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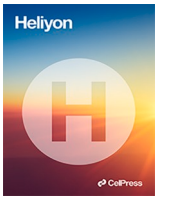

Environmentally sustainable: How are the practices in the organic food tourist route?

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ABSTRACT

This study analyzes Environmentally Sustainable Practices (ESPs) in the Organic Food Tourist Route (OFTR) in South Brazil. Data collection included interviews with open and closed questions about ESPs and the Barometer of Tourism Sustainability (BTS) tool. Eight owners or managers of OFTR's enterprises answered questions online or personally. Content analysis and descriptive statistics were used. Results indicated that tourism enterprises adopt ESPs according to each reality since some are dedicated to producing and commercializing organic products, while others are dedicated to lodging and guided tours. Managers realize the importance of adopting ESPs, enabling a decrease in expenses and the supply of organic products. Since tourists are concerned and careful with the environment nowadays, sustainability must be considered, becoming a differential. The enterprises develop ESPs, which makes the route potentially sustainable, following the standards established by the BTS. In order to achieve the "sustainable" level, the enterprises on the route need to improve their performance in many items whose results were less sustainable. From a theoretical perspective, this study contributed to understanding how ESPs were developed in enterprises and how they contribute to tourism development. The understanding of tourist routes expanded with an emphasis on sustainability, the environmental dimension, the ESPs, and organic agriculture. The BTS enabled the assessment of the sustainability of OFTR's enterprises.

1. Introduction

Environmental awareness and sustainable development have been increasing in the tourism sector due to the complexity of environmental issues, concern for the care of the environment for future generations, and pressures from the sector itself [1–3]. This situation is amplified by climate change and, in particular, by the awareness of the impacts of mass tourism activity, which in some cases leads to the overtourism phenomenon, a combination of overcrowding, lack of infrastructure, poor tourism management, and

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social media influence [4–7].

Academic and tourism practitioners have focused on the relationship between the tourism industry, quality of life, and environmental health to "meet the needs of the present without compromising the well-being of future generations" [8]. It is a controversial topic in tourism, which generally tries to strike a balance between all stakeholders' economic, environmental, and social needs [9]. This discussion has been considered vague, and many regarded it as overly utopian [10].

It involves a process that seeks improvements for tourism enterprise managers to develop alternative and sustainable behaviors as a solution [11,12], so-called Environmentally Sustainable Practices (ESPs), because "sustainability knowledge and awareness are key in adopting sustainable solutions" [13]. Some of the ESPs benefits include the conservation of natural resources and ecosystems, restoration of wildlife habitats [14–16], preservation of landscapes [17,18], increasing residents' awareness of the importance of preserving natural resources [16], protecting the environment, reducing pollutants, and conserving air and water [17,18].

Proposing mechanisms to reconcile tourism activities with the environment is important [19]. Once each organization knows its production impact, it must choose the environmental practices that best suit its needs [20]. The implementation is positively related to the concern with the environmental impacts and improving the enterprise's image before the users and other stakeholders [21]. Some solutions can be simple and low-cost for businesses, cutting their greenhouse gas emissions, and reducing water, energy, and other waste consumption, resulting in lower costs [22]. Crotts et al. [23] proposed a performance indicators framework to emphasize these critical metrics and provide baseline information for managers to improve upon strategic sustainability efforts in the near- and long-term more holistically. This theme makes sense when looking at the Brazilian tourism context, characterized by diverse attractions, especially when exploring its rich natural resources [24].

In the building sustainable development context, the United Nations 2030, through the Agenda for Sustainable Development, has proposed several initiatives. More recently, it proposed the Sustainable Development Goals (SDGs), which represent a global call to action to end poverty, protect the environment and climate, and ensure that people everywhere can enjoy peace and prosperity [25]. In order to achieve the 17 SDGs, there are social, environmental, and economic responsibilities for the public, private, and third sectors. Tourism comprises adopting ESP, contributing to a "shared blueprint for peace and prosperity for people and the planet, now and into the future" [25].

Considering the environmental sustainability and the importance of adopting ESPs in tourism, this study aims to analyze Environmentally Sustainable Practices in the Organic Food Tourist Route (OFTR) in South Brazil. The tourist routes are continuous and delimited itineraries whose identity is reinforced or attributed through tourist use [26]. The OFTR was founded in 2016. It is a pioneer in Brazil for exploring regional food production, industrialization, commercialization, and consumption as its attractions. The OFTR proposes to value the lifestyle that combines food with health and environmental, social, and cultural sustainability through the experience of visiting farms with certified agroecological and artisanal production. These values align with a world movement for health and new lifestyles, as well as tourists' green consumption and preferences in identifying and choosing destinations with good practices [27].

