed on both domestic and foreign markets.

In India, the Business Responsibility and Sustainability Reporting (BRSR) framework was introduced by the Securities and Exchange Board of India (SEBI). This reporting system consists of key performance indicators (KPIs) and metrics across nine ESG attributes. By 2027, compliance with the BRSR framework will be mandatory for the top 1,000 publicly listed companies in India (Securities and Exchange Board of India, 2023).

2.2 INTERNATIONAL NORMS

To ensure a standardized approach to corporate sustainability reporting, internationally recognized frameworks have been developed to enhance interoperability and facilitate alignment with global sustainability principles.

2.2.1 ISO Standards

The most important international regulatory framework is developed by the International Organization for Standardization (ISO), one of the world's leading standard-setting bodies. ISO establishes Technical Standards that address various aspects of sustainability, occupational safety, and other essential business operations. The organization categorizes these standards into several key areas:

- Environmental Management Standards: Address environmental impact, waste reduction, and sustainability practices.
- Energy Management Standards: Aim to enhance energy efficiency and reduce overall consumption.
- Quality Management Standards: Focus on increasing operational efficiency and minimizing product defects.
- Health and Safety Standards: Designed to prevent workplace accidents and ensure employee well-being.
- Information Security Standards: Establish protocols for protecting corporate and customer data.

2.2.2 Global Reporting Initiative

The Global Reporting Initiative (GRI) is an independent, non-profit organization that develops sustainability reporting standards to help organizations of all sizes measure and disclose their environmental, economic, and social impacts. The GRI framework consists of three categories of standards:

- Universal Standards: Applicable to all organizations, covering fundamental topics such as human rights and environmental due diligence while maintaining consistency with intergovernmental frameworks.
- Sector-Specific Standards: Designed to provide tailored guidance for organizations within particular industries, ensuring the disclosure of sector-relevant sustainability impacts.
- Topic-Specific Standards: Addressing specific issues such as carbon emissions, human rights, governance structures, and diversity-related disclosures

2.2.3 International Sustainability Standards Board

The International Sustainability Standards Board (ISSB) has developed a set of globally applicable standards aimed at ensuring the high-quality disclosure of sustainability-related information (International Sustainability Standards Board, n.d.). The ISSB has introduced two key sustainability reporting standards:

- IFRS S1: Establishes fundamental disclosure requirements for sustainability-related financial reporting.
- IFRS S2: Requires additional reporting on climate-related risks and opportunities, ensuring transparency regarding a company's exposure to climate-related financial risks.

These internationally recognized frameworks serve as essential tools for companies seeking to align with the CSRD requirements while maintaining a high degree of transparency and accountability in their sustainability practices.

2.3 Voluntary Sustainability Assessment Systems

Beyond mandatory frameworks, various voluntary sustainability assessment systems have been developed. These initiatives address one or more aspects of sustainability and are available to companies seeking to minimize their environmental and social impacts.

- Sustainability Accounting Standards Board (SASB)

This framework establishes ESG (Environmental, Social, and Governance) disclosure standards designed to enhance communication between corporations and investors, facilitating transparency in sustainability reporting (Sustainability Accounting Standards Board, n.d.).

- Carbon Disclosure Project (CDP):

A global initiative encouraging companies to disclose their environmental impacts. CDP is utilized by businesses, municipalities, states, and regions to assess and improve their environmental performance. The project focuses on four strategic objectives:

1. Enhancing corporate transparency regarding environmental impacts.
2. Integrating environmental performance into investment decision-making.
3. Assisting cities in reducing pollution and developing climate adaptation strategies.
4. Advocating for environmental policies and legislation (Ministry of the Environment and Energy Security, n.d.).

- United Nations Principles for Responsible Investment (PRI):

The PRI framework consists of six principles designed to guide sustainable investment strategies. These principles establish a reference framework for incorporating ESG factors into investment decisions and financial practices:

5. Integrating ESG factors into investment analysis and decision-making.
6. Incorporating ESG considerations into shareholder policies and practices.
7. Encouraging entities in which investments are made to disclose ESG-related information.

8. Promoting the adoption and application of these principles within the financial system.

9. Facilitating collaboration between organizations to enhance the effectiveness of sustainable investment initiatives.

10. Ensuring transparency by reporting progress in implementing these principles (Principles for Responsible Investment, n.d.).

- Net Zero Standard:

A guidance framework providing companies with the necessary tools to achieve net-zero greenhouse gas emissions by 2050, aligning with the objectives of the 2015 Paris Agreement (Science Based Targets, n.d.).

2.4 CSRD – Corporate Sustainability Reporting Directive

As of January 1, 2024, the Corporate Sustainability Reporting Directive has come into effect, introducing new requirements for corporate sustainability reporting within the European Union.

The CSRD builds upon the previous Non-Financial Reporting Directive (Directive (EU) 2013/34), which was originally established to harmonize financial reporting and accounting regulations for companies operating within the EU. The 2014 update extended reporting obligations for large enterprises, requiring them to disclose non-financial information, including environmental impact, corporate social responsibility, and governance-related aspects.

However, the NFRD exhibited several shortcomings, including:

- Limited comparability of reported information.
- Restricted scope, as only a relatively small number of companies were subject to the directive.
- Lack of mandatory external verification of disclosed data.

Unlike the NFRD, the CSRD significantly broadens its scope by extending reporting obligations to all large companies and all listed companies operating in EU-regulated markets. A company falls within the scope of the directive if it meets at least two of the following three criteria:

- A balance sheet total of at least €20 million.
- Net turnover of at least €40 million.
- An average annual workforce of 250 or more employees.

The directive also establishes strict compliance deadlines, requiring a phased implementation based on company size, with full enforcement set for 2028 (Directive (EU) 2022/2464).

As a result, the number of companies subject to mandatory sustainability reporting has expanded from 11,600 under the NFRD to 49,000—representing 75% of the total revenue generated by European enterprises. Furthermore, companies are now required to report not only on their own sustainability impact but also on the impact of all entities within their value chain, both upstream and downstream. Consequently, even businesses not directly subject to the directive may be required to provide sustainability data to their reporting partners, while extending its influence a significantly larger number of organizations (Deloitte, 2021).

One of the major advancements compared to the previous 2014 directive is the adoption of the double materiality principle, which considers both the financial relevance of environmental, social, and governance (ESG) factors and the company's impact on these dimensions. The reporting requirements outlined in the CSRD include a description of the corporate strategy and business model, sustainability objectives—particularly those related to greenhouse gas emissions reduction targets for 2030 and 2050—the role of governance bodies in sustainability matters, corporate policies on sustainability, and the existence of incentive systems linked to ESG issues for board members and executives. Additionally, companies must report due diligence processes, potential and actual negative impacts of their activities, and remedial actions taken to address these concerns.

2.4.1 ESRS – European Sustainability Reporting Standards

To standardize sustainability disclosures, the European Commission, in collaboration with the European Financial Reporting Advisory Group (EFRAG), has established the European Sustainability Reporting Standards (ESRS) (European Commission, 2023).

These standards are structured into three categories: transversal, thematic, and sector-specific principles.

The transversal principles, applicable across all industries, are primarily defined by ESRS 1 and ESRS 2.

ESRS 1 outlines the general framework and guidelines, ensuring consistency, comparability, and quality of information. A core component of ESRS 1 is the principle of double materiality, which extends traditional materiality approaches by requiring companies to assess both how sustainability factors impact their financial performance (financial materiality) and how their activities affect the environment and society (impact materiality). Certain disclosures, such as general information (ESRS 2), data points mandated by EU regulations, climate change (E1), and workforce-related factors (S1-S9), are compulsory. The directive also acknowledges the challenges that some companies may face in preparing sustainability reports and provides proportionality measures to account for the complexity and scale of their value chains.

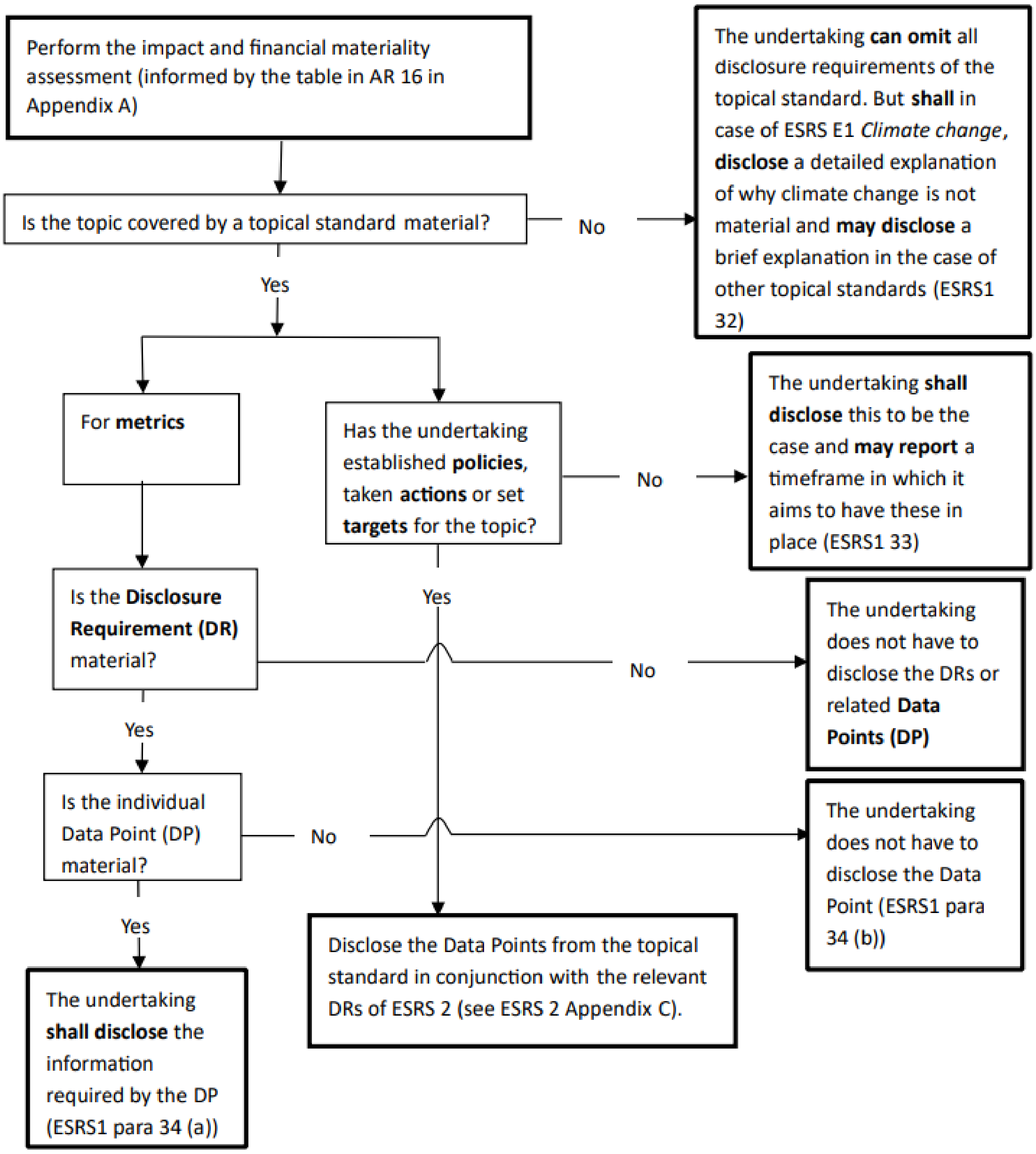

Fig. 2. 1 - Flowchart relevance analysis

The sustainability due diligence process serves as a guiding framework for businesses in assessing relevant impacts, risks, and opportunities. The key elements of due diligence obligations are reflected in the European Sustainability Reporting Standards disclosure requirements, which include governance and strategy, stakeholder engagement, identification and evaluation of impacts, mitigation of negative impacts, and monitoring effectiveness.

Sustainability disclosures must also encompass impacts, risks, and opportunities associated with a company's business relationships along its value chain, both upstream and downstream. These disclosures are provided based on relevance and the specific obligations outlined in the ESRS standards, as stipulated in Article 5, Paragraph 63 of Delegated Regulation EU 2023/2772.

ESRS 2 establishes general disclosure requirements that companies must comply with across various sustainability topics. The regulation provides specific guidelines on reporting principles (BP), including general criteria for drafting sustainability statements (BP-1) and disclosures related to specific circumstances (BP-2). Additionally, governance-related obligations (GOV) cover aspects such as the role of administrative, management, and supervisory bodies (GOV-1), the sustainability-related information provided to these bodies (GOV-2), integration of sustainability performance into incentive systems (GOV-3), due diligence declarations (GOV-4), and risk management as well as internal sustainability reporting controls (GOV-5).

Regarding strategy (SBM), ESRS 2 mandates disclosures on corporate strategy, business models, and value chains (SBM-1), stakeholder interests and perspectives (SBM-2), and the interrelation between sustainability impacts, risks, opportunities, and corporate strategy (SBM-3). Companies must also provide information on impact, risk, and opportunity management (IRO), detailing the process for identifying and evaluating relevant factors (IRO-1) and the specific ESRS disclosure obligations included in their sustainability reporting (IRO-2). Furthermore, sustainability metrics and objectives (MT) are integrated into thematic principles to ensure coherence across disclosures.

ESRS 2 also establishes minimum disclosure requirements concerning sustainability-related policies (MDR-P), actions and resource allocation (MDR-A), relevant sustainability metrics (MDR-M), and the monitoring of policy effectiveness through targets (MDR-T). Given the cross-cutting nature of these elements, they are incorporated within each thematic principle, as outlined in Appendix C of ESRS 2, which specifies disclosure obligations and application requirements for thematic ESRS standards (Delegated Regulation EU 2023/2772, p. 71/284).

The thematic ESRS principles are divided in the three sustainability matters - environmental, social and governance. The three main topics are subdivided into more specific sections, as shown in the table below.

Table 2. 1 - Thematic ESRS principles

Topical ESRS	Topic	Subtopic
ESRS E1	Climate change	• Climate change adaptation • Climate change mitigation • Energy
ESRS E2	Pollution	• Pollution of air • Pollution of water • Pollution of soil • Pollution of living organisms and food resources • Substances of concern • Substances of very high concern • Microplastics
ESRS E3	Water and marine resources	• Water • Marine resources
ESRS E4	Biodiversity and ecosystems	• Direct impact drivers of biodiversity loss • Impacts on the state of species • Impacts on the extent and condition of ecosystem • Impacts on dependencies on ecosystem services
ESRS E5	Circular economy	• Resources inflows including resource use • Resource outflows related to products and services • Waste
ESRS S1	Own workforce	• Working conditions • Equal treatment and opportunities for all • Other work-related rights

Topical ESRS	Topic	Subtopic
ESRS S2	Workers in the value chain	• Working conditions • Equal treatment and opportunities for all • Oher work-related rights
ESRS S3	Affected communities	• Communities' economic, social and cultural rights • Communities' civil and political rights • Rights of indigenous peoples
ESRS S4	Consumers and end-users	• Information-related impacts for consumers and/or end-users • Personal safety of consumers and/or end-users • Social inclusion of consumers and/or end-users
ESRS G1	Business conduct	• Corporate culture • Protection of whistleblowers • Animal welfare • Political engagement • Management of relationships with suppliers including payment practices • Corruption and bribery

When performing its materiality assessment, the undertaking shall consider the following list of sustainability matters covered in the topical ESRS.

The sectorial principles are specific for each type of enterprise; EFRAG is developing these principles to allow a more accurate and comprehensive report redaction.

2.5 VSME – VOLUNTARY STANDARD FOR NON-LISTED SMALL AND MEDIUM-SIZED ENTERPRISES

With the growing focus on sustainability from stakeholders and investors, even Micro, Small, and Medium Enterprises (MSMEs) not subject to the CSRD directive are increasingly required to adopt and certify sustainability practices to remain competitive in the market (European Commission, 2024).

For this reason, under the direct mandate of the European Commission, EFRAG has developed and proposed a "voluntary ESG reporting system for unlisted SMEs." Micro-enterprises are defined as businesses that do not exceed two of the following thresholds: €350,000 in total assets, €700,000 in net turnover, and 10 employees. Notably, micro-enterprises constitute 93.5% of all EU businesses (22.7 million), representing a vast majority.

It is important to highlight that: “VSME has been developed as an independent standard, specifically designed to address the complexity and needs of unlisted SMEs, rather than as a simplification of the corresponding disclosure requirements in ESRS Set 1. However, consistency with ESRS concepts has been maintained to the greatest extent possible.” This suggests that the CSRD framework is highly complex and cannot be simply streamlined and adapted to SMEs.

To date, the only available material for analysis and evaluation is the draft proposed by EFRAG in January 2024.

2.5.1 Structure of the ED VSME

The Exposure Draft VSME was analysed; the objectives of the VSME standard align with those of the CSRD:

- Promoting a more sustainable economy.
- Integrating sustainability considerations into business practices.
- Providing stakeholders and investors with relevant information to meet their expectations.
- Supplying large enterprises with necessary data as they require such information.

To better accommodate corporate needs, the VSME system is divided into three modules, which businesses can utilize to establish the foundation of their sustainability reporting:

- Basic Module (B)
- Policies, Actions, and Objectives Module (N)
- Business Partners Module (BP)

As companies progress from the Basic Module to the Business Partners Module, the complexity of requirements gradually increases. This allows businesses to choose the most suitable module according to their specific circumstances.

A key feature of the ED VSME is the presence of a highly detailed and clear reporting guideline, making it accessible to entrepreneurs from all industries and sectors.

Basic Module

The Basic Module consists of Disclosure sections B1, B2, and Basic Metrics B3-B12. It is particularly suited for smaller enterprises, as it does not require a materiality assessment. The adoption of metrics is mandatory only when applicable to the company's context.

The module is structured as follows:

- Disclosure B1 – Basis for Preparation: The company must outline the rationale, composition, and selection of modules used.
- Disclosure B2 – Practices for transitioning towards a more sustainable economy: Aims to provide information on current sustainability practices, helping business partners understand the company’s level of commitment.
- Disclosure B3 – Energy and greenhouse gas emissions: Companies are required to calculate Scope 1 and Scope 2 emissions, while Scope 3 emissions are exempt. The calculation methods align with ESRS standards.
- Disclosure B4 – Pollution of air, water and soil: Companies must quantify these emissions, corresponding to a Principal Adverse Impact (PAI) under SFDR (specific details not provided in the draft).

- Disclosure B5 – Biodiversity: Companies must define quantitative metrics related to land use near or within sensitive areas, aligned with GRI, TNFD sources, and corresponding to an SFDR PAI.
- Disclosure B6 – Water: Businesses must report water consumption and withdrawal, in alignment with ESRS Set 1.
- Disclosure B7 – Resource use, circular economy and waste management: Companies must disclose the types of materials used (recycled or not), the amount of waste generated, and the percentage of waste sent for recycling.
- Disclosure B8 – Workforce – General Characteristics: Companies must report the total number of employees by gender, contract type, and country.
- Disclosure B9 – Workforce – Health and Safety: Includes reporting on work-related injuries, occupational diseases, and fatalities. This disclosure is sourced from ESRS S1-14.
- Disclosure B10 – Workforce – Remuneration, collective bargaining and training: Includes information on employment contracts, wages, and training opportunities, aligning with an SFDR PAI.
- Disclosure B11 – Workers in the value chain, affected communities, consumers and end-users: Companies may describe whether their value chain includes workers, consumers, or communities potentially negatively impacted by business activities.
- Disclosure B12 – Convictions and fines for corruption and bribery: Despite appearing self-incriminating, EFRAG considers this a crucial element in combating corruption.

Policies, Actions, and Objectives Module (PAT)

This module includes narrative disclosures (N1 - N5), providing complementary information to B1-B12 in a descriptive format. A materiality assessment is required to determine which sustainability issues should be reported.

- Disclosure N1 – Strategy: business model and sustainability – related initiatives: Companies must disclose their business model and strategy, detailing product and service groups, markets, business relationships, and, if possible, sustainability-related strategic initiatives.

- Disclosure N2 – Material sustainability matters: Businesses must identify and describe material sustainability issues using Appendix A of the EFRAG draft.
- Disclosure N3 – Management of material sustainability matters: Companies must outline how they manage material sustainability issues, including policies, objectives, and actions undertaken.
- Disclosure N4 – Key stakeholders: If stakeholders are involved, companies must report their categories and briefly describe related activities.
- Disclosure N5 – Governance: responsibilities in relation to sustainability matters: Companies must describe their governance structure and responsibilities concerning sustainability issues.

Business Partners Module (BP)

The Business Partners Module serves as an extension to the Basic Module and incorporates data requests from financiers, investors, and clients. A materiality assessment is required in this module.

It includes the following disclosures:

- BP1 – Revenues from certain sectors: Companies must disclose if they operate in controversial arms manufacturing, tobacco cultivation and production, fossil fuels, or chemical production.
- BP2 – Gender diversity ratio in governance body: Companies must disclose the composition and gender diversity index of their governance body.
- BP3 – GHG emissions reduction target: Companies must report commitments to reducing Scope 1 and 2 emissions and provide Scope 3 emission data.
- BP4 – Transition plan for climate change mitigation: Businesses must outline strategies and operations aimed at limiting global warming to 1.5°C.
- BP5 – Physical risks from climate change: Companies must assess and report financial risks arising from climate change that could affect them.

