

Business models for nature-based tourism companies: The adoption of sustainable requirements

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ABSTRACT

Nature-based tourism is increasingly recognised as a strategic segment within the tourism sector, often dominated by small and family-owned enterprises. Despite its growing relevance, the adoption of explicit, sustainable business models in this segment remains limited, with many firms operating in informal or implicit approaches. Although business models are acknowledged as key mediators of innovation and sustainability, substantial gaps remain in understanding and applying innovative sustainable business model principles within nature-based tourism companies. This study provides novel empirical evidence by examining how these companies integrate sustainability into their business models and by examining the requirements and practices adopted by nature-based tourism entrepreneurs. This study provides novel empirical evidence by examining how these companies engage with the four guiding principles proposed by Breuer et al. (2018) (sustainability orientation, extended value creation, systems thinking and stakeholder integration) and the constraints they face in doing so. Building on these principles, the research explores how sustainability is integrated into existing business models. An exploratory qualitative study based on thirteen semi-structured interviews with Portuguese nature-based tourism entrepreneurs reveals that, although sustainability is widely regarded as essential for competitiveness and long-term resilience, its integration into business models remains uneven and largely intuitive. Environmental aspects receive more systematic attention than social value creation, systems integration or stakeholder collaboration, with progress hindered by limited managerial capabilities, resource scarcity, and weak policy alignment. The study contributes to the literature by clarifying how sustainability principles are operationalised in small tourism enterprises and by identifying structural barriers that prevent their fuller adoption. It also offers practical implications for policymakers and support institutions seeking to strengthen the resilience, competitiveness and sustainability orientation of nature-based tourism systems.

1. Introduction

The tourism sector faces multiple structural and market-related challenges, requiring strategies that respond effectively to evolving demand while maintaining competitiveness. Natural resources form the foundation of several tourism modalities, particularly nature-based tourism, which is predominantly characterised by small and family-owned enterprises (Omerzel, 2016). In this context, tourism offerings are typically built around key natural assets, and business management is often concentrated in the hands of one or two individuals, reflecting

limited organisational capacity and managerial formalisation (Omerzel, 2016).

Within nature-based tourism companies, the adoption of a clearly articulated business model is not always evident. In many cases, business models exist in an informal or implicit form, especially among small and family-run firms (Biloslavo et al., 2018). More broadly, the explicit use of the business model concept in tourism remains limited, and empirical research on business models in the tourism context remains scarce (Reinhold et al., 2017). To address this gap, Reinhold et al. (2017) proposed a conceptual foundation for studying business models in

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tourism, emphasising the transition from existing configurations towards emerging and innovative business model arrangements. From a sustainability perspective, [Boons and Lüdeke-Freund \(2013\)](#) argue that business models can be understood as mediators of innovation, linking production and consumption processes with stakeholder expectations while embedding principles of sustainable value creation.

For nature-based tourism companies, developing innovative sustainable business models (ISBMs) represents both a significant challenge and a strategic opportunity. On the one hand, limited resources, managerial capabilities, and path dependency may hinder change; on the other hand, ISBMs offer the potential to overcome obsolete practices ([Breuer et al., 2018](#); [Biloslavo et al., 2018](#); [Täuscher and Abdelkafi, 2018](#)), enhance firm performance ([Teece, 2010](#); [Boons and Lüdeke-Freund, 2013](#); [Sahebalzamani and Bertella, 2018](#)), strengthen competitive advantage ([Souto, 2015](#)), and support long-term business viability ([Tidd and Bessant, 2018](#)). In this regard, business model innovation for sustainability has been shown to improve a firm's capacity to create, maintain, or regenerate natural, social, and economic capital beyond organisational boundaries by transforming value propositions and mechanisms of value creation, delivery, and capture ([Lüdeke-Freund et al., 2019](#), p. 21). More broadly, innovation enhances firms' ability to act and to integrate ecological and social concerns into their core business activities ([Lüdeke-Freund and Schaltegger, 2023](#)).

Nevertheless, business model innovation is inherently uncertain, and the business model managers initially plan often differ from the one that ultimately emerges in practice ([Lüdeke-Freund and Schaltegger, 2023](#)). Despite growing scholarly interest, significant research gaps persist regarding innovative sustainable business models in nature-based tourism ([Geissdoerfer et al., 2018](#)), as well as in the broader tourism literature on sustainability-oriented business models ([Biloslavo et al., 2018](#); [Reinhold et al., 2017](#)). To help address these gaps, [Breuer et al. \(2018\)](#) proposed four guiding principles for sustainable business model innovation: sustainability orientation, extended value creation, systems thinking, and stakeholder integration. Despite the growing conceptual development of sustainable business models, no empirical studies have examined how nature-based tourism companies operationalise these four guiding principles. This study fills this gap by providing the first evidence on how these principles are adopted in practice and where implementation barriers persist.

Aiming to explore the perceptions of nature-based tourism entrepreneurs, public institutions, and a non-governmental organisation, [Abreu et al. \(2025\)](#) examined the roles of sustainability and innovation in the business models of nature-based tourism companies, as well as their contributions to competitiveness and long-term resilience. The findings revealed divergent perceptions among these stakeholder groups, underscoring the complexity of aligning sustainability objectives across actors ([Abreu et al., 2025](#)). Beyond providing an in-depth analysis of stakeholder perspectives, the research also enabled the development of a conceptual framework for an innovative sustainable business model for nature-based tourism ([Abreu et al., 2025](#)). This framework is aligned with the United Nations Sustainable Development Goals (SDGs). It is structured around the 5Ps - Planet, People, Partnership, Prosperity, and Peace, which collectively underpin the value proposition, value creation, value delivery, and value capture processes of nature-based tourism companies.

Despite these conceptual advances, most nature-based tourism companies operate with business models, formal or informal, that do not explicitly incorporate sustainability principles. To address this gap, the present study seeks to understand which sustainable business model requirements are adopted by nature-based tourism companies in practice. Drawing on the framework developed by [Breuer et al. \(2018\)](#), the study applies the four guiding principles as analytical lenses for examining sustainable business model development. Specifically, the research proceeds in three steps. First, it presents the most relevant interview findings, structured according to the four guiding principles of sustainable business model innovation. Second, it analyses how Portuguese

nature-based tourism companies operationalise these principles within their existing business models. Third, it identifies the key organisational, resource-based, and contextual constraints that limit the adoption of these principles in practice. To achieve these objectives, thirteen semi-structured interviews were conducted with Portuguese nature-based tourism entrepreneurs.