There are different tools, methodologies, and systems to assess sustainability in different areas, such as the Ecological Footprint Method (EFM), the Dashboard of Sustainability Method, the Sustainability Barometer (SB), the Environmental Sustainability Index (ESI), the Emergency Performance Index, and the Bellagio STAMP [28]. The adoption of the Sustainability Barometer by Prescott-Allen [29] is indicated for meeting the demand for measurement, easy use, and didactics that allows the understanding of the subject, generating interest in actions that seek sustainable development.

Prescott-Allen [29] presents the sustainability barometer using the criteria and indicators (C&I) methodology, setting a new standard regarding sustainability assessment. The use of criteria and indicators is a direct approach to operational evaluation. It comprises different aspects of sustainability, both quantitative and qualitative, and can be used in tourism initiatives aimed at sustainability [30].

We highlight instruments adapted by segments for the analysis of sustainability, such as: Indicators of Sustainability for Tourism Destinations (UNWTO); Barometer of Tourism Sustainability (BTS); Tourism Ecological Footprint Method (TEFM); AMOEBA of Tourism Sustainability Indicators (ATSI); and Tourism Areas Life Cycle (TALC) [31]. We consider the Barometer of Tourism Sustainability (BTS) tool to be the best choice to measure sustainability indicators through human and ecosystem dimensions.

BTS [32] adapts the Barometer of Sustainability to ESP, presenting itself as a tool that can measure sustainability indicators and provide information for decision-making. In the BTS development, we adopted neither the Brundtland Report definitions nor the economic dimension since we understood these would already be indirectly represented in people's life quality [32]. Instead, the tool includes the components of the ecosystem and people's life quality since only natural capital maintenance can guarantee the next generations' future [32]. Therefore, it comprises the potential to analyze such dimensions, Ko [32,33] recommended the BTS as the best option to assess the sustainability of tourism destinations because the barometer of sustainability is a tool for understanding and evaluating the system communications and human-ecosystem interactions using several indicators and criteria [34]. Previous studies applied the BTS model: Zhang et al. [35] represented the comprehensive level of protected areas with tourism sustainability and found more social than environmental indicators; Sanches and Schmidt [36] found environmental sustainability initiatives focused on rural tourism; Other researchers evaluated the sustainability of community-based tourism [37], level of sustainability based on perceptions of tourism in the stakeholders' perspective [38,39] assessed the implementation of community-based ecotourism (CBE) development and compared the sustainability of ecotourism development between two communities.

In this study, we have a twofold purpose. First, contribute to a discussion focused on the first certified organic food tourist route in a region in South Brazil. Then, positively contribute with information and insights for enterprises' decision-making based on sustainability indicators, offering a quality of life in an environmentally conscious way for communities. The study contributes to promoting the sustainable development of tourist routes as a part of the tourism industry with responsibilities in the Agenda of the United Nations

2030. Enterprises involved in a tourist route can use a sustainability perspective to become more competitive and attract a good tourist flow because routes efficiently support the economic development of less-developed regions through cooperation [40]. This study includes an introduction, environmentally sustainable practices in tourism (ESP), method, results and discussion, and final considerations and implications.

2. Environmentally sustainable practices in tourism (ESPs)

Tourism is important in increasing income and generating jobs, adopting new work practices, improving business skills, strengthening identity and community cohesion, and preserving nature [41]. Regarding Sustainable Development, the contribution can occur through practices that preserve the environment and the educational effect on the tourist, who has the chance to have contact with nature and with tourist activities that show the need and the benefits of its preservation.

The sustainability concept occupies more and more space on the agenda [42] because, in order to live sustainably, it is necessary to ensure that natural resources are used in a way that allows their regeneration. Environmentally sustainable practices (ESPs) are an alternative to environmental conservation [43], especially in tourism. Although the term "sustainable tourism" was initially used in the late 1980s when researchers began to consider the implications of the Brundtland Report, the concept was only used frequently in the early 1990s. Furthermore, it was also incorporated into the field of study of tourism, which, in this case, expands the discussion of ESPs.