- BP6 – Hazardous waste and/or radioactive waste ratio: Companies producing hazardous or radioactive waste must disclose the quantities.
- BP7 – Alignment with internationally recognised instruments: Companies must indicate whether their workforce policies align with international recognition systems.
- BP8 – Processes to monitor compliance and mechanisms to address violations: Companies must disclose if they monitor compliance with OECD and UN guidelines on business and human rights or have grievance mechanisms in place.
- BP9 – Violations of OECD Guidelines for Multinational Enterprises or the UN Guiding Principles (including the principles and rights set out in the eight fundamental conventions of the ILO Declaration and the International Bill of Human Rights): Companies must report any breaches related to UN, ILO, and OECD principles regarding their workforce.
- BP10 – Work-life balance: Businesses must report the percentage of employees entitled to and using family leave, categorized by gender.
- BP11 – Number of apprentices: Companies must indicate the number of apprentices, if applicable.

2.5.2 Comparing CSRD and VSME Reporting Systems

The CSRD and VSME reporting systems exhibit significant differences, making them suitable for different types of enterprises.

CSRD:

- Establishes a standardized framework for sustainability indicators.
- Emphasizes materiality analysis and corporate due diligence.
- Ensures interoperability with international voluntary reporting frameworks, such as GRI and ISSB.
- Primarily designed for large corporations. Due to its complexity and highly structured nature, it reporting may pose significant challenges for small and medium-

sized enterprises (SMEs), potentially making the application of its principles impractical for many smaller businesses.

VSME:

- Voluntary and accessible: Proposed by EFRAG as a tool for businesses seeking to establish a sustainability reporting system from the ground up.

- Modular approach: Comprising three progressively complex modules, VSME allows businesses to tailor their reporting based on their capacity to collect and disclose relevant data. This ensures proportionality and simplification, thereby reducing the burden of costly and complex analyses (Polo Innovativo, Voluntary Reporting Standard for SMEs, VSME).

- Stakeholder-driven standardization: By aligning ESG information requests, the system minimizes uncoordinated reporting demands while fostering sustainable business relationships, competitiveness, and innovation (EFRAG, 2024).

- Alignment with ESRS: While EFRAG emphasizes that VSME is not a simplified version of CSRD, it maintains conceptual consistency with the European Sustainability Reporting Standards (ESRS), ensuring a harmonized approach to sustainability reporting.

The extensive requirements, complexity, and challenges associated with applying CSRD reporting to SMEs would necessitate substantial financial and time investments, making the system unsuitable for smaller enterprises.

Given the focus on SMEs, it is crucial that they have access to a simplified reporting framework that enhances their competitiveness, resilience, attractiveness, and innovation while facilitating access to capital. Additionally, such a system would enable compliance with potential future regulatory harmonization.

3 PRAXIS AND OTHER EXPERIENCES

As analysed before, there are some guidelines at international and European level; other than these official sources, there are some praxis and system of sustainability evaluation related to touristic' enterprises. Three of them have been considered for this thesis.

- Measuring the tourism sustainability of mountain destinations in the Alps (Steering committee - Alpine convention, 2021)
- European Tourism Indicator System TOOLKIT for Sustainable Destinations (European Tourism Indicator System Toolkit, 2013)
- Uni PDR 134:2022 – Sustainability rating for minor dimension companies. Self assessment model (UNI - Ente italiano di normazione, 2022)

3.1 ALPINE CONVENTION: MEASURING THE TOURISM SUSTAINABILITY OF MOUNTAIN DESTINATIONS IN THE ALPS

This document provides a methodology for measuring the sustainability of tourism in mountain destinations within the Alps. It includes a list of key sustainability issues categorized into environmental, economic, and social themes, each accompanied by specific indicators. The indicators are clearly described and come with proposed calculation formulas, allowing users to assess various sustainability aspects such as transport, energy consumption, biodiversity, and local economic development.

There is an accompanying Excel table, which simplifies the application of the indicators. The table organizes the indicators by theme, enabling destination managers to directly input data, track performance over time, and make year-on-year comparisons.

Following this methodology, the enterprise has the possibility to integrate sustainability measures and keep track of improvements; the paper includes case studies and best practices, encouraging destinations to replicate successful sustainable tourism initiatives.

Table 3. 1 - Summary of "Measuring the tourism sustainability of mountain destinations in the Alps"

Focus	Themes
Environmental	Transport and soft mobility
	Energy and resources management
	Snowmaking and management of large facilities
	Protection of natural heritage and ordinary and exeptional biodiversity
	Actions against artificialization and degradation of natural ecosystems
	Natural risks and erosion management
	Climate change impact (mitigarion and adaptation)
	Water and erosion management
	Air quality
	Waste management
Economic	Economic diversification, adaptation, resilience
	Coexistence and synergies with agro-pastoral activities
	Development of local production
	Spatial development and land use planning
	Seasonality
Social and govenance	Project governance (strategic planning, decision-making process and stakeholder participation)
	Cooperation at the regional level and between valleys and mountains
	Development of local employment and social aspects
	Accessibility
	Staff training and workforce development

Focus	Themes
	Education, communication and public awareness
	Development and conservation of historical, cultural and traditional heritage
	Reporting/audit activities, public information and indicator management

The model is primarily designed for use by public institutions; most businesses are either unaware of or unable to retrieve the information required for certain sections of the questionnaire. Often such information would not be useful to the enterprises themselves. The model includes questions regarding data such as the percentage of treated wastewater and air pollution levels, as well as information beyond the scope of businesses, such as the energy and water consumption of ski facilities.

Nevertheless, it remains the only system specifically designed for assessing the sustainability of tourist destinations.

3.2 THE EUROPEAN TOURISM INDICATOR SYSTEM

The European Tourism Indicator System (ETIS) is a practical guide for tourist destination managers to start collecting information and analysing data to improve the services offered. It is a management tool developed by the European Commission to help tourism destinations monitor and improve their sustainability practices. The ETIS framework provides a structured approach to collecting and analysing data through a set of core and supplementary indicators, covering key areas such as environmental, economic, and social impacts of tourism.

The ETIS allows destinations managers to select the indicators most relevant to their context. It does not function as a certification system but rather as a practical toolkit to improve the sustainability level. The document also includes a seven-step guide for implementation, providing clear instructions on raising awareness, engaging stakeholders, data collection, and monitoring. It is an easy tool for destination managers to track sustainability performance and make informed decisions that contribute to long-term tourism competitiveness and environmental responsibility.

Table 3. 2 - Summary of ETIS questionnaire

Focus	**Criteria**
Destination management	Public policy for sustainable tourism
	Customer satisfaction
Economical	Tourist flow
	Performance of tourism businesses
	Quantity and quality of employment
	Tourism supply chain
Social and cultural	Social/community impact
	Health and safety
	Gender equality
	Inclusion/accessibility
	Protection and enhancement of cultural heritage, identity, and local resources
Environmental	Reduction of transport impact
	Climate change
	Solid waste management
	Wastewater treatment
	Water management
	Energy consumption
	Landscape and biodiversity protection

ETIS is one of the few comprehensive frameworks for managing the sustainability of tourist destinations, addressing governance, economic, socio-cultural, and environmental aspects.

The primary challenge lies in the extensive monitoring required by its indicators. The system demands highly detailed information, including data on resident and tourist behaviour and satisfaction, as well as mobility patterns of tourists staying in the destination. Additionally, it requires data typically managed by public authorities, such as employment figures and waste recycling rates.

3.3 REFERENCE PRACTICE UNI PRD 134:2022

Sustainability rating for minor dimension companies - Self assessment model. This model is created by UNI – Ente Italiano di Normazione – that relies on ISO standards. This model enters in force on the 24th of November 2022. There are four parts of a questionnaire about sustainability: general, environmental, social and governance. There are 53 questions, each question has a yes/no answer with a score of 0 or 1. At the end of this questionnaire is possible to assess the enterprise level of sustainability, from not sufficient to excellent. It’s up to the enterprise to decide how to proceed with those data.

This framework enables a comprehensive evaluation of ESG (Environmental, Social, and Governance) sustainability, encompassing environmental, social, and governance issues.

However, the questionnaire only allows for binary responses (“yes” or “no”), preventing respondents from providing detailed company-specific metrics.

Furthermore, the questionnaire is highly extensive, comprising over 50 questions, which may make the completion process demanding for respondents.

4 ANALYSIS OF THE SCIENTIFIC LITERATURE

The research has been carried out using Scopus as research tool. “La Statale di Milano” gives access to a good part of the content inside this database. Articles that weren’t open access were excluded for simplicity and lack of time.

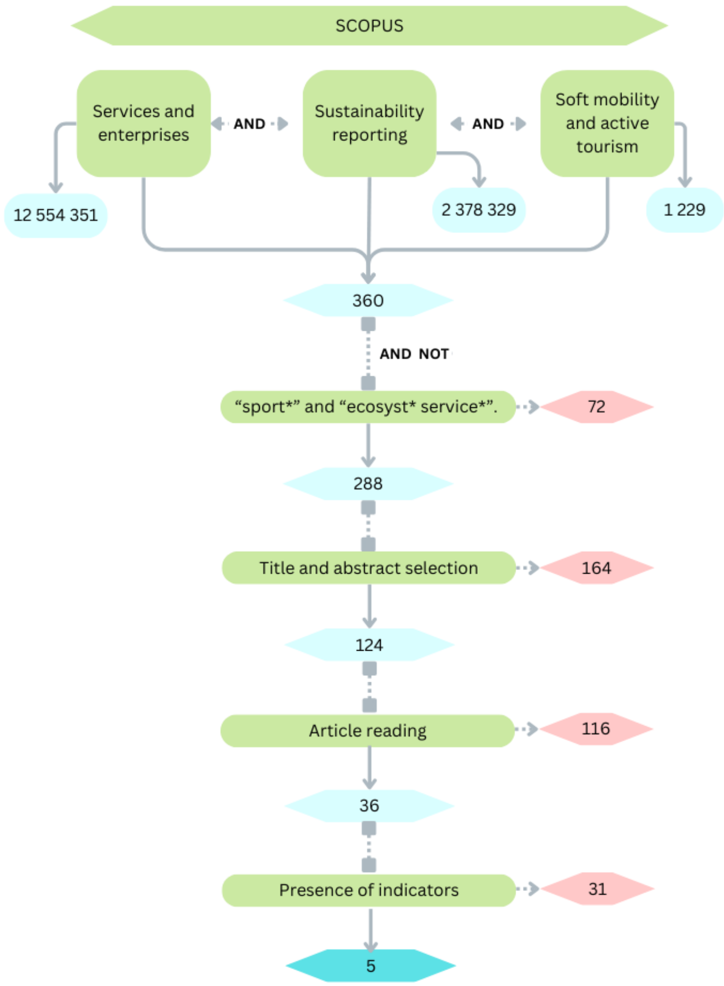

Fig. 4. 1 - Literature selection flowchart

4.1 DELIMITATION OF THE MACRO UNIVERSE

Finding the correct research question is fundamental to carrying out good research. The main aim of this research is to help MSMEs somehow linked with greenways in the creation process of a sustainability reporting. Schematizing the question allows to find the best key words, excluding redundance and false friends.

This thesis focuses on the combination of three main topics:

- MSMEs: micro, small and medium enterprises
- Sustainability reporting
- Tourism (soft mobility and active tourism)

For each of the 3 main topic, keyword evaluation has been carried out. Each key word has been independently considered, considering the impact on the topic final query. Once obtained three strings about the topics of MSMEs, sustainability reporting and tourism, there were put together to find a unique group of results. This group of results can be considered the macro universe for the bibliography. Not everything found in this universe is relevant to this research: some articles can contain the right keywords, but they have another focus (ie. Financial, …).

The ending of the keywords is open; for example, the word “camp*” with asterisk gives results for “camping”, “camper”, “campus”…

The string ‘MSMEs’ was considered misleading, a better representation of the articles was given by ‘services and enterprises’ related to greenways and active tourism.

The final 3 strings have been reported

- Services and enterprises

(TITLE-ABS-KEY ("enterprise*") OR TITLE-ABS-KEY ("compan*") OR TITLE-ABS-KEY ("busines*") OR TITLE-ABS-KEY ("undertaking*") OR TITLE-ABS-KEY ("organization*") OR TITLE-ABS-KEY ("bed* and breakfast*") OR TITLE-ABS-KEY ("b&b*") OR TITLE-ABS-KEY ("accommodation*") OR TITLE-ABS-KEY ("hotel*") OR TITLE-ABS-KEY ("agritourism*") OR TITLE-ABS-KEY (

"residence*") OR TITLE-ABS-KEY ("camp*") OR TITLE-ABS-KEY ("holida* home*") OR TITLE-ABS-KEY ("restaurant*") OR TITLE-ABS-KEY ("gastronom*") OR TITLE-ABS-KEY ("souvenir*") OR TITLE-ABS-KEY ("service*") OR TITLE-ABS-KEY ("rent*") OR TITLE-ABS-KEY ("maintain*") OR TITLE-ABS-KEY ("guid*") OR TITLE-ABS-KEY ("tour operator*"))

Nr results: 12.554.351

- Sustainability reporting

TITLE-ABS-KEY ("sustainab*") OR TITLE-ABS-KEY ("green*") OR TITLE-ABS-KEY ("ecolabel*") OR TITLE-ABS-KEY ("eco-label*")

Nr results: 2.378.329

- Tourism (soft mobility and active tourism)

(TITLE-ABS-KEY("active touri*") OR TITLE-ABS-KEY("open air touri*") OR TITLE-ABS-KEY("outdoor touri*") OR TITLE-ABS-KEY("Cycl* touri*") OR TITLE-ABS-KEY("Cycl*-touri*") OR TITLE-ABS-KEY("bicycle touri*") OR TITLE-ABS-KEY("bicycle-touri*") OR TITLE-ABS-KEY("bike touri*") OR TITLE-ABS-KEY("bike-touri*") OR TITLE-ABS-KEY("two wheel* touri*") OR TITLE-ABS-KEY("green* touri*") OR TITLE-ABS-KEY("green-touri*") OR TITLE-ABS-KEY("slow* touri*") OR TITLE-ABS-KEY("slow*-touri*") OR TITLE-ABS-KEY("active holida*") OR TITLE-ABS-KEY("open air holida*") OR TITLE-ABS-KEY("outdoor holida*") OR TITLE-ABS-KEY("Cycl* holida*") OR TITLE-ABS-KEY("Cycl*-holida*") OR TITLE-ABS-KEY("bicycle holida*") OR TITLE-ABS-KEY("bicycle-holida*") OR TITLE-ABS-KEY("bike holida*") OR TITLE-ABS-KEY("bike-holida*") OR TITLE-ABS-KEY("two wheel* holida*") OR TITLE-ABS-KEY("green* holida*") OR TITLE-ABS-KEY("green-holida*") OR TITLE-ABS-KEY("slow* holida*") OR TITLE-ABS-KEY("slow*-holida*"))

Nr results: 1.229

➔ Final combined string:

(TITLE-ABS-KEY("active touri*") OR TITLE-ABS-KEY("open air touri*") OR TITLE-ABS-KEY("outdoor touri*") OR TITLE-ABS-KEY("Cycl* touri*") OR TITLE-

ABS-KEY("Cycl*-touri*") OR TITLE-ABS-KEY("bicycle touri*") OR TITLE-ABS-KEY("bicycle-touri*") OR TITLE-ABS-KEY("bike touri*") OR TITLE-ABS-KEY("bike-touri*") OR TITLE-ABS-KEY("two wheel* touri*") OR TITLE-ABS-KEY("green* touri*") OR TITLE-ABS-KEY("green-touri*") OR TITLE-ABS-KEY("slow* touri*") OR TITLE-ABS-KEY("slow*-touri*") OR TITLE-ABS-KEY("active holida*") OR TITLE-ABS-KEY("open air holida*") OR TITLE-ABS-KEY("outdoor holida*") OR TITLE-ABS-KEY("Cycl* holida*") OR TITLE-ABS-KEY("Cycl*-holida*") OR TITLE-ABS-KEY("bicycle holida*") OR TITLE-ABS-KEY("bicycle-holida*") OR TITLE-ABS-KEY("bike holida*") OR TITLE-ABS-KEY("bike-holida*") OR TITLE-ABS-KEY("two wheel* holida*") OR TITLE-ABS-KEY("green* holida*") OR TITLE-ABS-KEY("green-holida*") OR TITLE-ABS-KEY("slow* holida*") OR TITLE-ABS-KEY("slow*-holida*")) AND (TITLE-ABS-KEY ("sustainab*") OR TITLE-ABS-KEY ("green*") OR TITLE-ABS-KEY ("ecolabel*") OR TITLE-ABS-KEY ("eco-label*")) AND (TITLE-ABS-KEY ("enterprise*") OR TITLE-ABS-KEY ("compan*") OR TITLE-ABS-KEY ("busines*") OR TITLE-ABS-KEY ("undertaking*") OR TITLE-ABS-KEY ("organization*") OR TITLE-ABS-KEY ("bed* and breakfast*") OR TITLE-ABS-KEY ("b&b*") OR TITLE-ABS-KEY ("accommodation*") OR TITLE-ABS-KEY ("hotel*") OR TITLE-ABS-KEY ("agritourism*") OR TITLE-ABS-KEY ("residence*") OR TITLE-ABS-KEY ("camp*") OR TITLE-ABS-KEY ("holida* home*") OR TITLE-ABS-KEY ("restaurant*") OR TITLE-ABS-KEY ("gastronom*") OR TITLE-ABS-KEY ("souvenir*") OR TITLE-ABS-KEY ("service*") OR TITLE-ABS-KEY ("rent*") OR TITLE-ABS-KEY ("maintain*") OR TITLE-ABS-KEY ("guid*") OR TITLE-ABS-KEY ("tour operator*")) AND NOT (TITLE-ABS-KEY ("sport*")) AND NOT (TITLE-ABS-KEY ("ecosyst* service*"))

The final string results from the combination of the 3 other stings; to eliminate some misleading results, the function "AND NOT" has been used excluding the keywords "sport*" and "ecosyst* service*". This step brought from 360 to 288 results. These 288 results are the macro universe considered in the review.

4.2 Selection and refinement

A manual selection has been carried out later on; first level selection was about title, second level was about abstract and third level was made by reading the articles and keeping or excluding them due their utility to the thesis.

Following the initial phase of identifying our research focus and formulating an appropriate search string, it was essential to apply inclusion and exclusion criteria to select articles that specifically addressed the topic of "sustainability of enterprises operating in the soft mobility sector."

To this end, a preliminary screening was conducted by examining the titles and subsequently the abstracts of all identified articles. This process enabled the exclusion of studies that were not relevant to our research objective. For instance:

- *"Cruise Tourism and Remote Communities in Greenland"* (Tommasini, 2012). As evident from the title, this article focuses on maritime tourism and does not align with the scope of our study.

The inclusion and exclusion phase resulted in a selection of 124 relevant documents.

The last selection has been done by reading the articles, evaluating for each the utility to the research. A total of 36 articles have been considered for this thesis.

Later a stricter selection has been done; the goal was to keep the articles inclusive of numerical indicators and the one with questionnaires; this could be helpful in the formulation of a new inclusive questionnaire. Reading the articles one by one, final 8 articles have been chosen.

Despite the rigorous selection process, the review of the collected materials did not yield comprehensive indicators, evaluation frameworks, or questionnaires capable of conducting a holistic assessment and self-evaluation of enterprises. While some studies did propose methodologies for assessing sustainability levels, they only partially covered the broad concept of sustainability. A significant emphasis was observed on environmental sustainability, whereas social and corporate governance aspects were largely overlooked.

Moreover, the available evaluation systems providing comprehensive ESG analyses were primarily designed for organizations managing tourism destinations rather than for individual enterprises. Consequently, the applicability of the selected literature to our study was only partial.

Table 4. 1 - Selected literature for the questionnaire formulation

Nr.	Title	DOI	Authors	Publisher	Year
1	Disclosure of Greenhouse Gas Costs and Green Tourism: Evidence from the Iraqi Tourism Industry	https://doi.org/10.1016/j.carbpol.2024.122928	b. Ridha Mohsin, N. M., Oleiwi, Z. H., & Yaqoob, I. I.	*African Journal of Hospitality, Tourism and Leisure*	2020
2	Evaluation Guide for Green Tourist Cities	10.1088/1755-1315/267/5/052010	Zong, J., Li, Y., Lin, L., & Bao, W.	*IOP Conference Series: Earth and Environmental Science*	2019
3	Penta Helix's Perspective: The Green Tourism at the Tourist Village in Bali, Indonesia	https://doi.org/10.14505/jemt.v13.3(59).25	Oka, I. M. D. et al.	*Journal of Environmental Management and Tourism*	2022
4	Putting Social Impact Assessment to the Test as a Method for Implementing Responsible Tourism Practice	https://doi.org/10.1016/j.eiar.2015.07.002	McCombes, L., Vanclay, F., & Evers, Y.	*Environmental Impact Assessment Review*	2015
5	Tourism Ecolabels and Social Sustainability: Challenges and Innovations from a Slovene Perspective	10.26493/2335-4194.11.19-29	Sasidharan, V., & Križaj, D.	*Academica Turistica*	2018

4.2.1 Article 1 – Disclosure of Greenhouse Gas Costs and Green Tourism: Evidence from the Iraqi Tourism Industry

"The aim of this paper is to reveal the determinants that affect the level of reporting of sustainability accounting in its economic, social, environmental and governance dimensions from the perspective of the Global Reporting Initiative (GRI.G4). The study adopts the method of analysing the content of the annual financial reports (2016 2017) for all sectors operating in the Iraq Stock Exchange (8) and by (100) companies. The results show that there is variation in the level of reporting of deportation as well as a weakness in the level of reporting and that the most important determinants affecting the discrepancy of reporting consist of the types of sector and disclosure instructions applied in the market and the accounting system adopted, and the fact that the sector size did not have a significant impact on the level of reporting sustainability accounting . The research recommends the support of companies listed in the Iraqi market for securities that adopt initiatives to report sustainability accounting by various means and provide facilities to ensure its sustainability."