2. Business models for innovation and sustainability

Developing a culture of sustainability and innovation is a complex challenge, as it encompasses major transitions such as digitalisation, decarbonisation, and the adoption of circular economy principles ([Bocken et al., 2014](#)). These transitions can be addressed by adapting and transforming existing business models (BMs) ([Lüdeke-Freund and Schaltegger, 2023](#)). [Baden-Fuller and Morgan \(2010\)](#) famously describe business models as “recipes for creative managers” (p. 156), highlighting their role in guiding managerial action. As noted by [Zott et al. \(2011\)](#), the business model concept also serves as an effective means of communicating business ideas to investors and other stakeholders. Over time, the concept has evolved from a descriptive device into a tool for systemic analysis, planning, and communication ([Doleski, 2015](#); [Lüdeke-Freund et al., 2024](#)), and it is simultaneously recognised as a strategic asset that can enhance competitive advantage and firm performance ([Chesbrough, 2007](#); [Magretta, 2002](#)).

Business model innovation (BMI) involves rethinking the fundamental logic through which an organisation creates, delivers, and captures value ([Kennedy and Bocken, 2020](#)). When sustainability is incorporated into business models, this process requires aligning economic, environmental, and social objectives ([Bocken et al., 2014](#)). As a result, business models for sustainability (SBMs) have emerged as a relatively recent and rapidly growing research field (e.g., [Stubbs and Cocklin, 2008](#)). These models are also referred to as innovative sustainable business models (ISBMs) (e.g., [Bocken et al., 2013](#)) and aim to explain how business model innovation can contribute positively to society ([Snihur and Bocken, 2022](#)). Among the various SBM archetypes, circular economy models are particularly prominent, as they emphasise resource efficiency, waste reduction, material reuse, and product design optimisation through closed material loops ([Geissdoerfer et al., 2017](#)).

The literature offers multiple definitions of business models for sustainability. [Stubbs and Cocklin \(2008\)](#) define them as organisational models that develop internal structural and cultural capabilities to achieve firm-level sustainability while collaborating with key stakeholders to promote sustainability at the system level (p. 123). [Lüdeke-Freund and Boons \(2013\)](#) conceptualises a business model for sustainability as an activity system that allocates resources and coordinates value-creation processes to overcome the public-private benefit discrepancy, thereby creating a business case for sustainability (p. 56). Similarly, [Schaltegger et al. \(2012\)](#) emphasise the role of voluntary or predominantly voluntary activities aimed at addressing social and environmental problems, while actively integrating social, environmental, and economic value creation (p. 112). [Joyce and Paquin \(2016\)](#) further synthesise these perspectives by defining a business model for sustainability as the rationale through which organisations simultaneously create, deliver, and capture economic, environmental, and social value (p. 39). [Bocken \(2023\)](#) further reflect on the classification of sustainability archetypes in tourism-relevant contexts.

Despite these conceptual advances, significant gaps remain. [Boons and Lüdeke-Freund \(2013\)](#) were among the first to propose the notion of innovative sustainable business models, yet the basic requirements for developing SBMs remain poorly understood ([Schaltegger et al., 2016](#); [Upward and Jones, 2016](#)). [Geissdoerfer et al. \(2016\)](#) argue that sustainable business model innovation explicitly aims to integrate sustainable value creation and proactive stakeholder management into the business model (p. 1220). [Breuer et al. \(2018\)](#) contribute to this debate by proposing a theoretical framework that identifies minimum requirements for sustainable business modelling. Crucially, they show that

a firm's sustainability orientation shapes the pathways through which SBMs are developed, helping to explain heterogeneous implementation outcomes across firms.

Achieving an "ideal" business model for sustainable development remains challenging (Breuer et al., 2018; Lüdeke-Freund et al., 2019; Lüdeke-Freund and Schaltegger, 2023), which explains the growing interest in innovative sustainable business models (Geissdoerfer et al., 2017). ISBMs must be both ecologically robust and economically viable (Täuscher and Abdelkafi, 2018). Their appeal lies in their ability to integrate all dimensions of sustainability while introducing new ways to create, deliver, and capture value. In doing so, they enable entrepreneurs to address critical sustainability challenges such as climate change, biodiversity loss, and poverty through innovative and positive solutions (Kennedy and Bocken, 2020). Empirical studies suggest that ISBMs enhance sustainable value creation, strengthen organisational reliability, and offer superior solutions for both customers and firms (Lüdeke-Freund et al., 2018; Schneider and Clauss, 2019).

Nevertheless, there is no single agreed-upon definition of ISBMs, indicating the need for further theoretical and empirical development in this field. Bocken et al. (2014) define ISBMs as innovations that generate significant positive, or significantly reduced negative, environmental and/or social impacts by changing how organisations and their value networks create, deliver, and capture value (p. 44). Lüdeke-Freund et al. (2019) describe business model innovation for sustainability as a process that enhances a firm's ability to create, maintain, or regenerate natural, social, and economic capital beyond organisational boundaries by transforming value propositions and value creation, delivery, and capture mechanisms (p. 105). This perspective is particularly salient for nature-based tourism, where business model design choices directly affect socio-ecological systems.

Multiple drivers encourage organisations to engage in sustainable business model innovation (Lüdeke-Freund and Schaltegger, 2023). From a regulatory perspective, sustainability-oriented innovation often emerges in response to environmental regulations, pressures to reduce ecological footprints, and expectations to contribute positively to society (Bocken et al., 2016). In parallel, increasing awareness of resource scarcity and environmental degradation has positioned sustainable business model innovation as a key mechanism for implementing circular economy principles, such as waste minimisation, resource efficiency, and responsible resource use (Geissdoerfer et al., 2018). Circular economy-based business models can also strengthen customer loyalty and profitability by offering low-impact products and services to environmentally conscious consumers (Bocken et al., 2016). More broadly, integrating sustainability into business models can create competitive advantage by developing distinctive, resilient, and environmentally responsible products and services (Schaltegger et al., 2012; Schneider and Clauss, 2019).