Adopting ESPs involves the act and process of renewing resources, reducing pollution, and eliminating harmful processes to the environment [13]. The preservation of the environment where the enterprise is located generally impacts its development, for example, the production and marketing of organic food [44,45], which is the focus of OFTR. Public policies such as those focused on solid waste are important instruments that enable advances in facing the main environmental, social, and economic problems arising from inadequate waste management [46]. They can contribute to best practices in tourism enterprises.

It is worth noting that the protection of natural ecosystems ensures the protection of natural resources in protected areas of tourist destinations whose intensity of use must be controlled [47]. Greater care must be given to scarce resources, such as water, essential for the survival of living beings and a production factor for consumer goods.

Another aspect that must be considered is energy consumption. Improving the energy efficiency of production systems is fundamental to sustainable development because it adds social, environmental, and competitive gains, prompting medium- and long-term governmental initiatives in all sectors [48]. Energy savings with reduced waste guarantees the saving of financial resources aimed at increasing the scale of energy production and its import [49]. Solar and wind energy stand out among the environmental energy technologies most likely to contribute to climate change mitigation [50]. They also help develop tourism enterprises by reducing energy costs [49].

Finally, the human impact on the natural environment resulting from the establishment of drivers and infrastructure to meet the tourists' needs must be considered. As a result, natural areas lose some of their native landscape and may lose their attractiveness [51]. The preservation of the environment where the enterprise is located is allied to its development. The production and sale of organic food are some examples [44,45]. Enterprises can contribute to environmental development and attract tourists inclined toward such attractions [52,53].

2.1. Tourism sustainability

Environmentally sustainable tourism "emerges as a remedy to meet the needs of the different stakeholders, minimizing the negative impacts of tourism while seeking to optimize the benefits to the destination" [54]. For an environmentally sustainable tourism enterprise to be investigated, context analysis is carried out according to local demands, with managers responsible for adapting to sustainability parameters. The parameters have indicators and measuring instruments adaptable to the different realities of the enterprises [55].

Sustainability indicators provide information that helps in the diagnosis of a certain activity. The essence of selecting indicators is to make the criteria used in decision-making open and explicit, helping to measure the phenomenon to be measured, and perceived as useful for monitoring something important [56].

Adopting ESPs helps tourism enterprises to develop better environmental performance [57] by verifying what can be improved. Moreover, a model for assessing sustainable development in tourism should provide a systemic way to organize, combine, and measure indicators so that policymakers or entrepreneurs can draw conclusions to identify whether developments are environmentally sustainable [33].

When it comes to ESPs, they can be analyzed from the indicators: water consumption and quality; electricity consumption; wastewater treatment; recycling; preservation of natural areas; environmental education initiatives; air quality improvement; certifications; and environmental management [15,47,48,50,58–61].

In tourism, in particular, performance can be evaluated in the dimension of environmental sustainability, including energy consumption, water consumption and quality, wastewater treatment, preserved natural areas, and administrative capacity for environmental management [62].

3. Methodology

There are ten enterprises in the OFTR. We collected data from eight, interviewing the owners or managers of the tourism enterprises (Table 1). Unfortunately, two companies denied our invitation, stating they needed more time to answer. Therefore, the eight

enterprises included here will be nominated from Organic1 to Organic8.

We adopted the Barometer of Tourism Sustainability (BTS) tool proposed by Ko [33]. The BTS does not pay special attention to tourism activities. We adapted based on the premise that tourism destinations are essentially geographic spaces comprising human systems and ecosystems directly influenced by tourism activities [32].

The research had only one of the dimensions selected: the ecosystem (environmental dimension) presented in the BTS model by Ko [32,33]. According to Mousinho [63], the ecosystem of the environmental dimension comprises five systems: (a) land: crop and other ecosystems including modification; degradation; conversion; diversity; and quality of forest areas; (b) water: diversity and quality of waters and ecosystems; including modification; pollution; and depletion; (c) air: air quality and conditions of the global atmosphere; (d) species and populations: genetic diversity; wild species and population; and (e) resource use: waste generation; recycling; energy; and pressure from agriculture. These five systems were branched into 18 indicators to assess the environmental sustainability of the OFTR destinations. All selected indicators were classified, converted into a certain level, and divided into several (un)sustainability gradations, according to Prescott-Allen [64] (Table 2).