The proposed indicators focus on several key aspects related to sustainability in tourism enterprises. These include information on the economic activities of businesses, compliance with international emission reduction regulations, disclosure of opportunities, risks, and management strategies related to climate change, governance structures addressing climate change, carbon accounting, and additional disclosures concerning the challenges companies face in reducing greenhouse gas emissions.

4.2.2 Article 2 – Evaluation Guide for Green Tourist Cities

"Green tourist cities are a kind of cities with unique resources such as unique natural sceneries or humanistic resources, can attract tourists. This paper puts forward an evaluation indicator system for measuring green tourist cities in 7 aspects of tourist resources, tourist services, infrastructures for tour, resource utilization and environmental protection, humanity, number of tourists and tourism revenue."

The article presents evaluation indicators that are assigned predefined scores based on the extent of compliance with sustainability criteria. These indicators include the availability of tourism resources (such as government support for the planning and development of green tourist cities), the quality of services provided (including public transportation, accommodation, language services, communication services, financial services, and medical services), and the resources utilized in operational processes (such as waste recycling rates, water supply and transport efficiency, environmental investment percentages, and land consumption). Additionally, measures for water and energy conservation, green education initiatives, and the provision of free public services are considered. Other key indicators include the number of tourists, tourism revenues, and adherence to recognized sustainability standards.

4.2.3 Article 3 – Penta Helix's Perspective: The Green Tourism at the Tourist Village in Bali, Indonesia

"This study explores the implementation of the green tourism (GT) in the tourist village in Bali using Penta Helix perspective. The data were collected through observation, interview and library research. The informants were determined using the sampling purposive method. The data were analysed using mixed method. The result shows that the GT has been well implemented in the tourist village, as shown by the following things: the tourist village has been developed by preserving the environment; the tourist village has been able to improve the vitality of the local economy; the tourist village has been able to maintain the cultural diversification; and the tourist village has been able to introduce new experience to tourists. The result shows that the environmental, the local economic, the culture and experience achievement contribute to the GT."

The identified sustainability considerations encompass environmental, economic, cultural, and experiential dimensions. Environmental aspects include the preservation and promotion of natural areas, as well as the collaboration between local communities to support conservation efforts. Economic considerations focus on job creation, local workforce development, prioritization of local employment, promotion of tourism village development, and improvements in the local economy. Cultural aspects address the preservation and promotion of local traditions and heritage. Finally, exploration-related indicators emphasize outdoor experiences, tourist satisfaction, and the introduction of new activities within the village.

4.2.4 Article 4 – Putting Social Impact Assessment to the Test as a Method for Implementing Responsible Tourism Practice

"The discourse on the social impacts of tourism needs to shift from the current descriptive critique of tourism to considering what can be done in actual practice to embed the management of tourism's social impacts into the existing planning, product development and operational processes of tourism businesses. A pragmatic approach for designing research methodologies, social management systems and initial actions, which is shaped by the real-world operational constraints and existing systems used in the tourism industry, is needed. Our pilot study with a small Bulgarian travel company put social impact assessment (SIA) to the test to see if it could provide this desired approach and assist in implementing responsible tourism development practice, especially in small tourism businesses. Our findings showed that our adapted SIA method has value as a practical method for embedding a responsible tourism approach. While there were some challenges, SIA proved to be effective in assisting the staff of our test case tourism business to better understand their social impacts on their local communities and to identify actions to take."

To assess sustainability efforts, businesses were asked a series of questions related to various performance indicators. These included the number of local residents employed throughout the year, total expenditures on local suppliers, the number of sustainability awareness and training activities for suppliers and tourism industry stakeholders, owner and guest satisfaction levels, the number of tourists receiving environmental guidelines before guided tours, the number of accommodations with Green certifications, the financial contributions made to local conservation and education initiatives, and the number of volunteer hours dedicated by staff to environmental protection efforts.

4.2.5 Article 5 – Tourism Ecolabels and Social Sustainability: Challenges and Innovations from a Slovene Perspective

"To gain new insights regarding the implementation of social sustainability practices, this study examined the sustainability performance of five tourism businesses in Slovenia. Each of the five has been awarded the Slovenia Green Certificate or a national award for innovative achievements (Sejalec, Snovalec) by the Slovenian Tourist Board. Semi-structured interviews were conducted among the tourism providers based on environmental, social, and economic dimensions. Findings from the study can help in the stimulation and achievement of higher levels of social sustainability performance within Slovenia's growing tourism industry while positioning the country as not only a green tourism leader but also as a socially-responsible destination."

The study, which employed semi-structured interviews, explored several key research questions, that could be considered also for the present research:

1. What environmental aspects were considered by the businesses?
2. What social responsibility aspects were taken into account?

3. What economic factors were analysed concerning sustainability?
4. Did businesses face challenges related to sustainable development and certification?
5. What, in their view, is the added value of sustainable engagement?
6. How could businesses compare their performance with direct and indirect competitors?
7. What opportunities do they see in adopting and developing sustainable innovations and improvements?

5 SOFT MOBILITY AND ACTIVE TOURISM

5.1 ABOUT SOFT MOBILITY

Soft mobility refers to non-motorized, human-powered modes of transport such as walking, cycling, roller skating, and skateboarding. It is often described as "zero-impact" mobility, as it significantly reduces environmental and social costs compared to traditional motorized transport. The terminology surrounding soft mobility is still evolving, with terms like "mobilité douce," "slow traffic," and "active mobility" used interchangeably to describe transport alternatives that prioritize pedestrians and cyclists (Anna, 2010). As cities strive for sustainable development, policies promoting soft mobility have gained increasing attention. Urban areas worldwide are implementing strategies to slow traffic, alleviate congestion, and improve environmental conditions while preserving individuals' right to move freely. The shift towards soft mobility is not merely an infrastructural change but also a cultural transformation aimed at fostering healthier, more inclusive, and environmentally friendly urban spaces.

Soft mobility plays a crucial role in improving urban livability. Cycling and walking contribute to physical and mental health by promoting active lifestyles. According to the European Declaration on Cycling (European Declaration on cycling, 2024), cycling is a moderate physical activity that reduces health risks and premature deaths linked with sedentary behaviors. By ensuring affordable and accessible transport options, soft mobility fosters inclusivity, especially for individuals with reduced mobility or those unable to afford a car. Road transport is a significant contributor to pollution in European cities. Encouraging soft mobility reduces vehicle emissions, mitigates air pollution, and contributes to climate change mitigation. In addition, investments in cycling infrastructure yield significant returns. Studies suggest that cycling infrastructure can offer benefits up to eight times higher than initial investments by reducing travel times, improving public health, and increasing road safety.

Soft mobility is applicable in daily commuting as well as recreational activities. People use human-powered transport for commuting to work or school, grocery shopping, and social outings. Furthermore, soft mobility is integral to leisure, cultural activities, sports, and tourism. Many cities are investing in cycling tourism and pedestrian-friendly zones to attract visitors while promoting sustainable travel behaviors.

Northern European countries such as the Netherlands, Norway, Sweden, and Germany have successfully integrated soft mobility into their urban transport policies. These nations exhibit high rates of active transportation due to well-developed cycling and pedestrian infrastructure, policy support, and cultural acceptance of non-motorized travel. One notable initiative is the Nordic Cycle Power Network, funded by the Nordic Council of Ministers (Lisa Rohrer, 2025). Running from February 2023 to January 2025, this two-year project aims to foster knowledge-sharing among urban planners and policymakers. Through workshops and study visits, the network is identifying concrete measures to increase cycling and decrease car dependency, thereby lowering transport-related CO2 emissions.

To enhance soft mobility across Europe, urban mobility policies should focus on infrastructure development by expanding cycling lanes, pedestrian zones, and mixed-use pathways to create safer and more efficient non-motorized transport networks. Governance and funding should be allocated sufficiently for active mobility projects at local, national, and European levels. Public awareness and education should be promoted through campaigns, incentives, and integration into school curriculums. Safety and accessibility must be ensured through adequate safety regulations and inclusive design, particularly for people with disabilities or reduced mobility. The recent European Declaration on Cycling, adopted in April 2024, marks a significant milestone in promoting cycling as a sustainable transport mode. This declaration calls for comprehensive strategies to mainstream cycling into transport planning, improve infrastructure, and enhance safety regulations.

Soft mobility is a key point of sustainable urban transport. By prioritizing walking, cycling, and other non-motorized transport modes, cities can significantly reduce congestion, pollution, and health risks while fostering a more inclusive and livable environment. European cities must continue to adopt policies that support active mobility and invest in the necessary infrastructure to ensure a greener, healthier future for all.

5.2 TOURISM, IMPACTS AND OPPORTUNITIES

According to the United Nations World Tourism Organization (UNWTO), the tourism sector is one of the most significant industries globally. From the post-World War II period to the early 2000s, the number of tourists grew exponentially, rising from 25 million to over one billion in 2013, with an expenditure of USD 1.159 trillion, ranking third among the most important export categories worldwide.

International tourism experienced a strong rebound in 2023, reaching 1.3 billion arrivals, approximately 89% of pre-pandemic levels, following three years of travel restrictions due to the COVID-19 pandemic. The economic contribution of tourism in 2023 was estimated at USD 3.4 trillion in terms of Tourism Direct Gross Domestic Product (TDGDP), equivalent to 3% of global GDP, slightly below the 4% share recorded in 2019. In the decades leading up to 2019, tourism continued to expand and diversify, establishing itself as one of the largest and fastest-growing economic sectors worldwide. Despite the severe disruption caused by the COVID-19 pandemic in 2020, international tourism largely recovered by 2023, resuming its role as a major driver of economic growth and employment, benefiting destinations in both advanced and emerging economies. As international travel continues to expand, it becomes increasingly important to rethink tourism policies and management. National and local governments, along with industry stakeholders, are urged to adapt and enhance tourism strategies to ensure that local communities and environmental sustainability remain central to tourism development (UN Tourism Market Intelligence, Policies and Competitiveness Department, 2024).

Given the scale of the industry, it is essential to analyse its impact on the environment, society, and economy. Since a significant portion of tourism relies on the attractiveness of natural landscapes, it is crucial that the sector rapidly adapts to sustainable practices to prevent the degradation and loss of the very areas upon which it depends. Research by Kuo, Lin, Chen, and Chen (2012) highlights the necessity of assessing tourism-related energy consumption and carbon dioxide emissions using a life cycle assessment approach to promote sustainability (N.-W., C.-Y., P.-H., & Y.-W, 2012).

Tourism is the leading economic activity worldwide; the industry employs millions of workers, accounting for one in every 15 jobs globally, and is expected to continue expanding due to advancements in transport and communication technologies (AITR).

However, this growth also presents challenges, particularly concerning waste production, resource consumption, and environmental impact. The United Nations has reported that the tourism sector accounts for 14% of global waste production, and at the current rate of resource consumption, this figure is expected to rise sharply by 2050. Water, energy, and gas consumption in tourism-related activities are projected to increase by 152%, 154%, and 132%, respectively, compared to current levels.

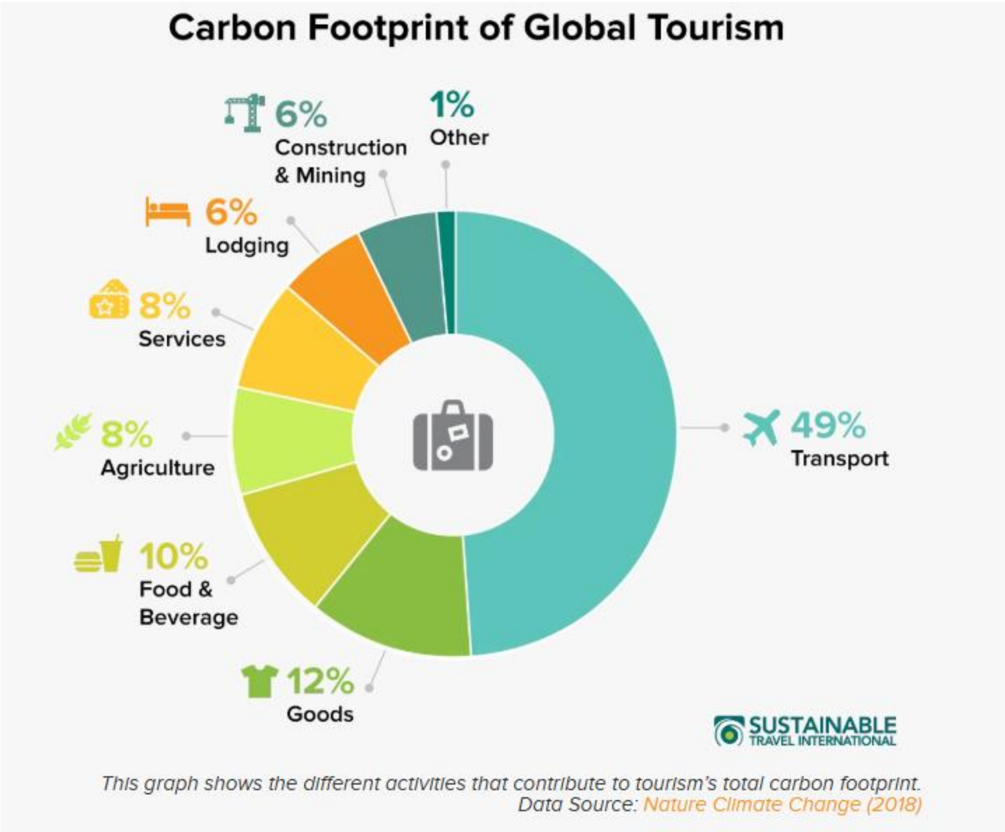

Fig. 5. 1 - Carbon footprint of Global Tourism (UNTWO)

As is represented 46Fig. 5. 1 - Carbon footprint of Global Tourism (UNTWO)5.1, transportation is the most polluting factor within the tourism sector. The heavy reliance on air travel and private vehicles contributes significantly to greenhouse gas emissions, exacerbating climate change and environmental degradation. However, shifting towards more sustainable transportation methods can substantially reduce tourism's carbon footprint. For instance, opting for cycling holidays or vacations that integrate public transportation with bicycle use allows travellers to explore regions in an eco-friendly manner. A trip where visitors use trains or buses for long distances and then switch to bicycles for local mobility offers not only a lower environmental impact but also a deeper connection with the surroundings. This approach allows tourists to discover hidden spots, engage more authentically with local communities, and appreciate natural landscapes in a slower way.

The global tourism industry is undergoing significant transformations driven by external factors such as the COVID-19 pandemic and internal shifts toward sustainability. While the industry faces various challenges, it also presents opportunities for growth and innovation, particularly in sustainable and transformative tourism. The future of tourism will likely be shaped by these evolving trends and the industry's ability to adapt to new environmental and social realities.

Something is moving in this sector; for example, the Global Sustainable Tourism Council (GSTC – https://www.gstcouncil.org/) is a non-profit organization that establishes global sustainability standards for the tourism sector. Founded in 2007 by the United Nations Environment Programme (UNEP) and the United Nations World Tourism Organization (UNWTO), the GSTC oversees the criteria for sustainable tourism, aligned with the 17 Sustainable Development Goals (SDGs) set by the United Nations. These standards translate into more than one hundred concrete commitments for responsible tourism practices. Currently, hotels, tour operators, and destinations can be certified under these criteria, which consider sustainable management, socio-economic sustainability, cultural sustainability, and environmental sustainability. UNTWO is in first line for the shift to sustainable tourism; in fact, by 2030 the UNWTO aims to develop and implement policies to promote sustainable tourism that create jobs and support local culture and products. It also develops and applies tools to monitor the impacts of sustainable development on tourism through evidence-based decision making, efficiency, innovation, stakeholder collaboration, monitoring, and a life-cycle approach for continuous improvement (UNTWO). In Italy, from 2005 the AIRT – Associazione Italiana Turismo Responsabile – is working to bring innovation in tourism. From the AITR Assembly on October 9, 2005, in Cervia, responsible tourism is defined as tourism that adheres to principles of social and economic justice while fully respecting the environment and local cultures. Responsible tourism recognizes the centrality of host communities and their right to play a leading role in the sustainable and socially responsible development of their territories. It fosters positive interactions between the tourism industry, local communities, and travellers. In practice, responsible tourism means that tourism operators who are conscious of corporate social responsibility, environmental sustainability, gender equity, and good practices ensure that tourism activities are designed, implemented, and managed in a way that prevents social and economic inequities, particularly to the detriment of host communities. These two examples highlight the need of change in touristic sector, trying to bring innovation, sustainability and equity to it.

5.3 EUROPEAN SITUATION

The ecosystem of soft mobility, which relies exclusively on low-impact, non-motorized means of transportation such as walking and cycling (Mobilità dolce, 2018), encompasses various activities and modes of application, including active tourism, slow tourism, and cycle tourism. Active tourism is centered around outdoor activities such as cycling, horseback riding, and paragliding, as well as other nature-based sports. Unlike sports tourism, which is practiced by professional athletes, active tourism is accessible to people of all fitness levels (ActiveItaly, 2021). Slow tourism, commonly referred to as *slow tourism*, is an increasingly popular travel approach that prioritizes the use of "slow" means of transport, such as walking or cycling. It represents a different travel philosophy, emphasizing the exploration of rural areas, diverse cultures, and local products at a leisurely pace, promoting high-quality tourism experiences as opposed to the fast-paced "hit-and-run" travel model (Legambiente Turismo, 2020) (RoccaR., 2010).Cycle tourism, which falls under both active and slow tourism, is defined in “Viaggiare con la bici 2024” (Isnart and Legambiente, 2024) as the practice of visiting and exploring destinations for recreational purposes, over one or multiple days, primarily using bicycles for leisure travel. More broadly, cycle tourism can be understood as a travel model in which cycling serves as the primary mode of transportation, regardless of the length of the journey or the type of destination, which may range from natural landscapes to urban settings (Scuola Italiana Mountain Bike, 2019).

5.3.1 Ongoing projects

In Italy, two significant projects dedicated to promoting sustainable mobility and cycling culture are Bikeitalia and AMODO (Alleanza per la Mobilità Dolce). Bikeitalia aims to transform Italy into a more bicycle-friendly country by fostering a widespread appreciation for cycling. Historically, cycling in Italy was associated primarily with professional athletes, occasional sports enthusiasts, or individuals who could not afford a car. However, this perception has gradually shifted, and more people are now embracing cycling for environmental reasons, civic awareness, personal well-being, or simply for the joy of riding. Bikeitalia’s mission is to take cycling beyond a niche activity and establish it as a mainstream means of transportation, ultimately turning Italy into a cyclist’s paradise.

On the other hand, AMODO brings together major national environmental and sector-specific associations to promote and develop sustainable mobility in Italy. Recognizing the need to bridge the gap in territorial and landscape planning, as well as to support slow tourism, AMODO advocates for integrated policies that enhance soft mobility across the country. The alliance operates under a shared manifesto and includes organizations such as Legambiente, the Italian Association for Responsible Tourism, WWF, and FederTrek, among others. AMODO serves as a collaborative platform that formulates joint proposals, monitors legislation, engages in dialogue with institutions, and fosters interactions with railway operators and mobility service providers. Additionally, it promotes initiatives that showcase Italy’s diverse landscapes through slow tourism, supporting active lifestyles and sustainable travel choices. Through these initiatives, both Bikeitalia and AMODO contribute to reshaping mobility in Italy, encouraging a shift towards greener, more inclusive, and accessible transportation alternatives.

Across Europe, another project is going on: First Mile – supporting tourism SMEs in walking the first mile in improving their sustainability footprint through innovative behaviour change techniques.

The First Mile aim to improve tourism SMEs’ sustainability by reducing their carbon footprint & environmental impact, in timeframe 2023-2025. This project is supporting 80 SMEs spread across France, Norway, Italy, and Slovenia. These SMEs try to implement and experiment with behaviour tactics to enhance their operations and make them more sustainable. With the tools and knowledge acquired during this process, the hope is to create a ripple effect. The basic idea is to make sustainability easy and accessible, so it becomes the first choice for the enterprises.

Something is moving in Europe, both from legislation and citizenship associations.

5.3.2 Main infrastructures

In recent years, Europe has made significant steps in developing sustainable transport infrastructure, promoting eco-friendly tourism, and encouraging non-motorized mobility. The focus on sustainable cycling and greenways has led to the creation of extensive networks that connect urban and rural areas, enhance accessibility, and provide economic and environmental benefits. Two of the most prominent initiatives in this field are EuroVelo, the European cycle route network, and the Greenways movement, both of which contribute to the promotion of sustainable travel across the continent.

EuroVelo: A Trans-European Cycling Network

EuroVelo (EuroVelo) is a large-scale initiative aimed at creating a network of long-distance cycling routes that cross and connect Europe. Developed by the European Cyclists' Federation (ECF) in cooperation with national and regional partners, EuroVelo consists of 17 routes, covering over 90,000 km when fully completed. These routes are used to both long-distance cycle tourists and residents, serving as an essential backbone for national and regional cycle networks.

Fig. 5. 2 - Eurovelo European Network

The EuroVelo project was launched in 1997, driven by the vision of connecting Europe through dedicated cycle paths. Today, the network continues to grow, with some sections still under development. The “EuroVelo Strategy 2030” prioritizes quality over quantity, emphasizing the need for well-maintained, safe, and interconnected routes that integrate seamlessly with local and national transport systems. The goal is to increase everyday cycling and cycling tourism, supporting ECF’s broader mission of promoting cycling as a sustainable mode of transport.