Innovative sustainable business models generate a range of organisational benefits. They enhance firms' resilience by reducing exposure to environmental vulnerabilities and risks (Teece, 2010; Boons and Lüdeke-Freund, 2013; Espiner et al., 2017; Sahebalzamani and Bertella, 2018), support cost reductions through improved resource efficiency (Jensen and Prebensen, 2015; Prange and Schlegelmilch, 2016), and strengthen corporate reputation by fostering trust and loyalty among customers and stakeholders (Massa et al., 2017; Breuer et al., 2018). Ultimately, ISBMs contribute to long-term value creation across economic, environmental, and social dimensions (Stubbs and Cocklin, 2008). In this context, Schaltegger et al. (2012) stress the importance of understanding how nature-based tourism entrepreneurs embed sustainability-oriented goals at the core of their organisations.

Despite growing interest, the literature highlights several unresolved challenges related to the development, assessment, and monitoring of innovative sustainable business models. Schaltegger and Wagner (2011) note that integrating sustainability principles is inherently complex and shaped by uncertainty in market dynamics and external conditions. Cultural and institutional inertia has also been identified as a significant

barrier to adapting existing business models (Jensen and Prebensen, 2015). Moreover, scholars have emphasised the need for improved indicators and metrics to assess the environmental, social, and economic impacts of sustainable business models (Boons and Lüdeke-Freund, 2013). The lack of standardised SBM frameworks further limits cross-sectoral comparison and benchmarking (Geissdoerfer et al., 2018). Within the context of nature-based tourism, only a limited number of studies explicitly address sustainability (Reinhold et al., 2017; Abreu et al., 2025), and there remain gaps in SBM design that fully integrate all sustainability dimensions (Täuscher and Abdelkafi, 2018; Biloslavo et al., 2018). Additionally, the scarcity of primary data on business models in nature-based tourism (Reinhold et al., 2018) further justifies the relevance of this research. Building on these gaps, Abreu et al. (2025) propose an ISBM definition tailored to NBT, emphasising innovation, conservation of nature and resources, sustainable economic growth, and societal benefits.

This study adopts the guiding principles for developing innovative sustainable business models proposed by Breuer et al. (2018). These principles, sustainability orientation, extended value creation, systems thinking, and stakeholder integration, provide a conceptual framework for steering existing business models towards sustainability (Lüdeke-Freund and Schaltegger, 2023). While these principles do not guarantee sustainable outcomes, they offer a structured approach for reducing the gap between idealised sustainability models and practical implementation. Sustainability orientation emphasises the integrated consideration of environmental, social, economic, and organisational dimensions. Extended value creation focuses on generating value for a broad range of stakeholders. Systems thinking highlights the importance of understanding interdependencies between the firm and its socio-ecological context, while stakeholder integration underscores the role of diverse actors in supporting sustainable innovation (Breuer et al., 2018).

By adopting these guiding principles, organisations can move towards more strategic, holistic, and sustainability-oriented business models (e.g., Baden-Fuller and Morgan, 2010; Wirtz et al., 2016), fostering long-term sustainable value creation (Lüdeke-Freund and Schaltegger, 2023; Abreu et al., 2025). In this regard, collaboration between researchers and nature-based tourism entrepreneurs is essential to advance knowledge, support practical implementation, and mitigate the risks associated with adopting business models that lack sustainability and innovation considerations.

3. Study area and policy context

The study is conducted in Portugal, a country with high natural and cultural diversity and a strong policy commitment to sustainable and innovative tourism development. National frameworks such as Tourism Strategy 2027; Portugal 2030 position nature-based tourism as a key driver of sustainable territorial development, particularly in rural and low-density areas (Turismo de Portugal, 2017; República Portuguesa, 2022).

The study focuses on a rural and environmentally sensitive destination characterised by diverse ecosystems and high biodiversity value, including areas integrated into the National System of Classified Areas and the Natura 2000 Network (European Commission, 2020; ICNF, 2021). Tourism activities are highly dependent on natural capital and local cultural practices. They are primarily delivered by small and medium-sized enterprises (SMEs), often family-run, operating under conditions of seasonality, resource constraints, and environmental regulation.

While nature-based tourism has become an essential mechanism for rural economic diversification and local value creation, the study area faces structural challenges, including demographic decline, limited infrastructure, and conservation-related restrictions (República Portuguesa, 2022). Within this context, innovative sustainable business models are critical for enhancing the viability, competitiveness, and

resilience of nature-based tourism, aligning business practices with policy-driven sustainability objectives and contributing to environmental conservation, local development, and community resilience.

4. Methods

The primary objective of this study is to examine how Portuguese nature-based tourism entrepreneurs adopt the guiding principles of business model innovation for sustainability proposed by Breuer et al. (2018). An exploratory qualitative research design with an inductive approach was employed. Data were collected through face-to-face and online videoconference semi-structured interviews and analysed qualitatively. To enhance validity, the data were subjected to systematic listening, transcription, interpretation, and triangulation with website content (Creswell, 2014). The methodological approach was designed to align with the study objectives and to minimise the researcher's bias (Bryman, 2015). Reflexive awareness was maintained throughout the research process to ensure that findings reflect participants' perspectives rather than the researchers' assumptions.

The research was conducted in two stages. First, a comprehensive review of the literature was undertaken to identify theoretical foundations and research gaps. Second, nature-based tourism companies were selected for empirical investigation based on predefined criteria: the provision of nature-based tourism products and a minimum of 5 years of operation.

4.1. Sampling

The sampling strategy considered the geographic distribution of nature-based tourism companies across mainland Portugal (north, centre, and south) and the information available on company websites, including types of nature-based tourism experiences offered, location, innovation initiatives, sustainability commitments, and organisational longevity. The inclusion of firms from multiple regions of mainland Portugal and the offering of diverse nature-based tourism experiences support analytical generalisation. It also enables readers to assess the applicability of the findings to other nature-based tourism or tourism contexts (Bryman, 2015). An initial inventory of nature-based tourism companies was compiled using publicly available records from licensing authorities. As of July 2025, the Instituto da Conservação da Natureza e das Florestas (ICNF) listed thirty certified nature-based tourism companies.

Purposive sampling was used to ensure the selected companies were relevant to the research questions (Bryman, 2012). Thirteen companies meeting the selection criteria agreed to participate, including one certified nature-based tourism company and twelve companies providing nature-based tourism services. The final sample comprises firms operating across mainland Portugal and demonstrates diverse, sustainability-oriented, innovative, and long-term business practices. The interviewed entrepreneurs offer a wide range of nature-based tourism experiences, including birdwatching, whale and dolphin watching, heritage tourism, accommodation, sustainable tourism, horseback riding, nature hiking, gastronomic and wine tourism, religious tourism, environmental education, geological walks, and nature conservation. Entrepreneurs operating in glamping, surfing, extreme sports, and wildlife tourism (e.g. hunting) did not respond to the interview request.