In order to determine the contribution to sustainability from a relationship aspect, the achievement scores were obtained by the following equation:

$$D_i = \frac{\gamma_i}{w_i} \times 100\%,$$

Where Wi is the sum of weight, Yi is weighted scores, and Di is the i-th relationship aspect. We used the performance scales and their respective weights for each of the 18 indicators. After the classification, the arithmetic mean of the values was calculated and arranged on axes (Fig. 1), according to Ref. [33].

The choice of system and targets leads to aggregating indicators, and the methodology assesses ecosystem and social welfare levels. Afterward, the dimensions, topics, subtopics, and, finally, the indicators to measure performance are defined [63]. The interaction between the indicators is important because each one cannot individually indicate the real status of sustainability [29].

The BTS does not determine which indicators are the most appropriate for each survey because the dimensions and data collection methods selected may vary from one destination to another. Furthermore, they must be adjusted according to the specific conditions of each region [33]. We used 18 questions for ESPs indicators developed in the OFTR enterprises' data collection. The average percentage of respondents' responses for each indicator was calculated. The "not applicable" (N/A) option was disregarded in the calculation. The average was defined as the highest percentage value estimated by respondents (20%, 40%, 60%, 80%, and 100%, except 0%).

For data collection, we contacted the route's president by phone to verify the interest of the enterprises in participating in the research. We got the interviewee's authorization and permission to record the interview. The informed consent form was signed in the in-person meetings and read by the subjects who agreed to participate through speech and recording during the online interviews. The interview guide included: 20 open questions about characterization (5), business and environmental sustainability practices (14), and 18 close questions about ESPs indicators developed in the OFTR enterprises. For identify these indicators we used a scale: ( ) 0–20% ( )

Table 1
Characterization of the OFTR enterprises.

Enterprise	Respondent	Products and services	First year of the cattle ranching and farming activities	First year of tourism activity
Organic1	Managing Partner	Fresh vegetables such as lettuce, cabbage, and spices, with the "colhe e pague" (pick and pay); lodging services; jam and honey industrialization.	2009	2016
Organic2	Administrator	Organic wines, juices, tomato sauces, and jellies; fresh fruit production such as grapes, oranges, and bergamot; estate tours and picnics.	1998	1998
Organic3	Administrative Manager	Production of whole grain salty pizzas, chia pudding, and organic salad dishes offered on-site; supplements and bulk products; sale of organic vegetables, flours, and sugars.	N/A*	2016
Organic4	Co-owner	Sale of organic products, gluten-free, lactose-free, certified vegetables, juices, jams, sauces, bread, cookies, preserves, grains, and cereals from the organic line.	N/A	2009
Organic5	Sommelier, Tourism and Retail Supervisor	An organic line called *Da Casa*, with juice and wine; and a biodynamic line called *Astral*, a sparkling wine and a juice; services such as a guided tour and tasting are offered.	N/A	1994
Organic6	Managing Partner	Organic juices: grape, orange, apple, tangerine, mixed juices of tangerine with apple, orange with apple; apple vinegar, red wine, balsamic, aged balsamic; grape seed flour, grape skin flour, apple flour, and grape seed oil; guided tour to learn about the production process.	N/A	2018
Organic7	Administrator	Sparkling wines, wines, juices, cold cuts, coppa salami, salami, cheese; all organically produced; tastings and guided tours at the enterprise.	1998	2013
Organic8	Co-owner	Production of tomatoes and other fruits, such as navel oranges, sweet oranges, key lime, guava, and walnuts; guided tour to be in touch with nature.	2013	2018

*N/A: not applicable.

Table 2
BTS performance scales.

Range (in %)	Scale	Definition
1–20	Unsustainable (1)	Unacceptable
21–40	Potentially unsustainable (2)	Undesirable
41–60	Intermediate (3)	Neutral performance
61–80	Potentially sustainable (4)	Acceptable; goal almost reached
81–100	Sustainable (5)	Desirable; goal fully achieved

Source: Ko [32,55].