As of 2024, 67% of the EuroVelo network is fully operational, with 39% of routes signposted. This progress is supported by the National EuroVelo Coordination Centres (NECCs), which oversee implementation, quality control, and public communication at the national level. NECCs also work to integrate EuroVelo routes into transport policies, ensuring long-term sustainability and effective management.

A key aspect of the EuroVelo project is the European Certification Standard (ECS), a methodology developed by the ECF to assess and certify the quality of cycle routes. This standard helps harmonize cycling infrastructure development across different European countries, ensuring consistency in quality and safety for cyclists. Additionally, the ECS is particularly useful in countries where national standards do not yet exist, providing a framework for future planning.

The impact of EuroVelo extends beyond tourism, promoting daily cycling, sustainable mobility, and multimodal transport solutions. By connecting urban centers, rural areas, and tourist destinations, the network encourages low-carbon travel, reducing reliance on motorized transport and pushing local economic development through increased tourism.

Greenways: A Complementary Sustainable Mobility Network

While EuroVelo focuses on long-distance routes, greenways represent a network that provides accessible and sustainable pathways for non-motorized transport. Unlike traditional cycle paths, greenways are multi-use routes designed for pedestrians, cyclists, and other users, combining slow mobility, sustainable tourism, and environmental preservation.

Greenways can be interpreted as an interconnected system of linear territories, protected, managed and developed to obtain touristic, recreational, ecological and historical-cultural benefits, located along natural corridors such as rivers banks, streams and coasts, or along disused railway lines, canal towpaths and country roads (Art. 1, Statute of the Italian Greenways Association - STATUTO)

Founded in 1998 in Namur, Belgium, the European Greenways Association (EGWA- European Greenways Association) coordinates the promotion and development of these routes, collaborating with over 50 organizations in 16 European countries. Greenways are often developed by repurposing abandoned railway lines, rural roads, and canal towpaths, transforming existing infrastructure into green corridors that preserve landscapes while offering new opportunities for sustainable mobility. These existing infrastructures become easily accessible greenways due to their intrinsic features: slope, direct connection between places,

One of the defining characteristics of greenways is their safety, as they are completely separated from motorized traffic, making them ideal for people of all ages, including families with children and the elderly. Accessibility is another key factor, with pathways designed to be usable by everyone, regardless of physical ability. The design of greenways prioritizes a slow and immersive travel experience, with moderate gradients that allow users to traverse natural and cultural landscapes in a relaxed manner. Their multifunctionality makes them suitable not only for cyclists and pedestrians but also for hikers and, in some cases, horse riders.

Beyond their role in mobility, greenways stimulate local economies by attracting visitors to less-known areas and fostering new business opportunities in hospitality and services. They also contribute to public health by encouraging physical activity and well-being and enhance cultural heritage as many routes pass through historical sites and protected natural areas.

In Italy, the "Associazione Italiana Greenways (AIG)" actively works to integrate these pathways into urban and rural contexts, improving local mobility while preserving the territory. In the Italian territory, only 400 km of greenways are present, against almost 7000 km of dismissed railways (Greenways in Europa e in Italia, Green Tour; Greenways d'Italia, La Nuova Ecologia - LE GREENWAYS).

A successful example in Spain is the "Vías Verdes" (Vías Verdes - Fundación de los Ferrocarriles Españoles)program, which has transformed over 3,000 km of abandoned railways into eco-friendly routes, revitalizing rural areas that would otherwise face economic decline.

A significant milestone for the development of greenways was the Lille Declaration (2000), signed by numerous European organizations to promote shared guidelines for their implementation. The declaration highlights the role of greenways in social inclusion, environmental protection, and sustainable tourism development, defining criteria for accessibility, safety, and territorial integration.

Both EuroVelo and greenways represent a step in Europe’s approach to sustainable mobility and responsible tourism. Future challenges include maintaining the quality and efficiency of routes across all countries, improving intermodal connections between cycling networks and public transport, increasing visibility and promotion of these itineraries, and securing adequate funding for their expansion and development.

5.4 TOURISTS VISITING ITALY

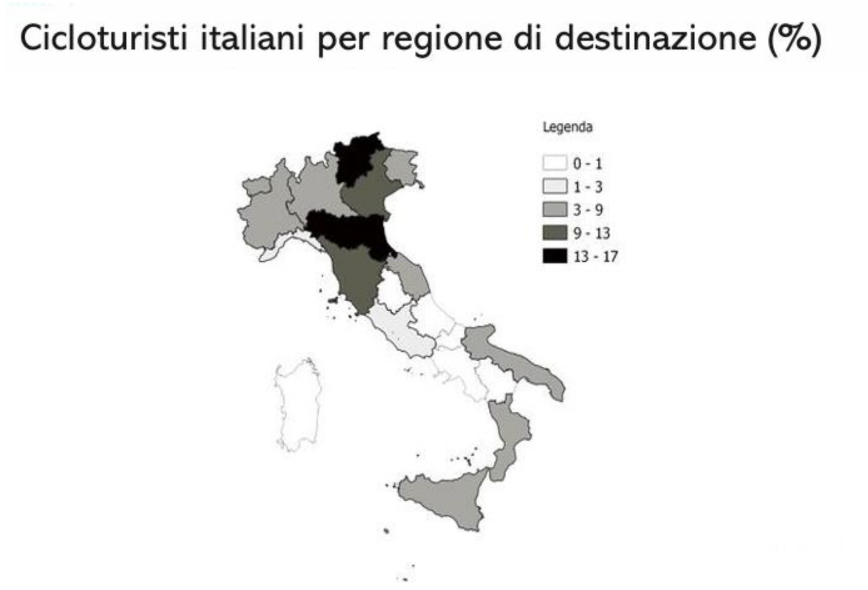

Fig. 5. 3 - Italian cycletourists divided by region (Legambiente)

According to Legambiente (Economia del cicloturismo 2020 - Presentazione standard di PowerPoint), the regions preferred by Italians in Italy are Trentino Alto Adige and Emilia Romagna, followed by Tuscany and Veneto region and considering also southern Italy. Foreigners cycle tourists, on the other hand, remain mainly in the north, with Trentino Alto Adige as top destination.

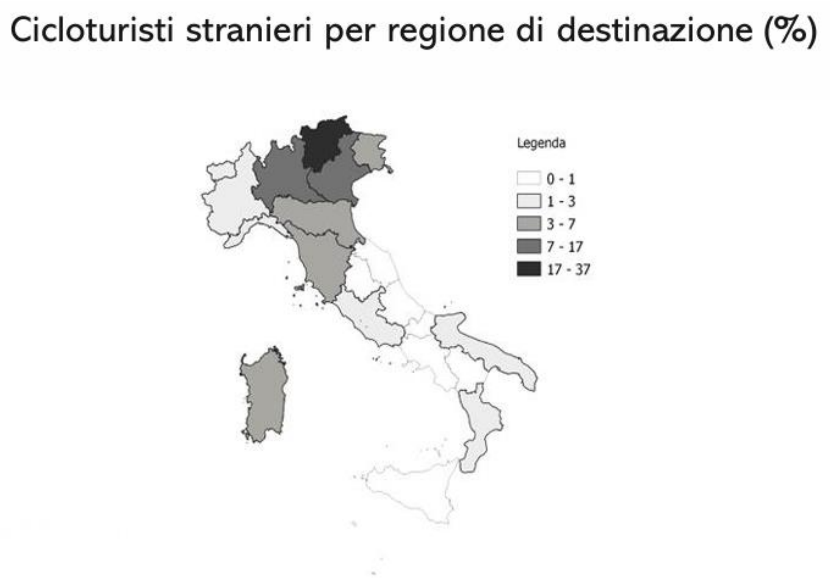

Fig. 5. 4 - International tourists per destination region (Legambiente)

It's interesting the case of Trentino Alto Adige: there are 3256 km of cycleways, cost per construction moves from 30 and 170 million € and maintenance costs around 2-6 million € per year per km. The total income per year is 1,1 billion €, therefore the average income is 338 million € per km of cycleway. The infrastructures and services offered in this region are more and often better than in other regions; it could be an example for many other rural and urban areas to develop a different type of tourism, implementing new services and creating local employment opportunities.

Features of the cycle tourist

As said before, cycle tourism is an emerging and growing model of active vacations (Martina Carra, 2023), offering significant benefits for both mental and physical health while also contributing to reduced energy consumption and travel-related pollution. According to the report by Daudibon & Kelly (2024), cycle touring is the domninant sector in Europe, with the United States and Germany being the primary markets. Italy stands out as the leading cycle tourism destination, followed by France and Germany. American cycle tourists tend to spend an average of €207 per day over a week-long trip, whereas German tourists spend approximately €128 per day. Despite the increasing popularity of cycle tourism, there is still a lack of adequate infrastructure, accommodation, and services along cycle routes (Daudibon & Kelly, 2024).

The profile of cycle tourists in Italy is well defined, as highlighted by the Osservatorio sull'Economia del Turismo delle Camere di Commercio (Isnart and Legambiente, 2024). In the summer of 2023, most cycle tourists were Millennials (47%, an increase of 10 percentage points from 2022), with a medium to high level of education and employment status (86%). Their financial profile makes them an economically attractive target for local tourism markets, as 52% declare a medium income and 24% a medium-high income. These tourists typically travel with their partners (41%), families (26.7%), or friends (17%). More importantly, cycle tourism is a cross-cutting activity that connects different motivations and interests, including visits to cultural and artistic heritage sites (37%), immersion in natural landscapes (36.4%), gastronomic experiences (24%), and general well-being (8%).

Looking specifically in Italy, there are two main types of tourists using bikes. Cycle tourists integrate cycling as a fundamental part of their holiday, using bikes for exploration and mobility. They have an average age of 32, with only 37% being Italian. In contrast, active tourists—who use bikes for secondary activities such as short city visits or hikes—are generally older, with an average age of 50, and 42% of them are Italian.

The economic impact of cycle tourism extends beyond accommodations (which generate €1.4 billion in revenue) to clothing (€500 million) and leisure activities (€300 million). The desire for a sustainable and environmentally respectful holiday is one of the main motivations behind cycle tourism (Eurovelo, Adventure Travel, Cycle summit, European Cyclist Federation, 2024). Travelers seek experiences that combine their passion for cycling with territorial discovery and overall well-being, reinforcing the growing trend toward "slow tourism" and eco-friendly accommodations (Ifis, 2023).

Italy's unique geographical and cultural diversity makes it the ideal destination for cycle tourism, as its landscapes, artistic heritage, and culinary traditions change significantly every 70-80 km—the perfect distance for a daily cycling journey. This contributes to its status as the top cycling destination worldwide (Daudibon & Kelly, 2024). Among the most popular regions for international cycle tourists is Trentino-Alto Adige, which has seen a 10.4% increase in cycleway length from 2022 to 2023 (Ifis, 2023), further enhancing its appeal as a premier location for sustainable and active travel.

The role of digital platforms and online communities is increasingly crucial in the planning and promotion of cycle tourism. According to recent data, six out of ten cycle tourists rely on the internet to gather information and organize their trips, demonstrating a highly engaged and detail-oriented traveler profile. Given the technical and logistical complexities of cycling vacations—ranging from equipment to transport and accommodation—many tourists meticulously plan their itineraries in advance. A key indicator of the sector's potential lies in the fact that 22% of international cycle tourists visiting Italy are "repeaters," meaning they are willing to return after a positive experience. This highlights a strong potential for customer loyalty, which can be further fostered through targeted strategies. Additionally, cycle tourists are highly active in sharing their experiences: six out of ten leave online reviews, share itinerary suggestions, and contribute technical insights, particularly within their digital communities, which they feel a strong sense of belonging to. Social media platforms play a major role in this exchange, with TripAdvisor (42%), Facebook (33.2%), and Instagram (22%) being the most widely used channels. Infrastructure quality also significantly influences travel choices: one in three tourists selects a cycling route based on its maintenance, while 26.2% are drawn to routes set in scenic natural environments, aligning with their interest in sustainability and environmental preservation. Moreover, 22.4% of tourists are motivated by newly developed cycle paths, demonstrating an engaged audience that actively seeks out and values infrastructure investments. As for bicycle preferences, nearly half (49%) opt for mountain bikes, 24% choose road bikes, 15.4% prefer city or leisure bikes, and 12% use e-bikes. The latter category is particularly relevant, as e-bikes expand the accessibility of cycle tourism to a broader demographic, including those who may not be regular cyclists (Isnart and Legambiente, 2024).

Cycling plays a fundamental role in advancing the European Union's climate, pollution reduction, and energy efficiency goals. As outlined in the European Cycling Declaration, cycling is one of the most sustainable, healthy, and efficient modes of transport. It offers significant potential to support the decarbonization of urban mobility and contributes to achieving the EU's target of reducing net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels, with the ultimate goal of reaching climate neutrality by 2050 (European Declaration on cycling, 2024). These environmental objectives, coupled with the increasing demand for well-maintained cycling infrastructure and sustainable travel experiences, reinforce the strategic importance of cycle tourism in both economic and ecological terms.

5.5 CYCLE TOURISM'S IMPACTS AND CRITICITIES

Italy represents the leading destination for cycling tourism; however, despite this positive trend, the country lacks a centralized governance structure dedicated to its global promotion. The current institutional framework remains fragmented between regional and national authorities, with no shared planning strategy in place (Bikeitalia, 2024). Becoming a competitive cycling tourism destination requires three essential elements: services, expertise, and infrastructure. In this regard, Italy remains significantly fragmented in terms of completed cycling routes. A notable example of successful development in cycling infrastructure is France, which, with 25,000 km of cycling routes and 8,000 bike-friendly services, has set the ambitious goal of becoming the world's leading cycling tourism destination by 2030 (Bike Italia, 2024).

One of the major obstacles in Italy is the lack of coordination among public administrations, as highlighted in Resolution No. 64/2024/G of the Italian Court of Auditors concerning "Funding for the Design and Implementation of a National System of Cycling Tourism Routes and Support for Urban Cycling." This inefficiency has led to significant challenges in the implementation of planned projects (Sezione centrale di controllo sulla gestione delle amministrazioni dello Stato, 2024).

Another critical aspect of cycling tourism, as emphasized in previous studies, is its potential negative impact on the natural environment, local communities, and, especially, service users (Prihayati, 2021). The lack of dedicated infrastructure can expose cyclists to safety risks, including accidents and falls. In highly urbanized areas, exposure to air pollution presents long-term health concerns. Furthermore, the seasonal nature of cycling tourism, particularly in Italy's climate, affects revenue generation and creates uncertainty for potential investments in dedicated services and infrastructure, even do climate change is influencing season length and traditional meteorological conditions. This challenge is also recognized at the European level, with 54% of cycling tourism operators expressing concerns over revenue fluctuations (Eurovelo, 2024).

The sector's growth is influenced also by the difficulty faced by service providers in effectively promoting their offerings, given the absence of a well-defined marketing strategy (Eurovelo, 2024). The Bicycle Travel Analysis (ADFC, 2024) further highlights key deterrents preventing potential tourists from choosing cycling tourism, including the physical effort required, the lack of necessary equipment, infrastructure, and accommodations, as well as the absence of travel companions sharing the same interest.

Cycling tourism, in some cases, can contribute to environmental degradation, particularly in mountain biking activities. Off-road cycling, especially in mountainous areas, can lead to trail and vegetation degradation, soil compaction, and alterations in surface profiles. These impacts are exacerbated by extreme riding techniques, adverse weather conditions, and inadequate trail maintenance post-construction (Pröbstl-Haider et al., 2017). Such environmental damage may also result in conflicts with other tourist groups, such as hikers, who generally have a lower environmental footprint. These issues are not exclusive to mountain biking but extend to other forms of cycling tourism, both in mountainous and lowland regions. Indeed, the failure to maintain cycling infrastructure after its construction is a critical factor that must be addressed to preserve its attractiveness and minimize environmental impact.

5.6 ACTIVE TOURISM IN MOUNTAIN AREAS

One third of the Italian territory is covered by mountains: 9 487 854 hectares. Often rural and mountain areas overlaps; both areas are subjected to depopulation and land abandonment. (Varotto, 2020)

One of the key benefits of mountain tourism is its significant contribution to local economies. As an industry, it generates employment, stimulates business development, and contributes to GDP. The sector is particularly valuable for rural and remote communities, where economic diversification opportunities are limited. Mountain tourism helps counteract depopulation by providing job opportunities and fostering local enterprises, including accommodation, food services, and outdoor activity providers. According to the World Tourism Organization, the Alpine region alone attracts approximately 12% of global tourism, with around 80 million international visitors recorded in 2001 (Ufficio turismo WWF, 2001). Furthermore, tourism plays a crucial role in preserving and promoting the cultural heritage of mountain communities. By integrating nature-based and rural tourism, it supports sustainable food systems and adds value to local products (Steiger, 2022).

Despite its economic and social benefits, mountain tourism also presents significant environmental challenges. Mountain landscapes and ecosystems are highly sensitive and vulnerable to climate change and human activity. The Alps, for example, have experienced a temperature increase of nearly +2°C since the late 19th century, almost twice as fast as the rest of the Northern Hemisphere. These changes have led to habitat loss for endemic species, altered water availability, increased forest stress, and greater risks of natural hazards (Alpine Convention, 2019). Given that mountain tourism is highly dependent on natural resources and landscapes, these environmental transformations pose significant threats to its sustainability (Steiger, 2022).

One of the major concerns is the issue of seasonality. While mountain tourism has the potential to distribute visitor flows throughout the year, many destinations still experience strong seasonal fluctuations. Climate change is altering traditional tourism patterns, with summer temperatures in August and other peak months becoming excessively high due to heatwaves. This may lead to a shift in tourist preferences, with an increasing number of visitors choosing mountain destinations over beach vacations, potentially exceeding the carrying capacity of fragile ecosystems (Ecobnb, 2018). Conversely, climate change also offers new opportunities for extending the tourism season, as activities such as hiking and cycling can now take place earlier in spring and later in autumn.

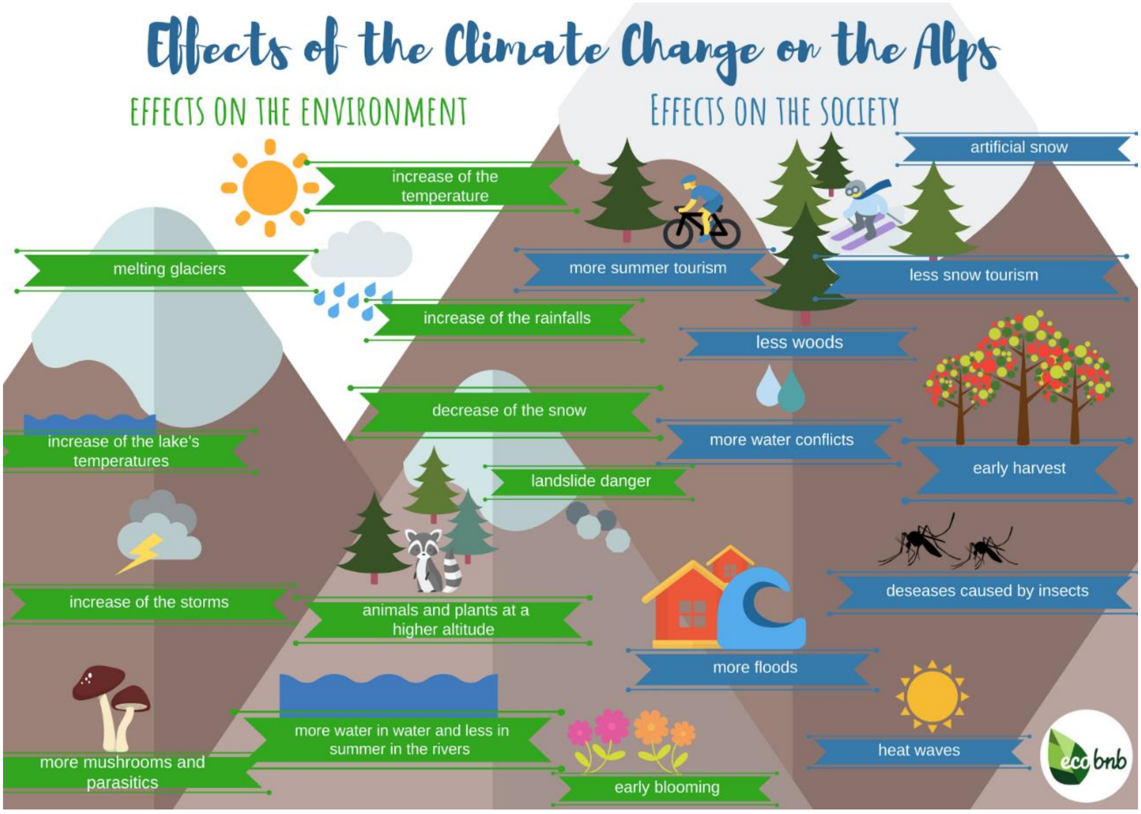

Fig. 5. 5 - Effects of climate change on the Alps (ecobnb infographic)

To address these challenges and ensure the long-term sustainability of mountain tourism, strategic measures are necessary. Innovation and the development of year-round tourism experiences, such as off-season adventure tourism and wellness retreats, can help mitigate the effects of seasonality. Investments in infrastructure, particularly digitalization, can enhance the efficiency and sustainability of tourism services. Strengthening multi-level governance and community participation is also critical, ensuring that local stakeholders have a voice in decision-making processes. Additionally, sustainable mobility initiatives, such as the "Alpine Pearls" network, which promotes car-free tourism by prioritizing bicycles, trains, and walking, serve as models for responsible tourism practices (Pearls of Responsible Tourism in the Alps - Ecobnb).