4.2. Data collection and analysis

Empirical data were collected through thirteen semi-structured interviews, chosen for their flexibility and capacity to generate rich, in-depth insights (Bryman, 2015). Eight interviews were conducted face-to-face, and five were conducted online. Ten interviewees were company owners or managers, while three were company representatives (Table 1).

Table 1

Summary and characterisation of the companies interviewed by region (Author's elaboration).

Entrepreneurs/ Entities	Activity	Region of Portugal's mainland
E01	Accommodation- nature experiences; sustainable tourism	Centre
E02	Horseback Riding on the beach	South
E03	Horseback Riding on the beach and other natural areas	South
E04	Whale and dolphin watching; Heritage visits	South
E05	Accommodation- nature experiences	Centre
E06	Hiking in nature; gastronomic and wine experiences; religious tourism	North
E07	Bird watching	Centre
E08	Accommodation, nature experiences, gastronomic and wine experiences	North
E09	Accommodation nature experiences; sustainable tourism	Centre
E10	Accommodation; nature experiences; gastronomic and wine experiences; sustainable tourism	South
E11	Accommodation; nature experiences; gastronomic and wine experiences; sustainable tourism; environmental education	South
E12	Accommodation; nature experiences; gastronomic and wine experiences; sustainable tourism; environmental education; nature conservation	Centre
E13	Pedestrian walks- geology observation; nature experiences	South

Interviews were deemed appropriate for this study because they facilitate an interactive knowledge-production process between the researcher and the participant (Creswell, 2014). Data triangulation was applied by cross-validating interview insights with information available on company websites and public documentation, thereby reducing the risk of biased or incomplete interpretations (Creswell, 2014). The qualitative research design prioritised credibility, authenticity, and trustworthiness. Participants' identities were anonymised, in line with applicable personal data protection regulations. All interviews were audio-recorded with participants' informed consent, transcribed, and systematically analysed (Bryman, 2012).

Data analysis followed a narrative approach (Bryman, 2015), guided by the central research question: Which sustainable business model requirements do nature-based tourism companies adopt in their business models? An interview guide was used to ensure consistency and data quality, which enabled in-depth exploration of participants' perspectives while allowing flexibility to probe emerging themes. Questions covered the firm's profile, target markets, and the perceived roles of sustainability and innovation in long-term performance, resilience, and competitive advantage. Participants were also allowed to raise additional issues not explicitly covered in the interview protocol.

5. Results

This study analyses information collected through thirteen nature-based tourism (NBT) companies. The accurate analysis of the semi-structured interviews conducted with NBT entrepreneurs enabled an understanding of how these companies align with the basic requirements for modelling a sustainability-oriented business (Breuer et al., 2018). Moreover, the interviews revealed that NBT companies consider sustainability-oriented goals at the core of their organisations (Schneider and Clauss, 2019). We conducted a narrative analysis of the interviews. The entrepreneurs talked about the importance of sustainability in their business models, how they create ecological, social, and economic value for the company and for all the stakeholders, how the

interviewed NBT companies' business models evidence the relations with the surroundings, how they consider stakeholders as sustainability supporters, and how they integrate an extended value creation. Some answers attest to these statements.

5.1. Sustainability orientation

5.1.1. Environmental sustainability

The interviewees showed a shared commitment to integrating sustainability into their core practices. The emphasis on environmental responsibility was evident, primarily through the conservation of biodiversity, natural resources, and the local landscape. Some companies mentioned adopting environmentally friendly technologies and processes, such as implementing recycling and reuse initiatives.

"Nature plays a part in the choice of location; it always plays a part in respecting the vegetation around each of the houses; in other words, we only use plants that are characteristic of the local landscape, and we always respect all the surroundings."

"Nature is the great golden goose; it is about being able to maintain, look after, and take care of all this environmental part, which supports our activity."

"Tourists enjoy a well-preserved natural environment, and half an hour from Lisbon, it's surprising that there is still a place with this level of preservation, with waterfalls ..."

"There are always impacts. I am concerned that our impacts are positive, and I convey to our customers that we care for nature and recycling ..."

"... the conservation of natural resources is essential; it is fundamental because these resources sustain the activity; if there are no resources, we would not be selling tours because tourists would not be visiting anything."

"... always on the promotion of biodiversity; in our case, the focus is always on the promotion of biodiversity, then there is a whole social aspect where we try to draw attention to these facts, and perhaps the most concrete example is this open day that our goal is really to raise awareness."

"We have tried to take action in terms of conservation in everything we do, and I can give you an example: from next year, we are going to go one step further, and a substantial part of all our tours, ranging from 3 to 5 per cent, will go directly to conservation, particularly in the Guadiana valley, which is a protected area where we think makes perfect sense this kind of link between tourism and nature conservation."

"This concept of self-sustainability is one that we try to preserve, of course, adapted to the present day, but which we try to implement and preserve, and in this sense, in terms of resources, whether they be water or solar, whatever they may be, they have been implemented and are increasingly being expanded."

5.1.2. Social sustainability

The interviews highlighted the need to promote positive socio-cultural impacts but revealed a common imbalance in incorporating sociocultural considerations into their businesses. Two of the companies interviewed demonstrated inclusive practices by fostering partnerships with the local community, thereby positively impacting the regions in which they operate.

"... my mother wanted to provide workplaces to the people in the village near the estate; there was much unemployment at the time ..."

"... sustainability is essential because we are talking about people who make a living here, and they have to feel that we are committed to this being a business for life."

Moreover, at the socioeconomic level, the same interviewees expressed a commitment to providing direct economic benefits to their staff.

"One thing I want to highlight is that we need to pay good salaries to our staff ... because they deserve it and because my principle is to share the profit I make with those who work with us."

"We're managing to remunerate our staff in a gratifying way, and they participate in sales. I give them a net commission on sales, and their underpin salaries are already pretty good".

5.1.3. Economic sustainability

Some companies demonstrated their commitment to balancing profit with social responsibility. Interviewees emphasised the importance of integrating economic sustainability, noting that the business covers all company expenses. Challenges were recognised, including initial investment costs. However, interviewees noted positive results, such as increased brand loyalty and access to new markets. Overall, the interviews reveal economic success as one of their main goals. Nevertheless, we found no resilient business model that can adapt to changing economic scenarios.