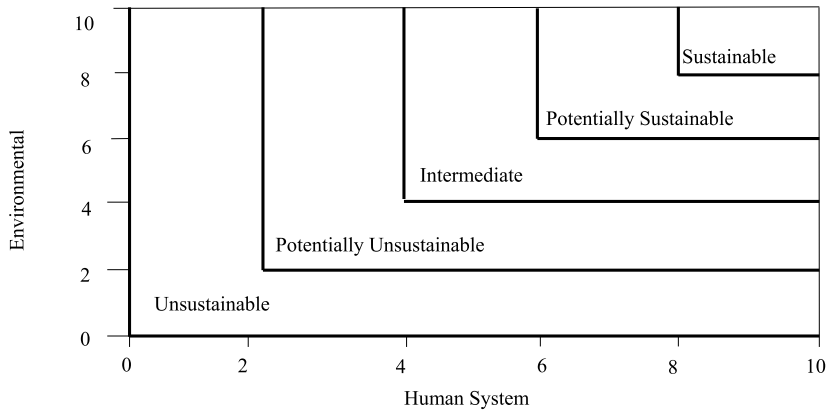

Fig. 1. Graphic representation of the Barometer of Tourism Sustainability performance scales.

21–40% ( ) 41–60% ( ) 61–80% ( ) 81–100% ( ) N/A (not applicable).

The interview was applied in eight enterprises. Data collection took place in November 2020 and was supplemented by *in loco* observation of four enterprises (respecting the protocols for Covid-19). For the others, data collection occurred on Google Meet. The interviewees included owners or people in charge of the enterprises, according to the following criteria: being the owner of the enterprise and a member of OFTR; being the manager or person in charge of the tourism sector; having the enterprise produce or sell organic products; having the organic certification seal.

For qualitative analyses, we used content analysis in four steps: pre-analysis, exploration, results, and interpretation phases, following Bardin [65]. We used descriptive statistics for quantitative data with Microsoft Excel™ software to make a bar graph to assess the level of enterprises' sustainability. The data explored ESPs according to owners or people in charge of the business and ESPs drivers, barriers, and performance.

4. Results and discussion

4.1. Environmentally sustainable practices at the organic food tourist route

Since its inception, the OFTR's enterprises have sought to care for preserving the environment through organic certification. The main ESPs developed in the surveyed enterprises include solid waste management, recycling, energy efficiency, reduction of electric energy waste, and rational water use. Therefore, it supports the idea that ESPs preserve the environment [43]. Furthermore, practices developed in full do not require high investment costs and are easy to implement [13].

Seven of the eight enterprises have organic waste composting used for fertilization and improvement in soil organic matter. Composting fertilizer organically aids soil nutrition [61]. Six participants develop the management of scarce natural resources, such as reducing water use and preserving soil and wildlife habitats. It agrees with Silva and Mattos [66], who pointed out the importance of perceiving the need to preserve scarce natural resources for their renewal.

All the interviewees try to better manage the visual impact and infrastructure, avoiding large-scale construction projects that may degrade the environment. They develop sustainable agriculture, organic production, and biological pest management. Five respondents protect natural resources by preserving springs and maintaining native areas to preserve the natural landscape. Three enterprises implemented alternative energy sources. The others justified not using them due to the high initial investment cost, and Kallmuenzer et al. [3] link the resistance to adopting some ESPs to their high implementation cost.

Table 3 shows the perception of the managers belonging to OFTR regarding ESPs.

For the interviewees, the ESPs adoption is important because it reduces expenses and allows them to grow organic food. Furthermore, the OFTR has product certification, so sustainability must be considered, being a unique attraction for tourists concerned with environmental issues (visibility issue pointed out by Bolis et al. [42]. These tourists tend to incorporate care for the environment

and concern for health [53].

The owners are constantly aiming at adaptations in the infrastructure with a sustainable approach. The adoption of ESPs adds value to the products and services offered by the enterprises since environmentally concerned tourists are likely to pay more for a product or service that prioritizes such aspects. Moreover, local products contribute to a favorable destination image in the tourist's mind, who might want to consume these products after returning home, increasing local exports and the overall benefits of tourism for the destination [41].

These initiatives are important strategies that contribute to promoting community tourism based on preserving natural resources and appreciating tradition and culture. In addition, they play a central role in socio-economic development by empowering the community to initiate, manage, and operate differentiated initiatives in local tourist ventures [37].

4.2. ESPs drivers, barriers, and performance

Adopting ESPs reduces expenses and waste and optimizes the use of resources [47,66–68,]. However, there are barriers such as implementation costs, lack of financial incentives, and governmental and institutional support policies [3,69–71].