6 QUESTIONNAIRE’ APPLICATION TO THE STUDY AREA: ADIGE VALLEY

6.1 ADIGE VALLEY

Adige Valley, that passes through Trentino Alto Adige and Veneto Region, is a geographically and economically significant valley shaped by the Adige River, the second-longest river in the country. Its geomorphological characteristics, formed by glacial and fluvial processes, include steep mountain slopes, expansive terraced vineyards, and fertile plains (https://www.destradigelagarina.it/UploadDocs/13390_Art_01_angelucci_col.pdf). Surrounded by the Dolomites and the Central Eastern Alps, the valley has historically served as a crucial north-south communication corridor. The region's fertile soil, enriched by river sediments and glacial deposits, has made it an agricultural hub, particularly for viticulture and apple cultivation.

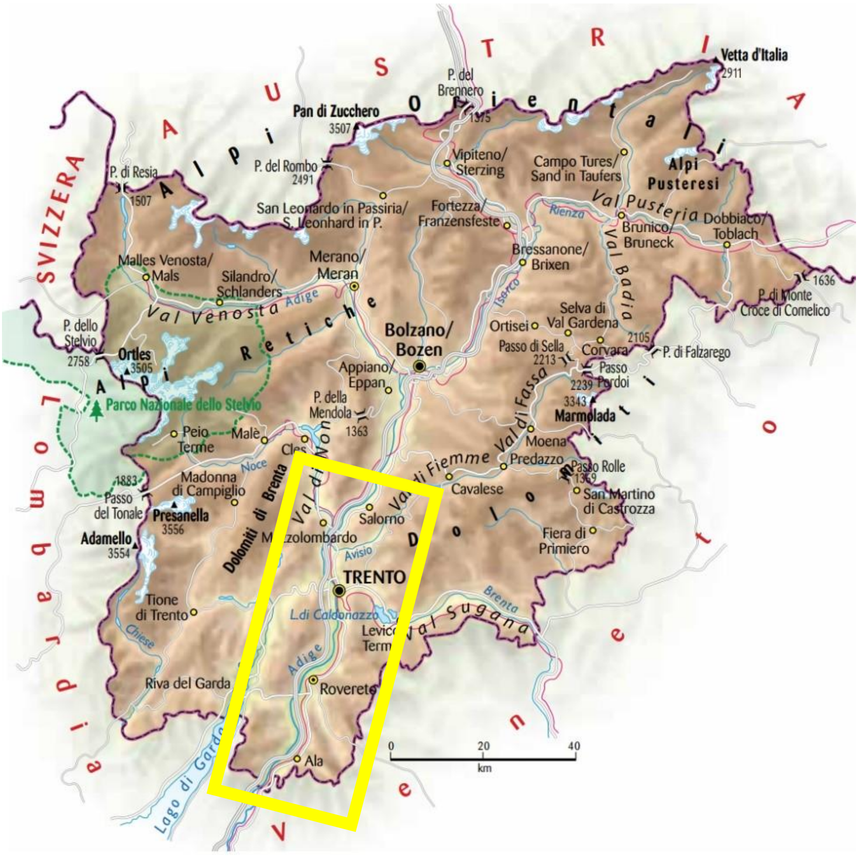

Fig. 6. 1 - Trentino’s section of Adige Valley

In the Trentino's sector, Valle dell'Adige is one of the most densely populated areas, encompassing key urban centres such as Trento, the region's administrative and cultural capital. With approximately 125,000 inhabitants (ISPAT - Istituro di Statistica della Provincia Autonoma di Trento, 2024), the valley sustains a diverse economic structure that integrates agriculture, manufacturing, and the service sector. The region is characterized by a prevalence of microenterprises, with 41.3% of employees working in businesses with fewer than ten employees (ISPAT - Istituro di Statistica della Provincia Autonoma di Trento, 2024). Economic activity is concentrated primarily in the valley floor and traditionally industrial and artisanal areas, which attract most of the workforce. Despite a historical trend of population movement from higher-altitude settlements to lower elevations, the Trentino mountains remain inhabited, with over 6% of the population residing above 1,000 meters and 16% above 750 meters. This continued habitation has been facilitated by support for mountain agriculture and the development of both summer and winter tourism. Nevertheless, the proportion of residents in the valley floor and lower mountain zones has increased from 55% in 1961 to approximately 65% in 2020 (Bertozzi, 2022).

Fascia altimetrica (m.s.l.m.)	1961		1991		2020	
	Popolazione residente	Percentuale	Popolazione residente	Percentuale	Popolazione residente	Percentuale
Fino a 250	176.003	42,7	223.252	49,6	277.369	51,2
251-500	52.023	12,6	55.425	12,3	71.445	13,2
501-750	95.430	23,2	91.549	20,4	106.269	19,6
751-1.000	56.070	13,6	49.183	10,9	53.482	9,9
oltre 1.000	32.578	7,9	30.443	6,8	33.601	6,2
Totale	412.104	100,0	449.852	100,0	542.166	100,0

Fig. 6. 2 - Population trend across the years in relation with altitude (meters a.s.l.)

Moreover, the population in the valley and surrounding municipalities exhibits high daily mobility in respect to the other parts of the province, with significant numbers commuting for work and education, as is possible to observe in **Error! Reference source not found.**.

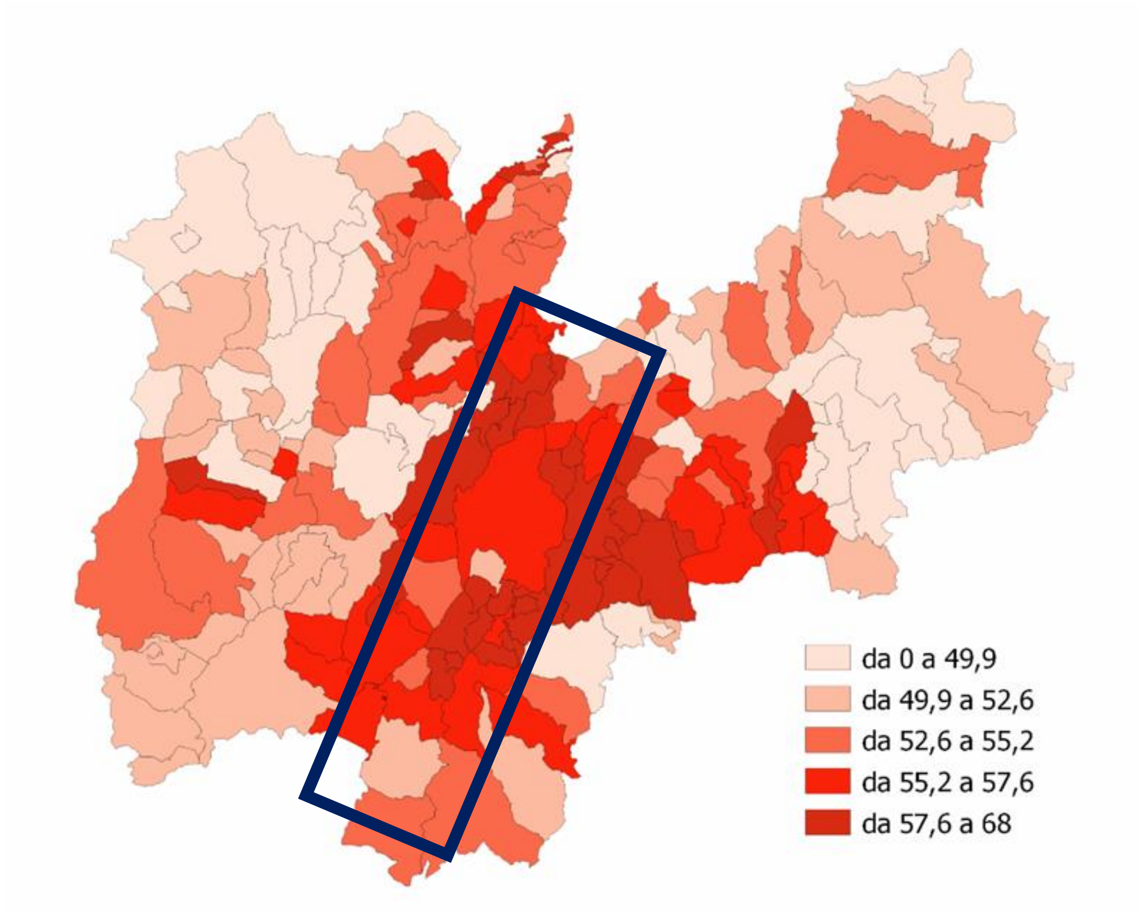

Fig. 6. 3 - Commuting percentage in Trentino

6.2 ABOUT SOFT MOBILITY IN TRENTINO

In Trentino, the establishment of the Ufficio Infrastrutture Ciclopedonali in 2005 marked a significant step towards promoting cycling and pedestrian mobility at the regional level, making it the only office of its kind in Italy. Today, the regional cycling and pedestrian network extends for approximately 440 km, playing a crucial role in sustainable mobility and tourism development. In recent years, more than two million annual cycling passages have been recorded, highlighting the increasing popularity of cycling in the region. The economic impact of cycle tourism in Trentino is estimated at approximately 110 million euros per year (Morghen, 2023), demonstrating its contribution to local economies, particularly in the tourism and hospitality sectors. Additionally, Trentino is home to *E-motion*, one of the largest public bike-sharing systems in Europe, which has been managed by the provincial government since its launch. Between 2014 and 2020, *E-motion* recorded nearly 500,000 bike rentals, facilitating urban travel over a total distance of approximately 1.1 million kilometers. This initiative has yielded significant environmental and economic benefits, preventing the emission of nearly 200,000 kg of carbon dioxide, saving approximately 100,000 liters of gasoline, and generating an estimated cost saving of 650,000 euros in car-equivalent expenses. These figures underscore the role of cycling infrastructure and bike-sharing systems in promoting sustainable mobility, reducing environmental impact, and enhancing the overall quality of life in the region.

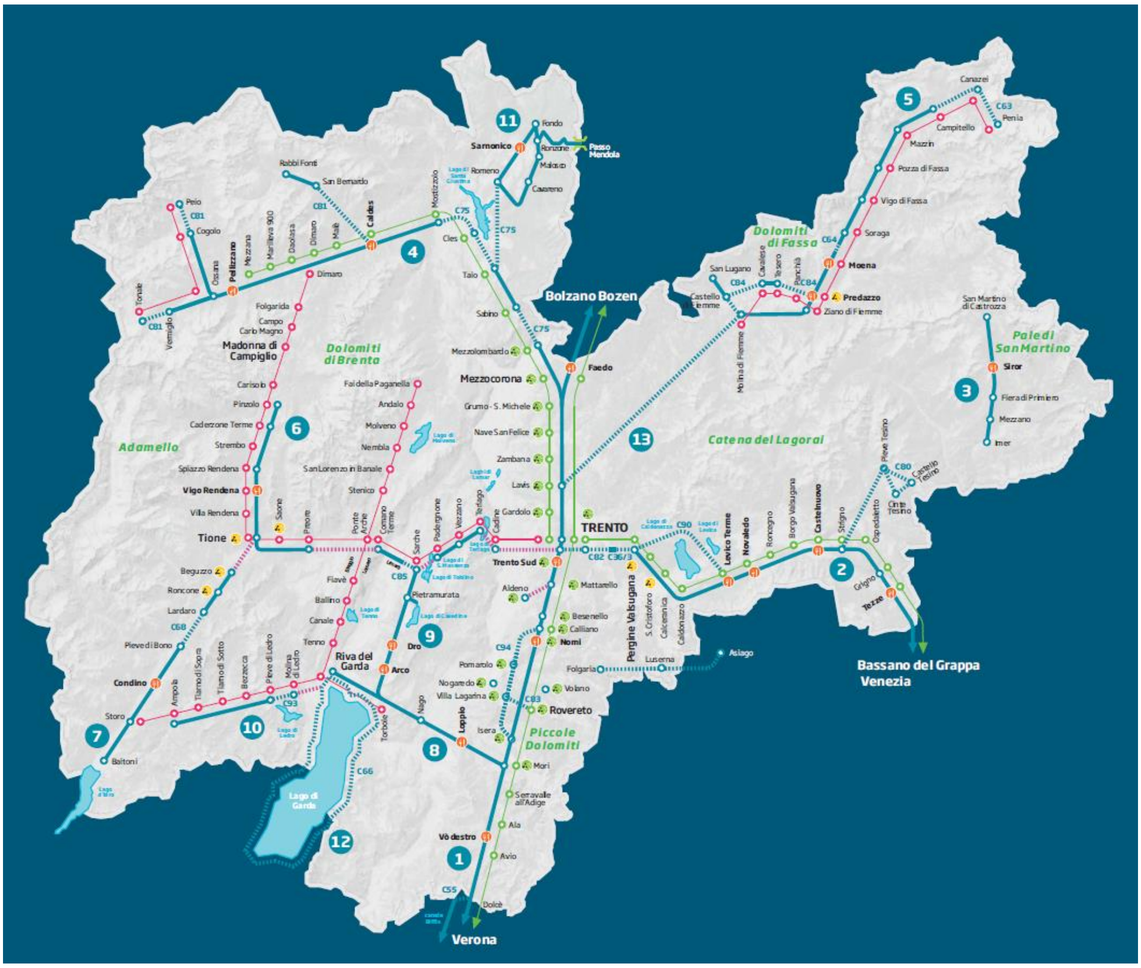

Fig. 6. 4 – Main cycleways in Trentino

The map above is the representation of cycleways that nowadays are active and fruible by cyclists and pedestrians. The net is composed of 13 segments that will be implemented in the next years, according to local politicians:

1. Adige
2. Valsugana

3. Primiero
4. Val di Sole
5. Valli di Fiemme e di Fassa
6. Val Rendena
7. Valle del Chiese
8. Adige – Garda
9. Laghi
10. Val di Ledro
11. Val di Non
12. Garda
13. Val di Cembra

6.3 STUDY AREA

This study will focus on the Adige's cycleway. The "Ciclovia della Valle dell'Adige" (CV-TN01) is a key segment of the EuroVelo 7 "Sun Route", extending 107.1 km through the Trentino province. Predominantly paved (asphalt), this cycling route follows the Adige River, connecting the Bolzano Province to Verona in the Veneto region. Where a dedicated cycling path is unavailable, the route integrates agricultural and secondary roads. Its strategic position and scenic appeal—passing through apple orchards, vineyards, small urban centers, and cultural landmarks—make it a highly frequented route among cycling tourists.

Fig. 6. 5 - "Ciclovia della Valle dell'Adige" from Nauders to Verona

This study focuses on the northern section of the valley, specifically the municipalities of Mezzocorona, Terre d'Adige, San Michele all'Adige, and Lavis. The selection excludes Trento and its southern surroundings, as the provincial capital's influence and proximity to Lake Garda—a major international tourism hotspot—could distort the representation of the local dynamics.

In Fig. 6. 6 – Selected municipalities, the four selected municipalities are highlighted. The red line represents the Adige's cycleway passing through them, following the river. In the last few years, the number of municipalities in this area has decreased: some municipalities merged to decrease costs and improve their management. San Michele all'Adige and Faedo become a unique municipality (San Michele), as well as Zambana, Nave San Rocco and Nave San Felice that are now together in Terre d'Adige.

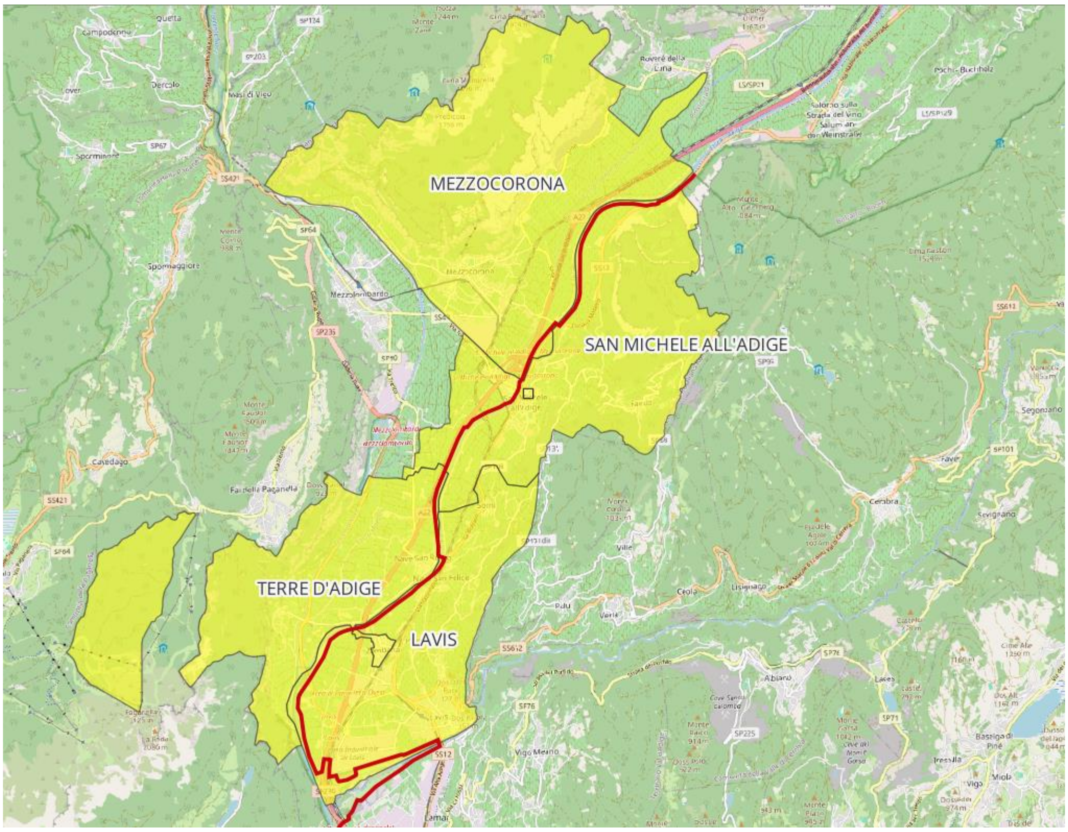

Fig. 6. 6 – Selected municipalities

The selected municipalities, with a combined area of 70 km² and a population of approximately 21,500 (as of 2019), are classified as mountain municipalities under Law 991/1952. However, they are not considered "inner areas" but rather "belt municipalities", as they are situated within 27 minutes of a central hub (Dipartimento per le Politiche di Coesione e per il Sud, 2020).

Table 6. 1 - Classification of the study area's municipalities

Mappa Aree Interne 2020													
PROCOM_T	COD_REG	REGIONE	COD_PROV	SIGLA AUTOM.	PROVINCIA/ CITTA' METROPOLITANA	COMUNE_30sett20	Superficie territoriale (kmq) al 01/01/2019	Popolazione residente censimento 2020	MAPPA AI 2020 COD_AI_2020	MAPPA AI 2020 DES_AI_2020	MAPPA AI 2020 MEDIA tempi di percorrenza (arrotondata alla prima cifra ddcimale)	MAPPA AI 2020 Codice PROCOM_N del COMUNE di destinazione prevalente	MAPPA AI 2020 Denominazione del COMUNE di destinazione prevalente
22103	4	Trentino-Alto	22	TN	Trento	Lavis	12.18	9'119	C	C - Cintura	14.9	22205	Trento
22116	4	Trentino-Alto	22	TN	Trento	Mezzocorona	25.35	5'528	C	C - Cintura	21.8	22205	Trento
22167	4	Trentino-Alto	22	TN	Trento	San Michele all'Adige	16	3'956	C	C - Cintura	20.5	22205	Trento
22251	4	Trentino-Alto	22	TN	Trento	Terre d'Adige	16.58	3'053	C	C - Cintura	16.5	22205	Trento

According to Azienda Per il Turismo Piana Rotaliana Konigsberg (APT PRK) , registered 47,119 tourist arrivals in 2024, marking a 2% increase compared to 2023. Total overnight stays reached 103,022 (+5%), with an average stay of 2.2 days (2.5 days for Italian visitors, 1.7 days for foreign tourists). Domestic tourism was primarily driven by visitors from Lombardy (18.6%), Veneto (17.8%), and Emilia-Romagna (10.2%), while foreign arrivals were dominated by Germany (41.6%), the Netherlands (5.0%), and Austria (4.3%). The data also highlight a significant shift in the labor market, with a notable decline in seasonal workers from Romania (from 11% in 2023 to 4% in 2024), suggesting a gradual shift towards a more tourism-oriented economy. Meanwhile, the share of Albanian seasonal workers remained stable at 3%. (data from APT PRK)

The tourism flow in the region exhibits strong seasonality, with peak increases in May (+20%), October (+13%), and November (+28%). This trend underscores the importance of shoulder-season tourism, which could mitigate the negative effects of seasonal fluctuations while contributing to a more sustainable and evenly distributed tourism economy.

Trough the study area, passes another possible bike trip. The ‘Giro del Vino 50’ has been created by the APT PRK connecting the municipalities of Mezzolombardo, Terre d’Adige, Lavis, San Michele all’Adige, Roverè della Luna e Mezzocorona. It allows tourists to explore this area, highligting panoramic spots, restoration services and other interesting activities; secondary roads, cycleways and other country roads brings to a continuative bike trip through wineries and local restaurants. Contacting the APT is possible to rent E-bikes and a guide to complete this tour.