"... we try to make sure that the people who visit that place with us also leave some economic value there."

"... we're still covering the large financial loan we took out, and we're still paying it off; we had a rather stressful situation eight years ago. Now we have a more stable situation, and although we still have these charges to settle, we can say that our company has entered a cruising phase that allows us to rest easy about it."

"... when we started, it was difficult to face all the expenses; also, because we didn't have a structure, the seasonality made our operation very difficult ..."

"... I've only been working full-time at the company for ten years; at the beginning, I had another activity in the winter, my husband had other projects, and then employing people all year round was difficult."

"... for a long time, we were three, then we became four and only in recent years have we become seven, and only this year are we eight full-time people and seasonally they double. I can say that in recent years, we have reached this level, and the new investment has helped us a lot in this regard; the first investment we made in the first catamaran in 2010, in 2017, the second catamaran and thus we were able to bring forward the acquisition of this sailboat by three years, which was initially planned for ten years ago. We've now been on the market for twenty-one years".

"... we're managing to cover our financial responsibilities ... we've been able to pay the banks, I can tell you that this month we're going to be able to settle a loan well ahead of schedule, the company has managed to generate money that allows for this settlement, and that's a good thing."

"Yes, we've been making profits every year. We've been making substantial profits for about five or six years; this takes time; we had a period of growth ... and now we have a stable and interesting economic situation from a financial point of view."

"... we do some tours to other international destinations, which were initially designed for our domestic market, and I'll give you an example: in a month, we have a trip to Estonia for eight days, six Portuguese and six Americans are going; we have a trip to Tanzania in May next year, at the moment we have three Portuguese and

almost ten Americans and English, so we have more and more foreigners even on these trips and why, because they are people who have come to Portugal, they like the way we work, they trust us!”

“For me, the keyword is resilience; there is no doubt about that. For example, here we do a lot of peasant economics; an organic farmer farms my land, and he pays me the rent for the land in sweet potatoes ...”

“No, we cover the expenses as a whole; otherwise, we wouldn’t have survived for 30 years. We have loss-making activities, and some activities pay for others; now, tourism is one of the most profitable activities that helps others, but that’s how we think it should be”.

5.2. Extended value creation

Interviewees emphasised a shift towards a holistic approach beyond traditional economic metrics. Challenges in implementing extended value creation in nature-based tourism were discussed, including environmental and heritage conservation, creating a positive social impact, and ongoing education that considers tourists. However, the general feeling from the interviews was optimism, with the conviction that responsible tourism practices can lead to economic gains and positive environmental and social outcomes.

“... hospitality has to do with “hospital”, with the ability to receive people, to welcome them, to try to look after them as best we can and ideally when they leave in a better condition, physically and spiritually, and that is what we try to do, nothing more.”

“... in the cities where they live, because of the stress, they like to come here and have this silence, where you do not hear cars; you hear the farm machinery and see the beach and hear the noise of the sea and also be relaxed here ...”

“... an abandoned village that has its characteristics and so it makes sense to focus on these simple things, to emphasise them, to study them, the herbs for therapeutic use, there are several qualities and characteristics that the landscape has, and that deserve to be studied, valued and presented to those who are interested in getting to know this region ...”

“The contact with animals, with nature, moves people a lot, with the sea, for many of them it is the first time they have had this experience.”

“The quality of our tours is the guide, the birdwatching, the quality of the accommodation, the meals, the atmosphere we have created over the five, ten or twelve days, and the safety.”

“... sleep well, eat well, know that the products are fresh from the garden; feeling that they are helping the community in some way ...”

“We have different things from abroad, such as the experience of human activities.”

“The power of our proposal essentially concerns the future; people become depressed and leave a little more energised.”

“... we work together with some researchers who come here, and then we include these aspects in our offer ... now there is a lot of research, and people are doing their doctoral theses, biologists, geologists, etc., and it is only now that this is being valued.”

“... we go hiking, but much more than hiking, we help people interpret and tell the stories of the places.”

5.3. Systems thinking

The interviews explored implementing Systems thinking in nature-based tourism, where participants emphasised their commitment to a

more comprehensive, interconnected approach to managing their businesses. Interviewees highlighted the recognition of nature-based tourism as a complex system comprising diverse elements, including ecosystems, local communities, businesses, and visitors. The interviews reflected a growing awareness of the interconnected nature of its components in the nature-based tourism sector. Adopting systems thinking was seen as a transformative approach, promoting collaboration and a more holistic understanding of the dynamic relationships within nature-based tourism.

“... we invest a lot in partnerships with wine producers, wineries, oysters, which have great potential in the estuary, Azeitão cheese, Azeitão pies, sweets, wines, and we end up bringing what is on land to the sea and providing different exclusive and high-quality products produced by great producers.”

“We recently linked up with the guardians of Serra da Estrela and Estrela Geopark, and now we are formalising a partnership with the Cervas association and planning other partnerships.”

“local businesses with complementary activities, some linked to nature and convenience activities, such as meal delivery services ...”

“The Municipality of Mértola has always been our partner in attracting foreign tourists to Portugal.”

“... we have partnerships with Astronomy Observatories; ... and with a biologist who runs tours inside the estate but who also goes outside the estate to show clients the local birds, and ethnobotanical tours, where he points out the different flora that can be found inside the estate and their possible uses, how the local people use them or have used them over generations and then takes this approach, a partnership with two archaeologists and with Lago Alqueva for water activities. ”

“We have several partners, such as accommodation, taxis for the luggage, meal providers, etc.

1. Study identifies how nature-based tourism companies adopt sustainability principles in their business models
2. Findings show stronger adoption of environmental and economic sustainability than social sustainability
3. Entrepreneurs reveal limited stakeholder integration and weak systemic thinking in business practices
4. Results highlight structural constraints such as scarce resources, weak capabilities and policy misalignment
5. Research offers practical guidance to enhance innovative sustainable business models in small tourism firms

5.4. Stakeholder integration

The interviewees stressed the diversity of actors involved in nature-based tourism, showing an ability to adopt measures geared towards systemic thinking, as described above, but need help setting out an innovative sustainable business model to attract stakeholders who share the same principles. Only one of the interviewees referred to the stakeholder integration guiding principle.

“We develop our work and projects and attract partners interested in certain areas such as architecture, interior design, nature, and simplicity, linked to this holistic perspective and who identify with our projects, with the peacefulness ...”