The main drivers, according to Table 4, include water savings, reduced packaging, and increased demand for organic food. The climate was also indicated for favoring the production of organic products and reducing expenses and waste in the ESPs adoption since everything can be reused for green manure or composting. Water saving is one of the easiest practices due to its low implementation cost [13,72].

Barriers include high costs in implementing sustainable energy sources and a need for more legislation and working capital [3]. There is also the labor issue because organic production demands much manual labor, and the region has limits to meet the demand. Nevertheless, the practices analyzed in the businesses allow us to evaluate their performance and consider whether they contribute preserving the environment [73]. We identified positive aspects concerning *performance*: cost reduction, increased life quality, perception of a more evolved enterprise, environmental preservation, and recognition for organic food production. Barbieri [15] shows similar results when highlighting that enterprises concerned with these issues collaborate with environment preservation by reducing the impacts of mass tourism since minimum care collaborates with preservation.

The interviewees point to the health preservation of those who cultivate and those who consume as a level of *performance* originating from the production of products. Pesticide-free production is a concern for tourists who seek organic foods. The consumption of organics appears as a niche market, as many consumers need agrochemical-free food due to allergies or health problems.

There is a tendency for tourists to be concerned with environmental issues, valuing spaces and attractions that preserve natural resources and also favor the improvement of health and quality of life for the population [53].

4.3. ESPs indicators according to BTS

According to Table 5, water quality monitoring, solid waste recycling, the appropriate destination for organic waste, wastewater collection, LED or energy-saving light lamps, no pesticides, and organic and inorganic fertilizers are indicators that all enterprises have for the ESPs analysis. The average of indicators that originated the BTS performance scale [32] indicated that sustainable energy is unsustainable, and rainwater collection and water saved had a neutral performance. The reuse of water from industrialization, the solid waste reduction program, the recycled or recyclable materials in packaging, and the environmental education practice were indicated as potentially sustainable. Water quality monitoring, solid waste recycling, organic waste used in composting or animal feed, wastewater collection, LED or energy-saving light lamps, protected areas, no pesticides, organic and inorganic fertilizers, organic production, and burning and wildfires showed a sustainable performance. No items were indicated as potentially unsustainable.

Table 3
Managers' perception of ESPs.

Enterprise	Perception
Organic1	Adopting sustainable practices adds value by being organic, producing without agrochemicals, and being ecologically aware. […] Preservation of natural resources is growing, so we must adapt to the market and invest in it.
Organic2	We invest a lot with an eye toward sustainability. The grape waste is all used, the seeds for seed oil, the bunches for mushroom production. We are always adapting; the organic consumer is well aware of it and is ok with paying more for the service offered with this awareness.
Organic3	The sustainability issue has been in the enterprise since its creation with the commercialization of organic products. […] We always encourage tourists to bring their packages and to buy products in bulk, thus, reducing the amount of packaging.
Organic4	Sustainability must be considered more and more every day since we must worry about environmental issues and future generations and what we will leave for them. […] Every day we should invest more in these issues and this care for the environment.
Organic5	Our priority is to maintain the business' sustainability and, every day, invest more in these issues since it is necessary to worry and care for the environment.
Organic6	This environmental issue is important. It is one of our pillars. We are designing new spaces for receiving tourists, all of this for us to consider sustainability. We are going to build a new space with ecological bricks or sustainable material, all of this is well thought out, and we have considered it. This year we installed solar energy. We collect rainwater. Virtually, we do everything. We always try to be as ecological as possible, which is an attraction.
Organic7	There is always room for improvement in terms of sustainability. My property has been organic for seven years. In the winery, we need to move toward biodynamics, which we are studying. However, it is a path. It is not born ready.
Organic8	We must preserve the environment through environmentally sustainable practices. We must work to keep the environment clean and pure without harming nature […].

Table 4
ESPs drivers, barriers, and performance.