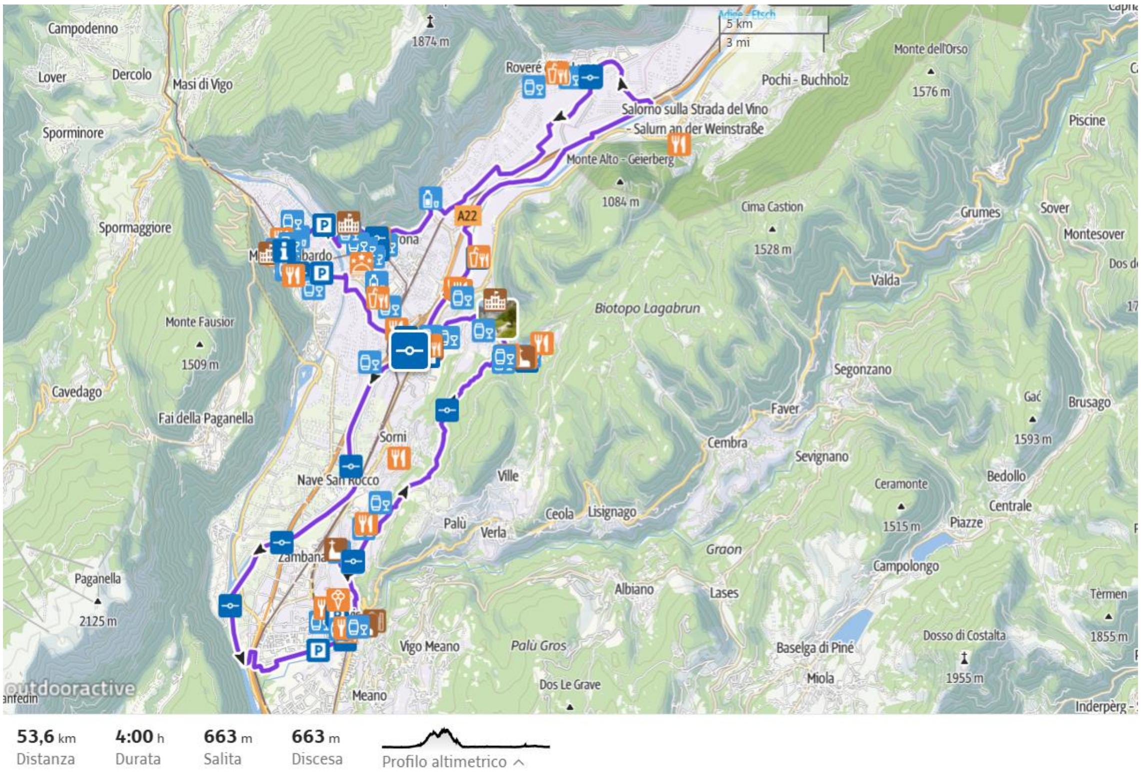

Fig. 6. 7 - Giro del Vino 50

6.4 ENTERPRISES SELECTION

SMEs related to soft mobility services have been found the 4 selected municipalities; the selection considered the following categories:

- Hospitality: B&B, hotels, apartments, garnì …
- Agritourism
- Restoration: bicigrill, bar, pastry shops, gelateria’s, restaurants …
- Bike services: rentals, bike guides, bike shops …

The APT (agency for tourism) Piana Rotaliana Konigsberg (PRK) shared the informative material created for tourists and other enterprises that usually collaborate with; as their territory of interest is slightly broader than the one considered in this study, the contacts were restricted. A total of 32 SMEs has been selected and contacted through email, WhatsApp text, call and going directly to the enterprise.

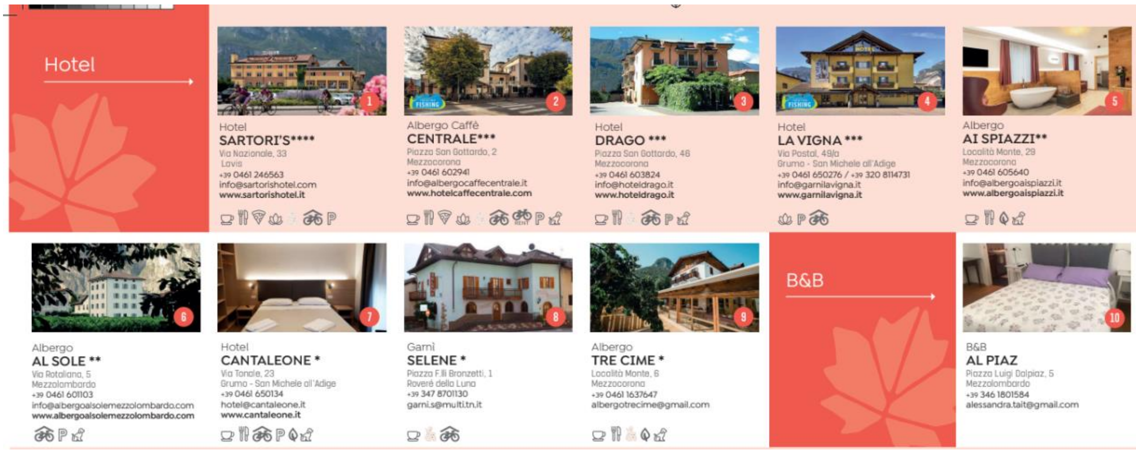

Fig. 6. 8 - Example of hospitality flier (APT PRK)

In Table 6. 2 - Selected SMEs along Ciclovia dell'Adigea list of the selected enterprises is found, with a description of the main service offered and municipalities. The majority of SMEs are related to hospitality: hotels, B&B, room rental and other accommodations.

Table 6. 2 - Selected SMEs along Ciclovia dell'Adige

	Name	Services	Municipaality
1	Hotel La Vigna	Hospitality	San Michele
2	Hotel Ai Spiazzi	Hospitality	Mezzocorona
3	Chalet Paganella	Hospitality	Lavis
4	Die Terrasse	Hospitality	Mezzocorona
5	B&B Holidays	Hospitality	Mezzocorona
6	B&B La Casa di Alina	Hospitality	Mezzocorona
7	B&B La Masera	Hospitality	Mezzocorona
8	B&B Navis	Hospitality	Terre d'Adige
9	B&B Martina	Hospitality	Mezzocorona
10	Pedelmont	Hospitality	Mezzocorona
11	Agritur Maso Tratta	Hospitality	Lavis
12	Agritur Maso Grener	Hospitality	Lavis
13	Agritur l'Isola di Arturo	Hospitality	Terre d'Adige
14	Hotel Centrale	Hospitality	Mezzocorona
15	Agritur Lavanda	Hospitality	Terre d'Adige
16	Agritur Piffer	Hospitality	Lavis
17	Agritur Sole Blu	Hospitality	Mezzocorona
18	Cottage Lavanda e Rosmarino	Hospitality	Lavis
19	Emma Home	Hospitality	San Michele
20	Cest Lavis	Hospitality	Lavis
21	Casa Camilla	Hospitality	San Michele

	Name	Services	Municipaality
22	Hotel alla Nave	Hospitality	Terre d'Adige
23	BikeBreak	Bicigrill	San Michele
24	Summerbike	Bike tours and rental	San Michele
25	Gelateria Serafini	Bar	Lavis
26	Bar Pasticceria Bronzetti	Bar	Lavis
27	Buongiorno Lavis	Bar	Lavis
28	905 Wine bar	Bar	San Michele
28	L'Aquila Nera	Bar	San Michele
30	Bar Franco	Bar	Mezzocorona
31	Hop's Cafè	Bar	Mezzocorona
32	La Stua	Bar	Mezzocorona

6.5 SUBMITTED QUESTIONNAIRE

QUESTIONARIO PER LA RACCOLTA DI INFORMAZIONI AI FINI DELLA REDAZIONE DELLA RELAZIONE SULLA SOSTENIBILITÀ

PER LE PMI DEI SETTORI LEGATI AL TURISMO ATTIVO

SEZIONE GENERALE e di GOVERNANCE

1-DATI AZIENDA	
Anno di riferimento: 2024	
Ragione Sociale	
Indirizzo	
P. IVA	
Cod. ATECO	

2-PRODOTTI E SERVIZI OFFERTI	
1)	
2)	
3)	
4)	
5)	

3-MERCATO		
Paese/i		
B2B !	Commercio all’ingrosso !	Commercio al dettaglio !

4 – PRINCIPALI RELAZIONI COMMERCIALI	
Fornitori	
Clienti	
Canali di distribuzione	
Consumatori	

5-PORTATORI D’INTERESSI: CATEGORIE CHIAVE	
Categoria	**Eventuale attività di coinvolgimento già in atto**
Banche	
Investitori	
Partner commerciali	
Sindacati	
ONG	
..…	

6-RESPONSABILE SOSTENIBILITÀ	
Figura/organo che si occupa specificatamente della sostenibilità	

7-DIVERSITÀ DI GENERE NELL’ORGANO DI GOVERNANCE	
Genere dei lavoratori occupati nella governance aziendale	**Numero di lavoratori occupati nella governance aziendale**
Uomo	
Donna	
Altro	

Non segnalato	

SEZIONE AMBIENTALE

ENERGIA ED EMISSIONI DI GAS A EFFETTO SERRA

8 - AZIONI, RISCHI E OPPORTUNITÀ LEGATE AL MIGLIORAMENTO DELLA PROPRIA EFFICIENZA ENERGETICA E ALLA RIDUZIONE DELLE EMISSIONI DI GAS EFFETTO SERRA	
Descrivere brevemente le azioni, rischi ed opportunità relative all'efficienza energetica e alla riduzione di emissioni di gas effetto serra messi in atto e individuati dall'azienda (Anno di riferimento: 2024).	
Azioni intraprese per migliorare la propria efficienza energetica	
Azioni intraprese per mitigare i cambiamenti climatici	
Rischi finanziari legati alle questioni energetiche	
Rischi finanziari legati ai cambiamenti climatici	
Opportunità legate al miglioramento della propria efficienza energetica	
Opportunità legate alla mitigazione dei cambiamenti climatici	

9.1 - CONSUMO TOTALE DI ENERGIA		
Indicare numericamente il consumo di energia derivante dall'utilizzo di elettricità e combustibili fossili per riscaldamento, luce, ecc. in kWh/anno oppure in altra unità di misura da specificare; ad esempio, i Sm^3 di metano e GPL o i m^3 di legna. Il dato, nel caso dei consumi di gas ed energia elettrica, sono recuperabili in bolletta. La percentuale di energia elettrica derivante da fonti non rinnovabile è anch'essa recuperabile in bolletta (Anno di riferimento: 2024).		
Fonte energetica	**Valore**	**U. di misura**
Combustibili fossili (GPL)		Sm^3
Combustibili fossili (Metano)		Sm^3
Energia elettrica acquistata da fonti non rinnovabili (Gas naturale)		kWh
Energia elettrica acquistata da fonti non rinnovabili (Carbone)		kWh
Energia elettrica acquistata da fonti non rinnovabili (altro)		kWh
Energia elettrica da fonti rinnovabili acquistata		kWh

9.1 - CONSUMO TOTALE DI ENERGIA		
Indicare numericamente il consumo di energia derivante dall'utilizzo di elettricità e combustibili fossili per riscaldamento, luce, ecc. in kWh/anno oppure in altra unità di misura da specificare; ad esempio, i Sm^3 di metano e GPL o i m^3 di legna. Il dato, nel caso dei consumi di gas ed energia elettrica, sono recuperabili in bolletta. La percentuale di energia elettrica derivante da fonti non rinnovabile è anch'essa recuperabile in bolletta (Anno di riferimento: 2024).		
Energia elettrica da fonti rinnovabili autoprodotta (pannelli solari, ecc.)		kWh
Altro (legna e pellet in m^3, ecc.)		-

9.2 – CONSUMO TOTALE DI ENERGIA - Veicoli

Se sono disponibili i dati delle quantità annue di carburante utilizzate per il funzionamento di veicoli aziendali, indicarne di seguito la quantità e la tipologia dello stesso consumato:

……

……..

In alternativa (e se si è in possesso di veicoli elettrici) compilare la sezione sottostante. (Anno di riferimento: 2024).

**Nel caso si sia in possesso di veicoli elettrici indicare solo lo storico di ricariche effettuate esterne all'azienda (colonnine elettriche pubbliche, ecc) in caso contrario (ricarica casalinga) non compilare.*

	Mezzo aziendale			Tipo di alimentazione (Gasolio, Benzina, Ibrida, elettrica, ecc.)	Km percorsi/ anno	*Storico di ricariche effettuate all'auto elettrica esterne all'azienda (in kWh o km)
	Marca	Modello	Anno			
Veicolo 1						
Veicolo 2						
Veicolo 3						
Altro						

10 - EMISSIONI LORDE STIMATE DI GAS SERRA - GHG (tCO2eq)	
Indicare in tCO_2eq le emissioni lorde di gas serra. Se non si conoscessero le voci, lasciare libero il campo (Anno di riferimento: 2024).	
Emissioni di Ambito 1 (da fonti di proprietà o controllate)	
Emissioni di Ambito 2 (derivanti dalla generazione di energia acquistata, cioè dall'energia consumata dall'impresa ma generate da fonti possedute o controllate da un'altra impresa.)	

BIODIVERSITÀ

11-AREE SENSIBILI SOTTO IL PROFILO DELLA BIODIVERSITÀ		
Nel caso la superficie aziendale (di proprietà, in affitto o gestita) ricada all'interno di una delle aree sensibili riportate in tabella, indicare il nome dell'area e la superficie aziendale posizionata nella stessa. (Anno di riferimento: 2024).		
Aree sensibili dal punto di vista della biodiversità	**Nome dell'area sensibile in cui è presente l'azienda**	**Superficie aziendale posizionata all'interno delle aree sensibili (in metri quadri)**
Natura 2000		
Key Biodiversity Areas		
UNESCO		
Altre aree protette:		

12 - USO DEL SUOLO AZIENDALE		
Nella tabella viene richiesto di indicare la tipologia d'uso del suolo aziendale. Si indichi la superficie impermeabilizzata e la superficie permeabile in metri quadri, preferibilmente suddivisa nelle varie categorie riportate (Anno di riferimento: 2024).		
		Superficie di suolo coperto (in m^2)
Superficie aziendali impermeabili all'acqua	Edifici (compreso di portici, tettoie, ecc.)	
	Parcheggi non permeabili (asfalto, cemento, ecc.)	
	Altre superfici impermeabili (cortili, piscine, terrazze, ecc.)	
	SUB TOTALE	
		Superficie di suolo interessato (in m^2)
Superfici aziendali permeabili all'acqua	Aree verdi permeabili (giardino, aiuole, ecc.)	
	Parcheggi permeabili	
	Altre superfici	
	SUB TOTOTALE	

ACQUA

13 - CONSUMI IDRICI
Indicare in tabella i consumi idrici derivanti dall'attività aziendale in un anno. Nel caso di acqua derivante dal reticolo idrico è possibile recuperare il dato in bolletta. Lo scarico rappresenta la

13 - CONSUMI IDRICI	
quota di acqua che ritorna alle reti fognarie; se non vi sono perdite (evaporazioni di processo, irrigazioni, ecc.) o trattenimenti, l'acqua di scarico è pari a quella prelevata (Anno di riferimento: 2024).	
Tipologia di prelievo o recupero idrico	**Quantità di acqua prelevata o recuperata in un anno in m^3**
Prelievo di acqua dalla rete idrica	
Prelievo di acqua da pozzi	
Recupero di acqua piovana	
Totale prelievo/recupero	
Scarico acqua	

USO DELLE RISORSE, ECONOMIA CIRCOLARE E GESTIONE DEI RIFIUTI

14 - USO DELLE RISORSE, ECONOMIA CIRCOLARE E GESTIONE DEI RIFIUTI GUIDA AI PRINCIPI DELL'ECONOMIA CIRCOLARE: PRODUZIONE DI RIFIUTI		
Indicare le quantità annue (in kg) di rifiuti prodotti e la quantità destinata al riciclaggio degli stessi. In caso non si conosca il dato, lasciare libera la sezione ed indicare di seguito la superficie aziendale in m^2 sottoposta alla tassa dei rifiuti (TARI), presente in bolletta, per il calcolo della tariffa (Anno di riferimento: 2024):		
Tipologia rifiuti	**Quantità in kg/anno**	**% di riciclaggio**
Rifiuti non pericolosi*		
Rifiuti pericolosi**		
**Per rifiuti non pericolosi si intendono i rifiuti prodotti ordinariamente dall'azienda (plastica vetro, lattine, ecc).* ***Esempi di rifiuti pericolosi che le piccole imprese possono generare sono le batterie, gli olii usati, i pesticidi, le apparecchiature contenenti mercurio e le lampade fluorescenti.* Se non si conoscono le quantità di rifiuti pericolosi, indicarne le tipologie prodotte dall'azienda		

SEZIONE SOCIALE

FORZA LAVORO - CARATTERISTICHE GENERALI

15-INFORMAZIONI SULLA TIPOLOGIA DI CONTRATTO DEI DIPENDENTI	
Anno di riferimento: 2024	
Tipo di contratto	**Numero di dipendenti**
Tempo determinato	
Tempo indeterminato	
Totale dipendenti	

16-INFORMAZIONI SUL GENERE DEI DIPENDENTI	
Anno di riferimento: 2024	
Genere dei dipendenti presenti in azienda	**Numero di dipendenti**
Uomo	
Donna	
Non segnalato	
Altro	
Totale	

17-PAESE D'ORIGINE DEI DIPENDENTI	
Anno di riferimento: 2024	
Paese d'origine dei dipendenti	**Numero di dipendenti**
Paese A:	
Paese B:	
Paese C:	
Paese D:	
Totale dipendenti	

FORZA LAVORO – SALUTE E SICUREZZA

18-INFORTUNI SUL LAVORO REGISTRABILI, DECESSI DOVUTI A INFORTUNI SUL LAVORO e/o MALATTIE PROFESSIONALI	
Anno di riferimento: 2024	
Numero di infortuni sul lavoro	
Numero di decessi dovuti a malattie professionali	
Numero di decessi dovuti a infortuni sul lavoro	

18-INFORTUNI SUL LAVORO REGISTRABILI, DECESSI DOVUTI A INFORTUNI SUL LAVORO e/o MALATTIE PROFESSIONALI	
Anno di riferimento: 2024	
Numero totale di ore lavorate da tutti i dipendenti	

19-EQUILIBRIO TRA VITA PROFESSIONALE E VITA PRIVATA		
Anno di riferimento: 2024		
Percentuale di dipendenti che hanno diritto a usufruire del congedo per motivi familiari, con una ripartizione per genere	**Genere**	**% avente diritto**
Percentuale di dipendenti che hanno usufruito di congedi per motivi familiari, con una ripartizione per genere	**Genere**	**% avente diritto**

FORZA LAVORO - RETRIBUZIONE, CONTRATTAZIONE COLLETTIVA E FORMAZIONE GUIDA SULLA RETRIBUZIONE: RAPPORTO TRA LIVELLO DI INGRESSO E SALARIO MINIMO

20-RETRIBUZIONE, CONTRATTAZIONE COLLETTIVA E FORMAZIONE		
Anno di riferimento: 2024		
Divario percentuale della retribuzione tra i dipendenti di sesso femminile e maschile		
Percentuale di dipendenti, sul totale, coperti da contratti collettivi di lavoro		
Numero medio di ore di formazione per dipendente, suddivise per genere, legate allo sviluppo di capacità e competenze.	**Genere**	**Numero di dipendenti**
	Uomo	
	Donna	
	Non dichiarato	

20-RETRIBUZIONE, CONTRATTAZIONE COLLETTIVA E FORMAZIONE		
Anno di riferimento: 2024		
	Altro	

CONDANNE E SANZIONI PER CORRUZIONE ATTIVA E PASSIVA

21-NUMERO DI CONDANNE PER CORRUZIONE E IMPORTO DELLE SANZIONI PAGATE NELL'ANNO DI RIFERIMENTO	
Anno di riferimento: 2024	
Numero totale di condanne per corruzione attiva e passiva	
Importo delle sanzioni pagate per condanne di corruzione attiva e passiva	

NUMERO DI APPRENDISTI

22-NUMERO DI APPRENDISTI PRESENTI IN AZIENDA	
Numero di apprendisti nel 2024	

AZIONI E POLITICHE LEGATE ALLE QUESTIONI DI SOTENIBILITÀ

25-QUESTIONI RILEVANTI DI SOSTENIBILITÀ (Appendice A)			
Anno di riferimento: 2024			
In questa sezione il rispondente dovrà indicare le azioni e le politiche messe in atto dall'azienda rispetto alle questioni di sostenibilità che considera rilevanti per la sua azienda (Contenute nell'appendice A). Si lasciano copie della tabella nel caso si selezioni più di una questione. Per ciascuna questione rilevante, compilare la seguente tabella:			
Questione di sostenibilità n°...........	A) Impatto sulle persone o sull'ambiente		
	B) Effetti sulla situazione patrimoniale-finanziaria dell'impresa		
	C) Effetti sulle attività e sulla strategia dell'impresa		
	D) Politiche per prevenire, mitigare, rimediare ad impatti,	*Obiettivo*	
		Ambito di applicazione	
		Portatori di interesse	