6. Discussion

This study’s first theoretical contribution is to understand how entrepreneurs consider sustainability at the core of their organisations (Schaltegger et al., 2012), and secondly, to identify the sustainable business model requirements that nature-based tourism companies

adopt. A third theoretical contribution clarifies the differences in stakeholder perceptions and the constraints NBT entrepreneurs face when applying Breuer et al.'s (2018) four guiding principles.

This study is supported by relevant literature and by a narrative analysis of semi-structured interviews with thirteen nature-based tourism entrepreneurs.

Regarding this study's first and second contributions, evidence indicates that the interviewed nature-based tourism entrepreneurs recognise the importance of being sustainable companies. However, their commitments concentrate mainly on environmental and economic sustainability. This is evident from their fulfilment of legal obligations, particularly in the environmental and economic domains. By contrast, the socio-cultural dimension of sustainability is often less explicit. The nature-based tourism companies in this study display limited, explicit commitments to social responsibility, and their innovative initiatives tend to be incremental (e.g., basic digitalisation and social-media promotion). The results also show that the companies in the sample have a weak stakeholder network and are often unaware of their customers' needs.

Considering the third contribution of this study, with respect to the first guiding principle, sustainability orientation, nature-based tourism companies are primarily aligned with environmental sustainability and fulfil the legal requirements. In the economic dimension of sustainability, companies have demonstrated an ability and a concern to promote economic growth. Regarding the social dimension of sustainability, two interviewees explicitly express their commitments to social contribution through job creation and fair salaries.

When analysing the second guiding principle, extended value creation, the results indicate that Portuguese nature-based tourism entrepreneurs align with ecological value creation and with firm-level value. The third guiding principle, systems thinking, reveals that some interviewees value the relations between the company and the surroundings, expressing a willingness to innovate the existing business model. Regarding the last guiding principle, stakeholder integration, only one interviewee shows a clear commitment to integrating specific stakeholders to support sustainability orientation, extended value creation, and systems thinking.

In summary, the results show that the business models of Portuguese nature-based tourism companies prioritise sustainability's environmental and economic dimensions, with notable shortcomings in the social dimension. With respect to extended value creation and systems thinking, interviewees describe diverse firm–environment relationships and some innovation activity; however, innovation is typically product-focused rather than process-oriented. Regarding the fourth guiding principle, interviewees report difficulties in integrating stakeholders, reflecting an individualistic stance in developing their businesses.

The results support Reinhold et al.'s (2017) assumption that nature-based tourism companies need to improve sustainability. The companies participating in this study have difficulty adhering to the four guiding principles proposed by Breuer et al. (2018). This observation may relate to limited business management literacy among nature-based tourism entrepreneurs, inadequately qualified labour, and weak adherence to new technologies (Biloslavo et al., 2018). Another reason why nature-based tourism entrepreneurs struggle to implement Breuer's four guiding principles could be related to the limited research on tourism innovation (Hjalager, 2010; Täuscher and Abdelkafi, 2018; Geissdoerfer et al., 2017; Dentchev et al., 2018), as well as business sustainability and business models for nature-based tourism (Biloslavo et al., 2018; Saheb-zamani and Bertella, 2018b; Reinhold et al., 2017b) and the lack of appropriate SBM design. Moreover, few studies on nature-based tourism address sustainability aspects (Reinhold et al., 2017; Abreu et al., 2025) and integrate all sustainability dimensions (Biloslavo et al., 2018; Abreu et al., 2025), which may be a root cause of the difficulty in adopting Breuer's four guiding principles.

Nature-based tourism companies that are sustainably committed benefit from ISBMs (Nasiri et al., 2018), which are ecologically robust and socioeconomically sustainable (Täuscher and Abdelkafi, 2018). In addition, improving business model research in tourism (Reinhold et al., 2017) and on ISBMs for NBT (Geissdoerfer et al., 2018) goes beyond the economic dimension and improves research into sustainability dimensions such as environment, sociocultural and corporate sustainability (Lüdeke-Freund and Dembek, 2017; Schaltegger et al., 2016; Abreu et al., 2025). Therefore, it is vital to include environmental, economic, and social dimensions in the SBMs of nature-based tourism

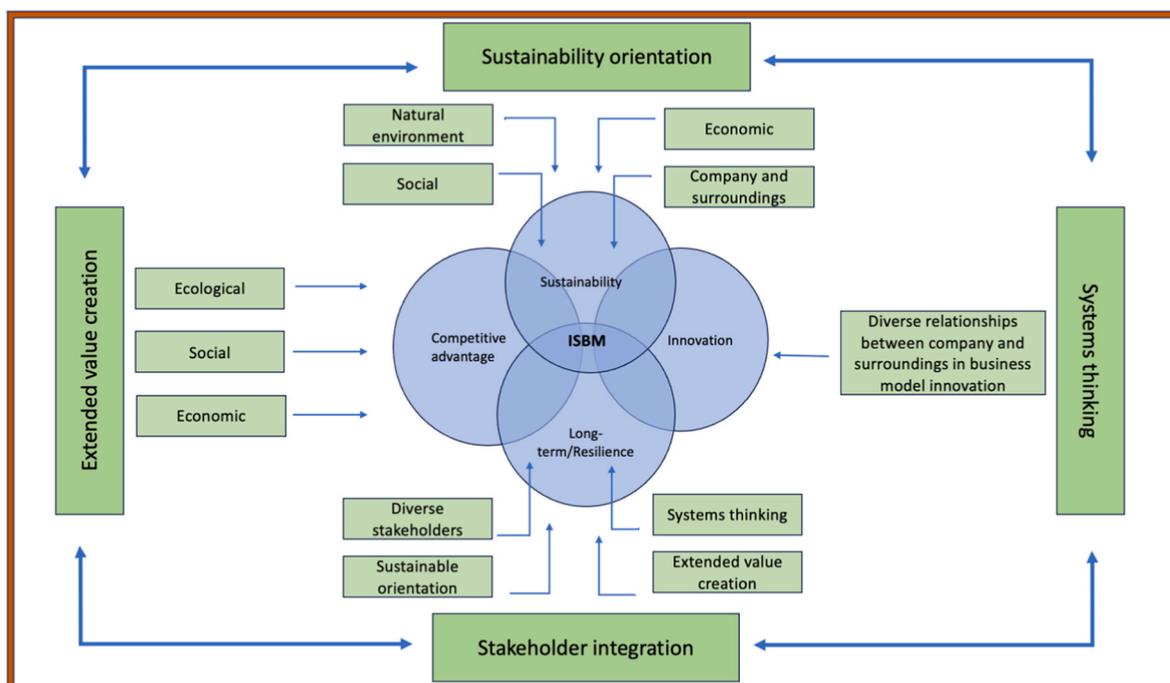


Fig. 1. Interconnection between the guiding principles of Breuer et al. (2018) and the four drivers-sustainability, innovation, competitive advantage, and long-term/resilience. (Author's elaboration).