Enterprise	Drivers	Barriers	Performance
Organic1	Reduction of water consumption with harnessing and heating using solar panels.	High cost of implementing solar energy, acquiring the fireplace water heating system, slow return on investment, and few incentives and credit lines.	Reduced electricity costs by using solar energy, reduced waste, and increased life quality.
Organic2	Saving water and electricity, reducing packaging waste, and offering reusable tableware.	Lack of working capital and labor.	Increased life quality, preservation of the environment, and perception of a better enterprise.
Organic3	Saving water and electricity, reducing waste, offering returnable bags, selling in bulk, and reducing plastic packaging.	Impossibility of water reuse and solar energy implementation because it is in a building.	Reduction of electricity and water costs and collaboration with the environment by selling products that do not harm it.
Organic4	Demand for organic food, reduced electricity, and water waste.	Difficulty in getting fresh horticultural products daily.	Reducing the costs of water supply and electricity services.
Organic5	Steady increase in the demand for organic food.	Producing organics in a conventional farming company.	Cost and waste reduction and better life quality.
Organic6	Reduction of unnecessary expenses through actions linked to sustainability and the promotion of the organic product's valorization.	Engaging the population in the valorization of organic production.	Reusing resources.
Organic7	Differentiation and respect for the environment.	Climate, legislation, and labor.	To be recognized for producing organic and natural foods; added value to the products, better life quality, and health.
Organic8	Climate that favors the production of organic food in all seasons.	Labor and difficulty in getting organic pesticides.	Waste reduction; health preservation, and, consequently, product consumption; and life quality and respect for the environment.

Table 5
ESPs indicators developed in the OFTR enterprises (in %).

Indicators	Organic1	Organic2	Organic3	Organic4	Organic5	Organic6	Organic7	Organic8	Mean
Reuse of water from industrialization	40	100	N/A	N/A	100	60	100	N/A	80
Use of rainwater	60	60	N/A	N/A	40	40	80	80	60
Water saving, reuse, and collection	60	60	N/A	N/A	40	40	80	80	60
Water quality monitoring	100	100	100	100	100	100	100	100	100
Solid waste recycling	100	100	100	100	100	100	100	100	100
Appropriate destination for organic waste	100	100	100	100	100	100	100	100	100
Solid waste reduction program	100	100	0	100	100	0	100	100	75
Wastewater collection	100	100	100	100	100	100	100	100	100
Recyclable materials and packaging	100	60	N/A	N/A	100	100	80	100	76.66
Sustainable energy	60	0	0	0	0	100	0	0	20
LED or energy-saving lamps	100	100	100	100	100	100	100	100	100
Environmental education	100	100	0	100	100	100	100	0	75
Protected areas	100	80	N/A	N/A	N/A	60	100	100	88
Agrochemicals	100	100	100	100	100	100	100	100	100
Inorganic fertilizers	100	100	100	100	100	100	100	100	100
Organic fertilizers	100	100	100	100	100	100	100	100	100
Organic production	100	100	N/A	N/A	40	100	100	100	90
Burning/wildfires	100	100	N/A	N/A	100	100	60	100	90

*N/A: not applicable.

Drawing a global prospect is essential when analyzing the level of environmental sustainability of tourist route enterprises to have a picture of the current collective situation of destinations [32]. The calculated average of the weights of each indicator showed the OFTR as a potentially sustainable tourist route (Fig. 2).

There is a relationship between tourism and sustainability in which the activity becomes sustainable as it achieves harmony concerning the local culture and the environment, based on conservation practices of landscapes and resources and preserving them for future generations [1–3]. Furthermore, by adopting ESPs, OFTR members obtain benefits that favor competitiveness. Regarding performance, adopting ESPs helps in enterprises' environmental and economic development, attraction and diversification of services and products offered to tourists, qualification of people to work in the sector, and continuous improvement of enterprise management processes, for example.

In addition, selecting indicators requires attention regarding adaptation for each destination, as tourism stakeholders have different expectations. These can generate a set of strategic information that supports public policies, private sector investments, and, especially, inclusive community development that promotes destinations' sustainability in the long-term [37–39].

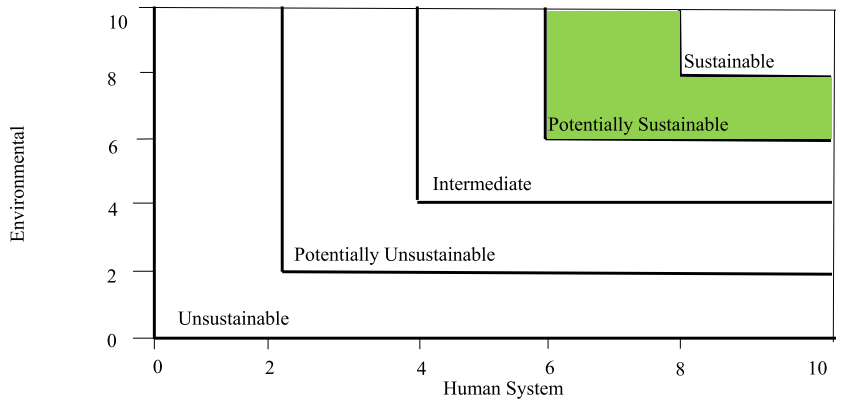

Fig. 2. OFTR's BTS

5. Conclusion

We proposed to analyze the Environmentally Sustainable Practices (ESPs) in the Organic Food Tourist Route (OFTR) in South Brazil. We found that tourism enterprises adopt ESPs according to each reality since some are dedicated to producing and commercializing organic products, while others are dedicated to lodging and guided tours.