<table>
<tr><th colspan="6">25-QUESTIONI RILEVANTI DI SOSTENIBILITÀ (Appendice A)</th></tr>
<tr><th colspan="6">Anno di riferimento: 2024</th></tr>
<tr><td rowspan="6"></td><td rowspan="2">affrontare i rischi finanziari</td><td>Rif. a principi di terzi</td><td colspan="3"></td></tr>
<tr><td>Monitoraggio</td><td colspan="3"></td></tr>
<tr><td rowspan="4">E) Azioni per prevenire, mitigare, rimediare ad impatti, affrontare i rischi finanziari</td><td>Azione</td><td colspan="3"></td></tr>
<tr><td>Ambito di applicazione</td><td colspan="3"></td></tr>
<tr><td>Orizzonte temporale</td><td>Brev!</td><td>Med!</td><td>Lung!</td></tr>
<tr><td>Monitoraggio</td><td colspan="3"></td></tr>
</table>

Appendice A: Elenco delle questioni di sostenibilità

Tema	Questioni di sostenibilità (con relativa numerazione
1. Cambiamenti climatici	1.1-Adattamento ai cambiamenti climatici
	1.2-Mitigazione dei cambiamenti climatici
	1.3-Energia
2. Inquinamento	2.1-Inquinamento dell'aria
	2.2-Inquinamento dell’acqua
	2.3-Inquinamento del suolo
	2.4-Inquinamento di organismi viventi e risorse alimentari
3. Acque e risorse marine	3.1-Consumo idrico
	3.2-Prelievi idrici
	3.3-Scarichi di acque
4. Biodiversità ed ecosistemi	4.1-Cambiamento di uso del suolo
	4.2-Degrado e/o Impermeabilizzazione del suolo
	4.3-Impatti sullo stato delle specie
	4.4-Impatto su Servizi Ecosistemici
	4.5-Specie esotiche invasive
	4.6-Inquinamento
5. Economia circolare	5.1-Rifiuti
6. Forza lavoro propria e Lavoratori nella catena del valore	6.1-Occupazione sicura
	6.2-Orario di lavoro
	6.3-Salari adeguati
	6.4-Dialogo sociale
	6.5-Libertà di associazione
	6.6-Contrattazione collettiva
	6.7-Equilibrio tra vita professionale e vita privata
	6.8-Salute e sicurezza
	6.9-Parità di genere e parità di retribuzione per un lavoro di pari valore
	6.10-Formazione e sviluppo delle competenze
	6.11-Occupazione e inclusione delle persone con disabilità
	6.12-Misure contro la violenza e le molestie sul luogo di lavoro
	6.13-Diversità
	6.14-Lavoro minorile
	6.15-Lavoro forzato
	6.16-Alloggi adeguati
	6.17-Riservatezza
7. Comunità interessate	7.1-Alloggi adeguati
	7.2-Acqua e servizi igienico-sanitari
	7.3-Impatti legati al territorio
	7.4-Impatti legati alla sicurezza
	7.5-Libertà di espressione
	7.6-Libertà di associazione
	7.7-Consenso libero, previo e informato

Tema	Questioni di sostenibilità (con relativa numerazione
	7.8-Autodeterminazione
	7.9-Diritti culturali
8. Consumatori ed utilizzatori finali	8.1-Riservatezza
	8.2-Libertà di espressione
	8.3-Accesso a informazioni (di qualità)
	8.4-Salute e sicurezza
	8.5-Non discriminazione
	8.6-Accesso a prodotti e servizi
	8.7-Pratiche commerciali responsabili
9. Condotta dell'impresa	9.1-Cultura d'impresa
	9.2-Benessere degli animali
	9.3-Gestione dei rapporti con i fornitori, comprese le prassi di pagamento
	9.4-Prevenzione e individuazione della corruzione (attiva e passiva)

7 RESULTS AND DISCUSSION

7.1 PARTICIPATING ENTERPRISES

A total of 5 completed questionnaires have been received. Four enterprises refused the questionnaire because it looked too difficult and they thought that their enterprise did not fit the basic requirements: too small, not many cycle tourists. Many other SMEs didn't reply at all, nor to emails, nor to WhatsApp messages. Some of them agreed to the questionnaire submission but then they did not reply.

The five received questionnaire are not complete; enterprises in this area show a low interest in sustainability issues. Other areas of Trentino, like the area around Garda Lake, have a greater interest in sustainable tourism due to higher numbers of visitors.

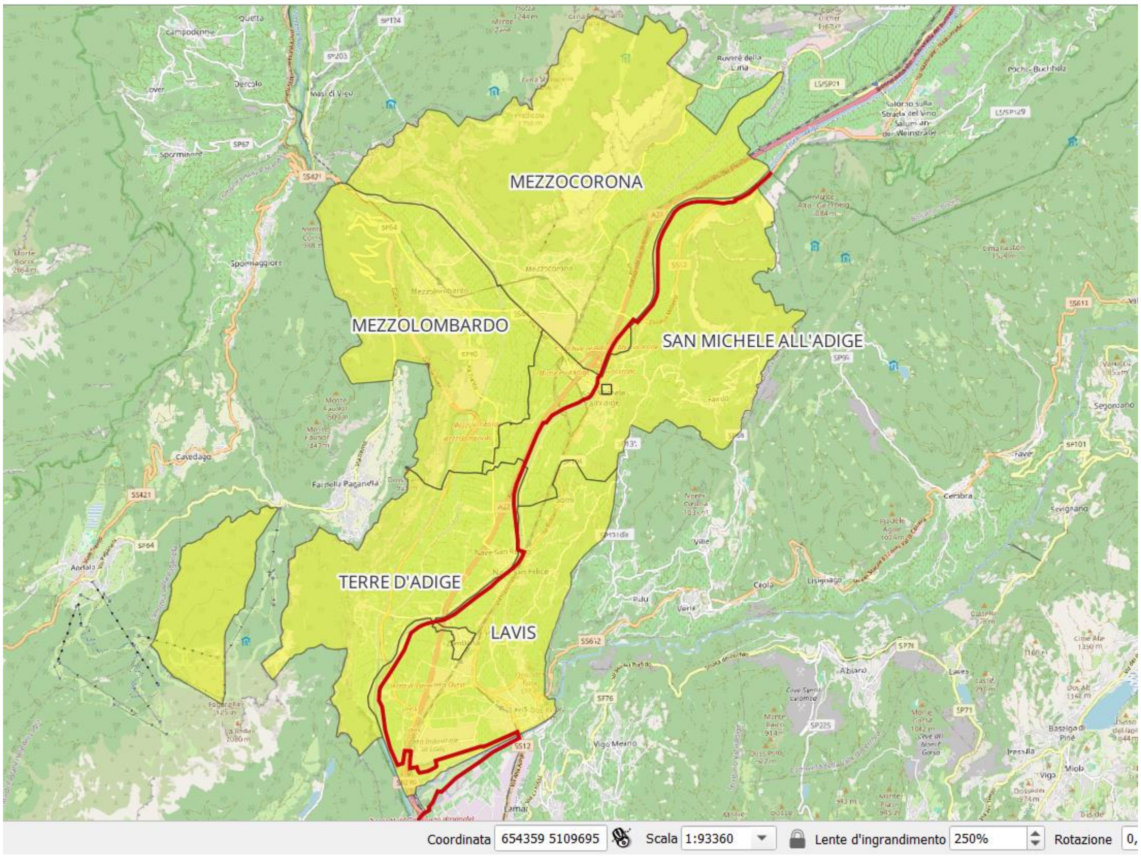

Fig. 7. 1 - Expanded municipalities

Due to the low participation number, it has been decided to expand the study area to another municipality to collect more data: Mezzolombardo. The municipality doesn't touch directly the Adige's cycleway, but it is still very close and well connected to it. The new version of the SMEs list is found in Table 7. 1 - Updated list of SMEs along Ciclovia dell’Adige7.1 .

Table 7. 1 - Updated list of SMEs along Ciclovia dell’Adige

	Name	Services	Municipality
1	Hotel La Vigna	Hospitality	San Michele
2	B&B al Piaz	Hospitality	Mezzolombardo
3	Hotel Ai Spiazzi	Hospitality	Mezzocorona
4	Casa Zeni	Hospitality	San Michele
5	Chalet Paganella	Hospitality	Lavis
6	Die Terrasse	Hospitality	Mezzocorona
7	B&B Holidays	Hospitality	Mezzocorona
8	B&B La Casa di Alina	Hospitality	Mezzocorona
9	B&B La Fosina	Hospitality	Mezzolombardo
10	B&B La Masera	Hospitality	Mezzocorona
11	B&B Navis	Hospitality	Terre d'Adige
12	B&B Martina	Hospitality	Mezzocorona
13	Pedelmont	Hospitality	Mezzocorona
14	Perbacco Relax	Hospitality	Mezzolombardo
15	B&B Val del Rì	Hospitality	Mezzolombardo
16	Agritur Maso Tratta	Agritourism	Lavis
17	Agritur Maso Grener	Agritourism	Lavis
18	Agritur Maso Nello	Agritourism	San Michele
19	Agritur l'Isola di Arturo	Agritourism	Terre d'Adige
20	Hotel Centrale	Hospitality	Mezzocorona
21	Agritur Lavanda	Agritourism	Terre d'Adige
22	Agritur Piffer	Agritourism	Lavis
23	Agritur Sole Blu	Agritourism	Mezzocorona
24	Le 5 Torri	Hospitality	Mezzolombardo
25	Cottage Lavanda e Rosmarino	Hospitality	Lavis
26	Emma Home	Hospitality	San Michele
27	Rooms La Ferrata	Hospitality	Mezzolombardo
28	Cest Lavis	Hospitality	Lavis
29	Casa Camilla	Hospitality	San Michele
30	Hotel alla Nave	Hospitality	Terre d'Adige
31	BikeBreak	Bicigrill	San Michele
32	Summerbike	Bike tours and rental	San Michele
33	Gelateria Serafini	Bar	Lavis

	Name	Services	Municipality
34	Bar Pasticceria Bronzetti	Bar	Lavis
35	Buongiorno Lavis	Bar	Lavis
36	905 Wine bar	Bar	San Michele
37	L'Aquila Nera	Bar	San Michele
38	Bar Franco	Bar	Mezzocorona
39	Hop's Cafè	Bar	Mezzocorona
40	La Stua	Bar	Mezzocorona

A total of seven questionnaires have been collected. The enterprises have filled the questionnaire alone or with the help of the student; they also answered to some other questions to better understand the territorial context.

The involved SMEs offered different services for slow tourists; the main categories of services offered have been summarized in Fig. 7. 2 - Services offered by interviewed SMEs.

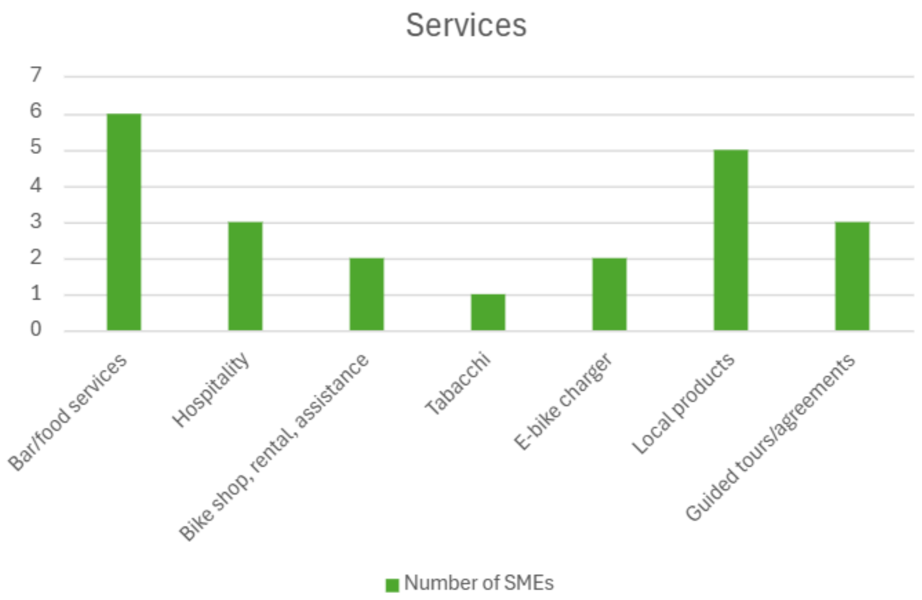

Fig. 7. 2 - Services offered by interviewed SMEs

A brief description of the SMEs involved will follow; this information was collected with brief interviews during the questionnaire submission.

Table 7. 2 - SMEs anagraphics

	Main service	ATECO	Municipality	Owner
Enterprise 1	Bicigrill	56.10.11	San Michele	Male
Enterprise 2	Rooms	55.20.51	San Michele	Female
Enterprise 3	Bike rental and shop	47.64.10	San Michele	Male
Enterprise 4	Bar	56.30.00	Mezzolombardo	Male
Enterprise 5	Bar	56.10.11	San Michele	Male
Enterprise 6	Bar	56.30.00	San Michele	Male
Enterprise 7	Agriturism	55.20.52	San Michele	Female

Most of the SMEs owners is male, as observable in Table 7. 2 - SMEs anagraphics; the average age is around 45 years: only some of them are in their 30ties, this type of enterprises has not a young participation.

During the brief interviews carried out with the owners, some interesting insights of tourism and economy along the Cycleway came out. As seen in Table 7. 3 - Respondent analysis, a good part of clients are residents or students/workers. This area does not rely totally on tourism, unlike many other realities in mountain areas. There is also a strong bond with local products; again, this are both for tourists but also for locals that appreciate and want to valorise their territories.

E4, E5 and E6 are bars: their activity season is well distributed along the year, with a slight impact due to seasonality; this is another signal of only partial reliance on tourism.

Table 7. 3 - Respondent analysis

		E1	E2	E3	E4	E5	E6	E7
Clients	Tourists		X	X	X	X	X	X
	Cycle tourists	X		X	X	X	X	
	Day cyclists	X		X	X	X	X	
	Residents	X		X	X	X	X	X
	Workers/Students		X		X	X	X	
Numbers	Alone	X	X	X	X	X	X	
	Couple	X	X	X	X			X
	Families	X			X	X	X	X
	Groups (<5)	X		X	X	X	X	X

		E1	E2	E3	E4	E5	E6	E7
Activity season	Autumn	II	II	II	II	II	II	I
	Winter (Christmas)	I	I		III	III	III	
	Spring	II	II	II	II	II	II	I
	Summer	III	III	III	III	III	III	III
Sustainability	Solar panel	X						X
	KM0 products	X			X	X	X	X

7.2 QUESTIONNAIRE ANSWERS

Table 7. 4 - Graphical summary of answers

Paragraph	Titols paragraph	Enterprise 1	Enterprise 2	Enterprise 3	Enterprise 4	Enterprise 5	Enterprise 6	Enterprise 7
1	ANAGRAPHICS							
2	PRODUCTS AND SERVICES							
3	MARKET							
4	MAIN COMMERCIAL CONTACTS							
5	STAKEHOLDERS: KEY CATHEGORIES							
6	SUSTAINABILITY MANAGER							
7	GENDER DIVERSITY IN GOVERNANCE BODY							
8	ACTIONS, FINANCIAL RISKS AND OPPORTUNITIES							
9.1	TOTAL ENERGY CONSUMPTION: main structure							
9.2	TOTAL ENERGY CONSUMPTION: vehicols							
10	GROSS GREENHOUSE GASES EMISSIONS (C02 EQ)							
11	BIODIVERSITY SENSITIVE AREAS							
12	SOIL CONSUMPTION							
13	WATER CONSUMPTION							
14	WASTE PRODUCTION							
15	EMPLOYERS CONTRACT INFORMATION							
16	EMPLOYERS GENDER INFORMATION							
17	EMPLOYERS ORIGIN COUNTRY							
18	WORK ACCIDENT AND HOURS OF WORK							
19	WORK LIFE BALANCE							
20	REMUNERATION, COLLECTIVE BARGAINING AND TRAINING							
21	CONVICTIONS AND FINE FOR CORRUPTION AND BRIBERY							
22	APPRENTICE'S NUMBER							
23	SUSTAINABILITY MATTERS							

By summarizing the responses from various businesses in an Excel table, categorized by color (green = complete, yellow = incomplete, red = missing), several critical issues related to completion difficulties were identified, including data unavailability and lack of understanding of the questions.

Specifically:

Question 5 – Stakeholders and key categories: Respondents appeared unfamiliar with the concept and were unable to provide relevant answers.

Question 9.1 – Energy sources: While nearly all businesses identified their type of energy source, they did not provide numerical data. Respondents understood the question and knew where to find the information, but a lack of time and/or motivation prevented them from doing so.

Question 10 – Scope 1 and 2 emissions: None of the respondents were aware of the existence of these emissions, indicating a complete lack of information on the subject.

Question 13 – Water consumption: Similar to Question 9.1, respondents comprehended the question but only specified the type of water consumption due to time constraints and/or lack of motivation.

Question 14 – Waste management: Respondents reported difficulties in retrieving this data, compounded by time constraints and/or lack of motivation.

Question 19 – Contractual financial data: Respondents stated that this information is managed by their accountant, and they were not personally aware of precise details. While the data is available, the same issue of time constraints and/or motivation persists.

Question 20 – Remuneration, collective bargaining and training: similar to Question 19: Respondents indicated that this information falls under the accountant’s responsibilities, and they were not directly informed about the specific figures. Again, the data is accessible, but motivation and time constraints remain barriers.

Question 23 – Sustainability matters: These topics were beyond the respondents' knowledge. In addition to time constraints and/or lack of motivation, there was also difficulty in understanding the subject matter.

Overall, respondents appeared apprehensive about encountering questions they could not answer and feared that their responses might be inadequate. Many businesses declined to participate in the questionnaire, arguing that such data should be requested from their accountant and that the questions were too complex for a small enterprise. A general sense of distrust and apprehension toward unfamiliar topics, particularly sustainability-related issues, was evident. The term "sustainability" itself often prompted hesitation and withdrawal from business owners. However, some respondents demonstrated a proactive attitude and sought to stay informed through networking, training courses, online resources, and best practices.

7.2.1 Environmental section

The answers of the environmental section are often uncomplete, but enterprises could find the data if necessary. Due to this lack of data, the elaboration has been carried out in a qualitative way.

Energy consumption

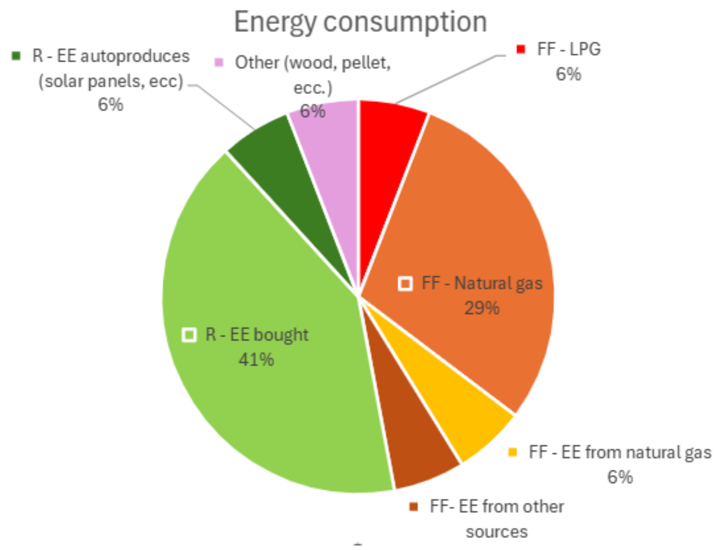

Fig. 7. 3 - Percentage of energy sources used by SMEs

About energy consumption, the primary source of electricity is purchased energy, predominantly generated from renewable sources. Dolomiti Ambiente, one of the main electricity providers in the Trentino region, produces an average of nearly 4,000 GWh of electricity per year, 98% of which comes from certified renewable sources, primarily hydroelectric power.

Natural gas is widely used for both heating and cooking across the various businesses. Among the seven companies surveyed, only one utilizes a wood stove for heating. This business is an agritourism establishment classified as a "historic house" and therefore subject to preservation regulations. Paradoxically, it is also the only facility equipped with solar thermal technology for hot water production.

Many enterprises did not complete this section with numerical data, even do they can be found on the bill. As they reported, finding data takes a lot of time and effort; if needed for some compulsory reporting, the SMEs declared that they would find the correct data.

Soil consumption

In Error! Reference source not found. the SMEs surfaces, divided between permeable and i mpermeable soil. The majority of enterprises are bars and they don't have other soil external to the building, only small terraces. Enterprises 1 and 7 have their own agricultural activities, producing vegetables and with livestock activities and pastures; therefore, their permeability percentage is much higher. This data was easy to find, therefore all the enterprises completed successfully this section.