companies (Joyce and Paquin, 2016; Biloslavo et al., 2018; Abreu et al., 2025). Lüdeke-Freund and Schaltegger (2023) discuss the relevance of engaging in the business model for sustainability, emphasising the importance of understanding whether companies are on the right path to sustainable value creation towards an ecologically and socially sustainable business model. The planned business model often differs from the realised one (Lüdeke-Freund and Schaltegger, 2023). The four major guiding principles by Breuer et al. (2018) help shape innovative business models towards sustainability (Lüdeke-Freund and Schaltegger, 2023). Yet, the four principles do not guarantee business sustainability (Lüdeke-Freund and Schaltegger, 2023). Still, they play a significant role in shaping innovative and sustainable business models by orienting firms to sustainability, extended value creation, systems thinking, and stakeholder integration (Breuer et al., 2018).

It is crucial to consider that NBT companies tend to be small or medium-sized, family-owned enterprises (França et al., 2017) and should define their future based on sustainable initiatives (Schneider and Clauss, 2019). Innovative sustainable business models positively impact corporate sustainability and sustainable innovation (Boons and Lüdeke-Freund, 2013), as well as sustainable value and reliability (Schneider and Clauss, 2019). The development of ISBMs for nature-based tourism companies requires adapting and modifying the existing business model (Schaltegger et al., 2012). Following Lüdeke-Freund and Schaltegger (2023), the authors corroborate that innovation is not a panacea. Nevertheless, filling the gap in tourism publications on business sustainability and business models (Reinhold et al., 2017), developing innovative sustainable business models for nature-based tourism increases model complexity, promotes the development of new business models, introduces innovation and sustainability, and value creation, recognises the importance of all stakeholders, and considers customers in all stages (Reinhold et al., 2017; Abreu et al., 2025). Innovative, sustainable business models align with the four guiding principles of Breuer et al. (2018). Adopting the four guiding principles in innovative, sustainable business models helps companies to commit to sustainable value creation, introduce systemic thinking, and promote stakeholder support (Lüdeke-Freund and Schaltegger, 2023).

Thus, considering the study's results, the fragility of business models can be interpreted in two ways. On the one hand, it could be interpreted as a lack of commitment to sustainability on the part of the NBT companies. On the other hand, it may reflect a need for knowledge and specific skills to implement the requirements of a sustainable business model. The second option is the most credible since the entrepreneurs generally express environmental and economic awareness and the need to make their businesses last over time. Therefore, investing in training for Portuguese nature-based tourism entrepreneurs is an urgent action to address fundamental knowledge gaps and improve the performance of these companies in sustainability, guided by the principles proposed by Breuer et al. (2018).

Several specific initiatives are proposed to help these entrepreneurs improve their management skills and enhance companies' sustainability. As a starting point, the authors suggest that nature-based tourism companies systematically assess their environmental, social, and economic impacts. The initiatives are presented as follows: (1) Identify areas where operations might negatively affect ecosystems, and define targeted measures to mitigate the identified impacts. (2) Regarding the environmental dimension of sustainability, establish and enforce guidelines for responsible wildlife observations, including maintaining a safe distance from animals, minimising noise, limiting the number of visitors in sensitive areas, and avoiding any activities that could disturb or harm wildlife. Implement initiatives to improve the management of natural resources, such as water and energy consumption. Reduce solid waste by implementing responsible purchasing policies. Develop plans to manage waste produced, reduce gas emissions, and reduce noise. (3) Implement effective waste management practices through reducing, reusing, and recycling wherever possible. (4) Complement the previous initiatives by providing guests with reusable items, encouraging them to

minimise waste production during NBT experiences. (5) Invest in energy-efficient technologies and practices in NBT companies, using renewable energy sources, optimising transportation routes to reduce fuel consumption, and implementing energy-saving measures in accommodations. (6) Develop and support initiatives contributing to local biodiversity conservation by cooperating on habitat restoration projects, reforestation efforts, and partnerships with local conservation organisations. These biodiversity initiatives should include the staff and tourists. Adhering to certifications helps companies implement an internal sustainable management system, improving their overall performance and aligning with sustainability principles.

Regarding the social dimension of sustainability, nature-based tourism entrepreneurs should involve local communities in decision-making processes, support community projects and hire locally whenever possible. Nature-based experiences may integrate tourists' educational initiatives to raise awareness about local ecosystems, wildlife, and conservation efforts. Economic initiatives may be designed to support local businesses, artisans, and suppliers, such as farmers and fishermen, ensuring that the economic benefits of nature-based tourism reach the communities hosting these activities. These measures positively impact environmental and social conditions by reducing product transportation and import-related impacts, improving local production, helping settle populations, preventing desertification, and fostering a sense of pride and ownership. Moreover, nature-based tourism companies must communicate their sustainability commitment, which helps convey their positions on the business model to suppliers and stakeholders and attracts aligned stakeholders. Collectively, these initiatives support the adoption of innovative, sustainable business models aligned with Breuer et al.'s (2018) four guiding principles.

The information compiled from interviews and data analysis provides an understanding of how nature-based tourism entrepreneurs consider innovation and sustainability in their business models, as well as their perceptions of the importance of these drivers for the competitiveness and longevity/resilience of their businesses. The research confirms four drivers of innovative sustainable business models: sustainability, innovation, competitive advantage, and long-term/resilience, and clarifies the relevance of proposing research related to developing an innovative sustainable business model for nature tourism companies (Abreu et al., 2025). This aligns with the literature, highlighting that weakly innovative businesses tend to be less sustainable (Schaltegger et al., 2012; França et al., 2017), often exhibiting limited value creation and delivery (Yang et al., 2017). Additionally, the literature emphasises a strong connection between innovation and competitive advantage (Jensen and Prebensen, 2015; Prange and Schlegelmilch, 2016), underscoring that sustainability and resilience in nature-based tourism business models are critical for determining business performance (Teece, 2010; Boons and Lüdeke-Freund, 2013; Espiner et al., 2017; Sahebazzamani and Bertella, 2018) and ensuring long-term viability (Ortiz-Villajos and Sotoca, 2018; Divisekera and Nguyen, 2018). Despite the interviewees expressing a strong personal passion for their chosen fields, some companies are less innovative, compromising their competitiveness and resilience. Public institutions and NGOs acknowledged this issue, stating that "nature-based tourism companies are an alternative and inconsistent business model with a high mortality rate."