We found that the surveyed managers perceive the importance of adopting ESPs by reducing expenses and offering organic products. Sustainability must be considered since tourists are currently concerned and careful with the environment, which becomes a differential.

The research included the main drivers, barriers, and performance in adopting ESPs. The enterprises develop ESPs that make the route potentially sustainable, following the standards established by the BTS. In order to reach the "sustainable" level, the enterprises need to improve their performance in the several items whose results were "less sustainable".

The environmental sustainability initiatives practiced on the route are developed individually. Each enterprise performs the necessary activities without mutual assistance and/or exchange of information and ideas among members.

The theoretical material contributed significantly toward understanding which ESPs were developed in the enterprises and how they help tourism development. The understanding of tourist routes was expanded with an emphasis on sustainability, the environmental dimension, the ESPs, and organic agriculture. The BTS enabled the assessment of the sustainability of OFTR's enterprises. This study's methodology also contributes to new studies.

For society, our study may contribute to strengthening these issues, given the importance of adopting ESPs in a tourist route or in enterprises individually. Furthermore, this trend consolidates the supply and, particularly, the tourists' demand.

Limitations: From a methodological perspective, the clippings made during the research can bring some specific results. Due to the covid-19 pandemic, the online data collection method in half of the enterprises did not enable them to experience the tourist environment and opportunities to observe and interact with owners/managers, employees, and family. The sample of all OFTR's enterprises was not possible in a route that seems to be relevant.

Regarding managerial implications, the results showed the importance of developing ESPs aligned with environmental preservation as a differential in tourist products. Brazil has the potential to expand tourism and strategically explore sustainable tourism practices using natural resources and diversified tourist vocation. However, sustainability practices in OFTR's enterprises are still underused or used as part of the business without exploring that professionally. It is up to entrepreneurs to train and support tourism stakeholders and the government in developing public policies that support and develop tourism in an orderly manner. Finally, this study can bring more insights for policymakers to build programs and policies to achieve harmony between the local culture and the environment.

We recommend future research with OFTR tourists regarding their perceptions of the effectiveness of ESPs developed in the enterprises; and broadening the research to other tourist routes, not necessarily involving production, commercialization, or industrialization of organic products. Conducting studies at the national level would be relevant to broaden the understanding of ESPs effectiveness: how they are developed in tourist enterprises and whether they have lower application indicators because they are not organically produced. The theoretical approach of ESPs can also be explored, considering their potential for replication in other sectors, as well as expanding research from a cross-country perspective, comparing tourist enterprises in different countries, and enabling the ESPs to be developed in different contexts of analysis. Exploring the theory of tourist flow and movement or event tourist mobility in OFTR tourists is possible. Another possibility is to develop an App to collect data daily from enterprises about ESPs and produce information from these practices for a long time to support decision-making.

Finally, we assumed that the ESPs developed in the surveyed establishments collaborate with the development of tourism because, in times of challenges to environmental preservation, these can help to guarantee natural resources for future generations. In the short-term, tourism is likely to be one of the main socio-economic and environmental development sectors. These issues are important when analyzed in tourism routes. They require more academic attention in terms of analysis complexity and multiple possibilities that can

corroborate the exploration and development of tourism in Brazil and in other countries with diverse tangible and intangible resources.

Author contribution statement

Marcelo Pellegrini, Ana Claudia Machado Padilha, Erlaine Binotto and Eduardo Luis Casarotto: Conceived and designed the experiments; analyzed and interpreted the data; Performed the experiments.

Marcelo Pellegrini, Ana Claudia Machado Padilha, Erlaine Binotto and Eduardo Luis Casarotto, João Paulo da Conceição Silva Jorge, Debora Nayar Hoff and Marcelino de Souza: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

The data that has been used is confidential.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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