Table 7. 5 - Surfaces in square meters of different soil consumption

	E1	E2	E3	E4	E5	E6	E7
NP: main building	780	200	120	110	90	80	400
NP: non permeable parkings (asphalt, concrete, ...)	0	50	100	20	70	30	50
NP: other non-permeable surfaces (terraces, swimming pools,...)	0	0	0	0	0	0	0
TOTAL Non Permeable	780	250	220	130	120	110	450
P: green areas (garden, ecc.)	5250	75	0	0	10	0	40000
P: permeable parkings	0	0	0	0	0	0	0
P: other permeable surfaces	0	0	0	0	0	0	0
TOTAL Permeabile	5250	75	0	0	10	0	40000

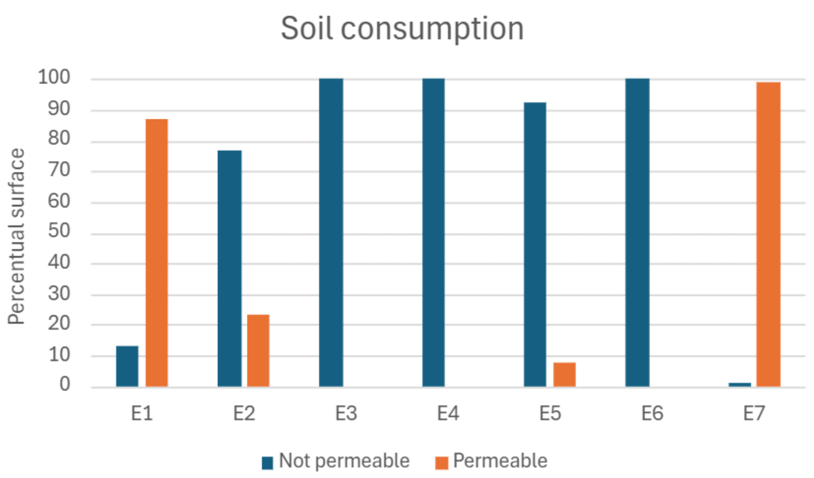

Fig. 7. 4 - Percentage of impermeable and permeable enterprises soil

Water consumption

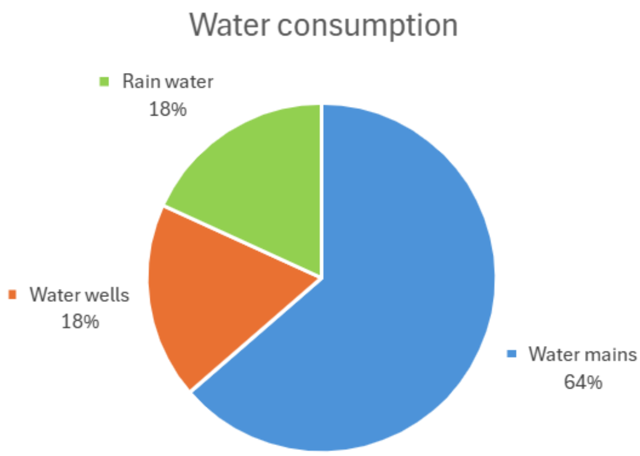

Fig. 7. 5 - Water consumption in SMEs along the cycleway

Most businesses rely on the public water network. In addition, two enterprises utilize rainwater harvesting systems, while another two source water from private wells.

As for the energy section, many enterprises did not complete this section with numerical data, even do they can be found on the bill. As they reported, finding data takes a lot of time and effort; if needed for some compulsory reporting, the SMEs declared that they would find the correct data.

Waste management

The surveyed businesses encountered difficulties in completing this section. Notably, none of them reported the annual quantity of waste produced nor reported the surface area subject to waste calculation. As for the energy section, many enterprises did not complete this section with numerical data, even do they can be found on the bill. As they reported, finding data takes a lot of time and effort; if needed for some compulsory reporting, the SMEs declared that they would find the correct data, at least part of it.

The amount of hazardous waste remains unknown, as six out of eight businesses did not provide this information, stating that they do not generate such waste. However, this claim is questionable, as hazardous waste includes items such as batteries, used cooking oils, and light bulbs.

7.2.2 Social section

Table 7. 6 - Social section answers overview

	SOCIAL MATTERS						
Required information	**Specificities**	**E1**	**E3**	**E4**	**E5**	**E6**	**E7**
Type of contract	Temporary	5	-	8	3	2	1
	Permanent	3	1	8	1	2	2
Employers gender	Male	4	-	8	2	1	2
	Female	4	1	8	2	3	1
	Not declared	-	-		-	-	-
	Others	-	-		-	-	-
Employers country of origin	Country A	7 Italy	1 Italy	14 Italy	3 Italy	4 Italy	4 Italy
	Country B	1 Asia	-	2 Albania	1 Brasile	-	-
Work accidents and hours of work	Number of accidents	0	0	0	0	0	0
	Number of deaths of work-related issues	0	0	0	0	0	0
	Number of death on the workplace	0	0	0	0	0	0
	Total hours worked	10000	1250	22000	7500	7000	3700
Percentage of emloyers who have the right of leave for family reasons	Male	100%	100%	100%	100%	100%	100%
	Female	100%	100%	100%	100%	100%	100%
	Not declared	-		-	-		-
	Other	-		-	-		-
Percentage of employers who utilized leave for family reasons	Male	100%	100%	100%	100%	ND	100%
	Female	100%	100%	100%	100%	ND	100%
	Not declared	-		-	-		-
	Other	-		-	-		-

	SOCIAL MATTERS						
Required information	**Specificities**	**E1**	**E3**	**E4**	**E5**	**E6**	**E7**
Average salary per gender	Male	1800	-	ND	ND	ND	ND
	Female	1800	ND	ND	ND	ND	ND
Average number of training hours per gender	Male	60	-	16	ND	ND	ND
	Female	60	ND	16	ND	ND	ND
	Not declared	-	-	-	-	-	-
	Other	-	-	-	-	-	-
Fines for corruption	Total number of fines	-	-	-	-	-	-
	Total amount paied per fines	-	-	-	-	-	-
Number of apprentice		2	-	-	-	-	-

Six out of seven enterprises have employees and filled the social section of the questionnaire. Some parts of the table have not been completed, due to lack of time but the information could be collected by asking to the enterprise's accountant. An interesting data is about the nationality of the employees, that are mainly Italian with some exceptions. The gender distribution is almost equal. Only one enterprise had some apprentice during the year 2024.

7.2.3 Sustainability matters

None of the enterprises completed the sustainability matters section. They declared that it was too difficult to understand, and they did not have the ability to fill it; they would have asked to their accountant if it was a compulsory reporting.

7.3 COMPARISON WITH NEW VSME

In January 2025, the European Financial Reporting Advisory Group (EFRAG) released the final version of the VSME framework, introducing several modifications compared to the draft published in January 2024. The revised framework significantly simplifies mandatory sustainability reporting requirements by consolidating various disclosure elements into two modules instead of the previous three:

- Basic Module:

This module consists of 11 reporting obligations, primarily quantitative, and remains largely unchanged from the earlier draft. One key revision pertains to requirement B2, which addresses business practices, policies, and future sustainability initiatives. The updated version includes a simplified reporting table where companies can indicate relevant sustainability issues and their implementation status, following the structure outlined in paragraph 78 of the VSME standard. Businesses can also refer to Appendix B of the document to identify relevant sustainability topics.

Table 7. 7 - Sustainability matters new VSME

	Do you have existing sustainability practices/ policies/ future initiatives that address any of the following sustainability issues? [YES/NO]	Are they publicly available? [YES/NO]	Do the policies have any targets? [YES/NO]
Sustainability matter 1			
Sustainability matter 2			
Sustainability matter …			

- Comprehensive Module:

This module consolidates the Narrative-PAT module and the Commercial Partners module from the previous draft. It significantly streamlines data entry by introducing user-friendly reporting tables, which allow businesses to document sustainability information in a more accessible manner. Requirement C2 mandates the description of practices, policies, and future sustainability initiatives, linking directly to requirement B2 from the Basic Module. This integration ensures a more coherent approach to sustainability reporting.

Table 7. 8 - Relevant sustainability matters new VSME

	If you answered YES to existing practices/ policies/ future initiatives in disclosure B2, please briefly describe them along with their consequent actions. (In case the practice/ policy/ future initiative covers suppliers or clients, the undertaking shall mention it)	If you answered YES to future initiatives/ targets in disclosure B2, please specify them.	You may indicate the highest senior level in the undertaking accountable for implementing them [if any]
Relevant sustainability matter 1			
Relevant sustainability matter 2			
Relevant sustainability matter …			

Beyond these structural changes, the revised framework maintains the core informational components while enhancing the usability and quality of supporting documentation (VSME-Standard, 2024). Table 3 provides an overview of the new standard's composition and a comparison with the earlier VSME draft used in this study's questionnaire development.

Table 7. 9 - Comparison between VSME Exposure Draft and VSME Official

<table>
<tr><th></th><th>VSME ED</th><th>VSME OFFICIAL</th></tr>
<tr><td>Basis for preparation</td><td>Disclosure B1</td><td>Disclosure B1</td></tr>
<tr><td rowspan="2">Practices, policies and future initiatives for transitioning towards a more sustainable economy</td><td rowspan="2">Disclosure B2</td><td>Disclosure B2</td></tr>
<tr><td>C2</td></tr>
</table>

	VSME ED	VSME OFFICIAL
Energy and greenhouse gas emissions	B3	B3
Pollution of air, water and soil	B4	B4
Biodiversity	B5	B5
Water	B6	B6
Resource use, circular economy and waste management	B7	B7
Workforce - general charateristics	B8	B8
Workforce - Health and safety	B9	B9
Workforce - Remuneration collective bargaining and training	B10	B10
Workers in value chain, communities involved and final consumers	B11	C7
Convinctions and fines for corruption and birbery	B12	B11
Strategy: business model and sustainability iniziatives	N1	C1
Relevant sustainability matters	N2	
Management of sustainability matters	N3	B2 C2
Main stakeholders (portatori di interesse)	N4	

	VSME ED	VSME OFFICIAL
Governance: responsability in sustainability	N5	
Revenues from certain sectors	BP1	C8
Gender diversity ratio in governance body	BP2	C9
Targets of GHG emissions reduction	BP3	C3
Transition plan and mitigation for climate change	BP4	C3
Phisical risks of climate change	BP5	C4
Dangerous/radioactive waste index	BP6	B7
International instruments allineation	BP7	
Processes to monitor the conformity and to face violations	BP8	
violation of OCSE indication	BP9	
Work-life balance	BP10	
Number of apprentice	BP11	

In conclusion, the revisions introduced by EFRAG effectively address the challenges identified in the January 2024 draft. By simplifying sustainability principles and providing improved guidance, the final framework enables businesses of all sizes to compile their sustainability reports more effectively, with clear instructions to resolve potential ambiguities.

7.4 DISCUSSION AND CRITICISMS

Out of 40 surveyed companies, only seven responses were obtained, representing a response rate of just 17.5%. This low participation suggests a general lack of interest in sustainability issues among tourism-sector businesses. According to members of the Accademia d'Impresa in Trento, a division of the Camera di Commercio, local enterprises exhibit significant skepticism towards sustainability initiatives and reporting practices. Over the past few years, the Accademia d'Impresa has organized training sessions and informational courses on ESG topics and sustainability certification. However, participation has been minimal, with attendees primarily consisting of accountants rather than business owners.

Among the companies that participated in the study, three demonstrated a greater willingness to collaborate and integrate sustainable practices into their daily operations. Conversely, the remaining firms perceive sustainability as an overused and largely meaningless concept.

Another significant challenge encountered was persuading business owners that completing the sustainability questionnaire was not an insurmountable task. Many entrepreneurs initially did not understand the explanatory notes and assumed they lacked the necessary knowledge to respond, believing they needed assistance from an accountant. However, when completing the questionnaire togheter, they realized that much of the required information was readily available. Additionally, they understood that an annual assessment could help them optimize resource consumption and improve both environmental performance and employee well-being. Documenting these aspects in a structured manner brings to higher awareness of ongoing and future actions.

The companies appreciated the assistance provided during the questionnaire process. Some expressed curiosity and interest in further exploring sustainability-related topics, provided they were presented in an accessible and straightforward manner. Often, the apparent lack of engagement stems from a fear of not knowing how to approach sustainability or from the absence of external incentives.

A further barrier to sustainability adoption is the perception among SMEs that such initiatives entail significant financial costs and long implementation timelines. As a result, businesses tend to limit their sustainability efforts to basic actions, such as waste separation, which are already mandated by government regulations.

Moreover, the difficulty in accessing European funding and grant opportunities restricts companies from advancing their sustainability initiatives. The excessive time investment and high costs associated with securing these funds present substantial obstacles, leading many businesses to seek alternative solutions.

In some cases, sustainability efforts have been driven by external factors, particularly suppliers. For instance, renewable electricity sources have gained popularity, partly due to suppliers' commitment to sustainability and partly because they represent a financially viable alternative.

In 2022, the Camera di Commercio of Trento introduced a sustainability self-assessment questionnaire (UNI PDR 134:2022) for SMEs. However, participation remained extremely low, indicating persistent reluctance towards voluntary reporting mechanisms.

An interesting point is regarding the new VSME: the modified reporting system has changed the critical aspects also found in this research; in particular, the sustainability matter’s section became easier to understand and complete. Some ambiguous parts of the draft have been removed, creating a more accessible reporting system.

In general terms, to increase reporting engagement, a more compelling approach is required. If traditional voluntary reporting methods prove ineffective, alternative solutions that provide visible and tangible benefits for business owners should be explored. The development of top-down incentives, combined with bottom-up initiatives, could prove highly effective in fostering sustainability adoption among SMEs. Business innovations often spread through peer influence, with entrepreneurs placing greater trust in the experiences of their counterparts rather than externally imposed regulations, which are frequently misinterpreted.

Finally, the expansion of the sustainable tourism sector could generate new employment opportunities, warranting further investigation into potential economic and social benefits.

8 CONCLUSIONS

This thesis aimed to analyse the sustainability practices of Small and Medium-Sized Enterprises (SMEs) operating in the hospitality sector of the Adige Valley in Trentino, with particular attention to services offered to cycling tourism.

In alignment with European regulations on sustainability—such as the Corporate Sustainability Reporting Directive (CSRD) and the voluntary sustainability assessment system proposed for SMEs (VSME)—this study developed a questionnaire designed to evaluate the sustainability practices of businesses concerning Environmental, Social, and Governance (ESG) criteria. The objective was to assess both the current state of sustainability adoption and the companies' readiness to comply with these requirements.

Additionally, the questionnaire underwent a validation process to assess its effectiveness and identify potential challenges arising from regulatory aspects (CSRD and VSME) that might be difficult or unsuitable for the target businesses. To this end, an analysis of the VSME framework was conducted, excluding elements deemed inapplicable to the local business context. The questionnaire was then compared to the mandatory CSRD framework to identify thematic overlaps that could hypothetically enable SMEs to meet the European Union's mandatory sustainability requirements.

The analysis of the results revealed that, while businesses were generally able to respond effectively to environmental and social sustainability aspects, significant challenges emerged in governance-related sustainability management. The completion of the questionnaire highlighted several critical issues:

- Stakeholder Engagement (Section 5): None of the businesses provided responses regarding stakeholder engagement, likely due to misunderstandings and a lack of relevant initiatives. This requirement is typically more relevant to larger corporations that engage with non-governmental organizations (NGOs), trade unions, and investors. However, local SMEs could have included relationships with banks for sustainability-related loans or support for local producers as part of their stakeholder engagement strategies. A possible solution could involve identifying specific sustainability-related partnerships (e.g., bank loans for energy efficiency projects) and incorporating them into reporting frameworks.

- Greenhouse Gas Emissions (Section 10): The surveyed businesses were unable to calculate their equivalent CO_2 emissions. While these emissions are derived from the consumption of non-renewable energy sources, the calculation process is perceived as complex and of little immediate value. The methodology for these calculations is outlined in IPCC guidelines referenced in the VSME framework. A potential solution could be the implementation of an automated spreadsheet (e.g., an Excel tool) that allows businesses to input energy consumption data and automatically calculate equivalent CO_2 emissions.
- Sustainability Matters (Section 23): This section was found to be overly complex. Although respondents attempted to complete nine fields, their understanding of and engagement with ESG-related topics were minimal. The informal approach to sustainability remains widespread, leading to a lack of structured information and an absence of medium- to long-term planning.

Overall, the analysis suggests that SMEs in the hospitality sector do not yet perceive ESG sustainability as a key factor for competitiveness. The lack of structured sustainability management and the limited interest in certain environmental and social aspects represent critical weaknesses that businesses need to address.

Another significant challenge lies in the cultural attitudes of business owners. As previously noted, SMEs tend to view sustainable tourism and cycling tourism as marginal aspects of regional development, regardless of industry trends and market data. In most cases, cycling-related services are limited to the provision of simple bike racks, reflecting an overall reluctance to integrate sustainability into business operations. However, a few pioneering businesses in the region have begun offering tailored services to cycling tourists, recognizing the sector’s growth potential.

This study serves as a foundation for further research on sustainability in SMEs within the tourism sector. Future studies could explore the following areas:

Expanding the Sample Size: Extending the research to a larger number of businesses would yield more representative results and provide deeper insights into industry dynamics.

Developing Practical Support Tools: Creating tools such as spreadsheets and other resources could facilitate SMEs' sustainability reporting processes, making the disclosure of sustainability information more accessible and straightforward.

By addressing these areas, future research could contribute to a more comprehensive understanding of sustainability adoption in SMEs and support the development of practical solutions to enhance sustainability in the tourism industry.

9 REFERENCES

ActiveItaly. (2021, May 29). Turismo Attivo e Sostenibile: cos'è e come praticarlo. *ActivItaly*.

Alpine Convention. (2019). *Climate-neutral and Climate-resilient Alps 2050.* Alpine Convention.

Anna, L. R. (2010). Soft Mobility and Urban Transformation. *TeMA - Journal of Land Use, Mobility and Environment, 2*.

Bertozzi, V. (2022). *Caratteristiche ed evoluzione della popolazione in Trentino.* ISPAT - Istituto di Statistica della Provincia Autonoma di Trento.

Bike Italia. (2024, June 26). Ciclovie Turistiche in Italia: gravi ritardi nei lavori (e alcune costano troppo). *Bike Italia*.

Deloitte. (2021). *Da Non-Financial Reporting a Corporate Sustainability Reporting Directive: le novità introdotte per la proposta di CSRD della Commissione Europea.* Deloitte.

Dipartimento per le Politiche di Coesione e per il Sud. (2020). *Aggioramenteo 2020 mappa Aree Interne.* Dipartimento per le Politiche di Coesione e per il Sud.

EFRAG. (2023). *EUROPEAN SUSTAINABILITY REPORTING STANDARDS (ESRS).* European Commission.

European Commission. (2023). COMMISSION DELEGATED REGULATION (EU) 2023/2772. *Official Journal of the European Union*.

European Commission. (2024). *Exposure Draft VOLUNTARY STANDARD FOR NON-LISTED SMALL- AND MEDIUM-SIZED UNDERTAKINGS.* European Union.

(2024). *European Declaration on cycling.* European Commission.

European Parliament and Council. (2013). DIRECTIVE 2013/34/EU. *Official Journal of the European Union*.

European Parliament and Council. (2014). DIRECTIVE 2014/95/EU. *Official Journal of the European Union*.

European Parliament and Council. (2019). REGULATION (EU) 2019/2088. *Official Journal of the European Union*.

European Parliament and Council. (2020). REGULATION (EU) 2020/852. *Official Journal of the European Union*.

European Parliament and Council. (2022). DIRECTIVE (EU) 2022/2464. *Official Journal of the European Union*.

European Parliament and Council. (2024). DIRECTIVE (EU) 2024/1760 . *Official Journal of Europen Union*.

(2013). *European Tourism Indicator System Toolkit.* European Commission.

Eurovelo, Adventure Travel, Cycle summit, European Cyclist Federation. (2024). *State of the Cycling Tour Operators Industry.* EUROVELO.

Ifis. (2023). *Ecosistema della bicicletta.* Ifis.

Isnart and Legambiente. (2024). *Viaggiare con la bici.* Bikenomist.

ISPAT - Istituro di Statistica della Provincia Autonoma di Trento. (2024). *Il movimento turistico in Trentino - 2023.* ISPAT.

Legambiente Turismo. (2020). *Slow Tourism: cos'è il turismo lento?* Legambiente.

Lisa Rohrer, P. A. (2025). *Debunking cycling myths: Realities and recommendations for Nordic planning and policy.* Nordregio.

Mobilità dolce. (2018). Enciclopedia Treccani.

Morghen, S. D. (2023). *Speciale Ciclovie Trentine.* Terratrentina.

N.-W., K., C.-Y., L., P.-H., C., & Y.-W, C. (2012). An Inventory of the Energy Use and Carbon Dioxide Emissions from Island Tourism Based on a Life Cycle Assessment Approach. *Environmental Progress and Sustainable Energy*.

Prihayati, Y. &. (2021). Developing green tourism to create the sustainable landscape: evidence from Community based Coffee Tourism. *IOP Conf. Ser.: Earth Environ. Sci. .*

RoccaR., L. (2010). Soft Mobility and Urban Transformation. *Journal of Land Use, Mobility and Environment, 2.*

Securities and Exchange Board of India. (2023). *Business responsibility and sustainability reporting by listed entities.* Securities and Exchange Board of India.

Sezione centrale di controllo sulla gestione delle amministrazioni dello Stato. (2024). *Delibera n. 62/2024/G.* Corte dei Conti.

Steering committee - Alpine convention. (2021). *Measuring the tourism sustainability of mountain destination in the Alps.* Alpine convention.

Steiger, R. K. (2022). Impacts of climate change on mountain tourism: a review. *Journal of Sustainable Tourism*.

(2024). *Sustainability reporting rates of firms worldwide from 2011 to 2024, by region.* Statista Research Department.

Swissinfo. (n.d.). *Swissinfo.*

Ufficio turismo WWF. (2001). *ALPI, TURISMO & AMBIENTE: alla ricerca di un equilibrio.* WWF.

UN Tourism Market Intelligence, Policies and Competitiveness Department. (2024). *International Tourism Highlights.* UNWTO.

UNI - Ente italiano di normazione. (2022). *Sustainability rating for minor dimension companies - Self assessment model.* Provincia Autonoma di Trento.

Varotto, M. (2020). *Montagne di mezzo - una nuova geografia.* Piccola Biblioteca Einaudi.

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