Nature-based tourism companies are, at some level, committed to environmental sustainability and fulfil legal environmental requirements. Some of these companies have shown concern and awareness of social responsibility. Regarding the economic dimension of sustainability, these companies report a stable situation. Some entrepreneurs reveal a vision driven by value creation and systemic thinking. However, the difficulty in integrating stakeholders is evident.

The literature evidences an interconnection between the guiding principles of Breuer et al. (2018) and the four drivers: sustainability, innovation, competitive advantage, and long-term/resilience. The guiding principles proposed by Breuer et al. (2018) are enablers of

innovation, sustainability in its various dimensions, competitiveness, and long-term business/resilience, facilitating the operationalisation of innovative and sustainable business models, as noted by [Abreu et al. \(2025\)](#). Innovative and sustainable business models must adopt a sustainability orientation, embrace the extended value creation principle, incorporate the systems thinking principle, and integrate all stakeholders to promote sustainable, innovative, competitive, and long-term/resilient businesses ([Fig. 1](#)).

7. Conclusions

The results confirm that the business models of nature-based tourism companies do not fulfil the basic requirements of innovative sustainable business models (ISBMs) ([Chesbrough, 2010](#); [Boons and Lüdeke-Freund, 2013](#); [Breuer et al., 2018](#); [Bocken et al., 2018](#); [Pieroni et al., 2019](#)).

The study helps outline how to compare different business models, assess their sustainability potential, and establish an overarching structure ([Ludeke-Freund et al., 2019](#)). It confirms the importance of adopting a comprehensive view of business models, including innovative and sustainable models for nature-based tourism companies (e.g., [Baden-Fuller and Morgan, 2010](#); [Wirtz et al., 2016](#)), an emergent field of research ([Geissdoerfer et al., 2018](#)).

The importance of this research lies in understanding the sustainable business model requirements that nature-based tourism companies adopt, as outlined by [Breuer et al. \(2018\)](#). The results demonstrate the mediating role of the four guiding principles proposed by [Breuer et al. \(2018\)](#) in the development of innovative sustainability-oriented business models. The results also show that Portuguese nature-based tourism entrepreneurs demonstrate some constraints when implementing these principles. However, the results provide, albeit partial, evidence that these entrepreneurs want to promote long-term business and are concerned about environmental impact. Moreover, the study underscores the need to develop an innovative and sustainable business model for nature-based tourism companies, particularly by integrating various stakeholders through an approach geared towards sustainability, systemic thinking, and extended value creation. The research identified the need to strengthen the relationship between academia and nature-based tourism entrepreneurs to help them overcome the difficulties identified in this study and achieve more competitive, resilient, innovative, and sustainable companies.

Portugal has excellent potential for nature-based tourism growth, with its extensive coastline, long sandy beaches, biodiversity, mountains, and landscapes contributing significantly. In addition, the country's dimension, allowing for relatively short journeys, the climate, the number of daylight hours, safety, gastronomy, high-quality products, the peacefulness of the inland regions, the hotel offer and the friendliness of the people - all assets that contribute significantly to a diversified offer throughout the year. Thus, Portugal should invest in a nature-based tourism model grounded in sustainability principles to prevent over-tourism, seasonality, and the protection and engagement of local communities, and to support economic development ([Abreu et al., 2025](#)).

The study encompasses a limited number of Portuguese nature-based tourism managers, which may explain a fragmented knowledge base about nature-based tourism, particularly regarding innovation, business constraints, and economic impacts ([Fredman and Tyrväinen, 2010](#)). This limitation highlights research difficulties, leading to the absence of an adequate, sustainable business model design that addresses all dimensions of sustainability ([Fredman and Tyrväinen, 2010](#); [Fredman et al., 2012](#)) and to limited access to primary data on business models for NBT ([Reinhold et al., 2018](#)).

8. Policy contributions

The study provides policy-relevant insights for advancing innovative, sustainable business models in nature-based tourism, particularly among small and micro-enterprises. It is framed by the four principles of

sustainable business model innovation proposed by [Breuer et al. \(2018\)](#): sustainability orientation, extended value creation, systems thinking, and stakeholder integration. The findings show that current public policies remain overly focused on environmental compliance, with limited integration of social and economic dimensions, highlighting the need for policy instruments that embed sustainability more holistically into business support mechanisms. Limited managerial and strategic capabilities among nature-based tourism entrepreneurs point to the importance of targeted capacity-building policies that support sustainable business model design and extended socio-ecological value creation. Weak alignment between tourism, conservation, and territorial development underscores the need for systems-thinking-based policies and integrated governance frameworks, particularly at the local and regional levels. In addition, the predominantly informal engagement with external stakeholders reveals the need for policy-facilitated collaborative platforms to strengthen stakeholder integration and co-creation. Finally, the gap between conceptual advances in sustainable business model research and their practical application in nature-based tourism highlights the importance of policy support for knowledge transfer, experimentation, and applied research initiatives, such as pilot projects and living labs, to translate sustainable business model frameworks into context-specific practices and support more resilient tourism systems ([Breuer et al., 2018](#)).

9. Future research

Future research should focus on strengthening the relationship between academia and entrepreneurs, thus helping entrepreneurs to innovate their businesses towards sustainability. Accordingly, future research should focus on (i) adapting business models to the country's context and the needs of sustainability-driven companies. (ii) promoting experimentation with new, innovative and sustainable business models in nature-based tourism companies. (iii) promoting new ways of innovating business models for sustainability with a focus on process innovation rather than product innovation. Future research should focus on other countries and continents to understand whether NBT business models' weaknesses and limitations are geographically restricted.

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CRedit authorship contribution statement

Cristina Abreu: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Writing – original draft. **Catarina Marques:** Methodology, Supervision, Validation, Writing – review & editing. **Hélia Gonçalves Pereira:** Data curation, Methodology, Supervision, Validation.

Declaration of competing interests

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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No data was used for the research described in the article.

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