



Article Toward Regenerative Hospitality Business Models: The Case of "Hortel"

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Copyright: © 2023 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). Department of Environmental Design, Faculty for the Built Environment, University of Malta, MSD 2080 Msida, Malta; luca.caruso@um.edu.mt; Tel.: +356-2340-2471

Abstract: Due to the ecologically unfavorable state of the living world, any formal commitment made by the accommodation sector for the practical implementation of corporate social responsibility (CSR) strategies needs to be followed up by a credible plan, courageous action, and an attentive monitoring and reporting phase. Only in this way can high-end hotels in cities emerge as regenerative sustainability (RS) hubs and better amalgamate whole life-cycle thinking and economic performance in their day-to-day activities. This paper provides a detailed literature review of the ongoing transformation of the hospitality sector toward the RS paradigm, which is a concept that underpins Hortel's business model. Hortel is then contextualized as the first example of an eco-innovative turnkey business-to-business (B2B) service for a high-end hotel with an annexed restaurant. Hortel implemented nature-based solutions adapted to the hospitality sector in order to contribute to local urban biodiversity and bring hotel clients closer to nature through biophilic tactics. Services like Hortel can support, with today's resources and competences, hotels that are putting at the core of their business model planetary health and societal well-being. It also includes the description of the prototype built at Four Points by Sheraton Catania, the monitoring phase that lasted between 2016 and 2017, and other strategic business-related initiatives. This paper also contributes to the advancement of the literature discussing regenerative business models, which to date has been a largely unexplored aspect of hospitality.

Keywords: hospitality; regenerative sustainability; regenerative business model; corporate social responsibility; urban biodiversity; nature-based solutions; green marketing; biophilia; landscape design; environmental design

1. Introduction

The hospitality industry is a major worldwide industry and one of the fastest growing sectors worldwide [1]. The etymology of "hospitality" derives from the Latin word "*hospes*", meaning host [2]. The word "*xenia*" [3]—the ancient Greek concept of hospitality—had almost sacred connotations because it implied a moral obligation to treating strangers—or "*xenos*"—as one's own. People felt that the stranger could have been a potential deity in disguise bestowing rewards. In essence, the rituals of hospitality were considered a form of "guest-friendship" deeply rooted in generosity, gift exchange, and reciprocity [4]. Nowadays, less poetically, the word hospitality refers to a set of services delivered to meet the travelers' basic needs, such as providing food and accommodation. Nevertheless, its success relies on good customer service and satisfaction.

Hospitality, just like any industrial sector, can either be a force for good or it can contribute to the depletion of the planet's resources and be harmful to the well-being of society. Along with the other major industries, tourism—whose definition includes hospitality—is contributing to human-induced climate change [5,6]. On a more positive note, however, the tourism sector represents 10% of global employment and between 9 and 10% of global gross domestic product (GDP) [7,8]. Hence, hospitality [9] can be an effective part of the solution to reverse the current planetary climate and biodiversity crisis [10].

The demand for sustainable accommodation and travel options reflects travelers' changing values and priorities [11–13]. Business models in hospitality are responding to this demand by acting as responsible enterprises putting purpose before profit: *"the purpose of business is to solve the problems of people and [the] planet profitably, and not to profit from causing problems"* [14]. For this reason, hotel owners and executives are eager to learn about and implement eco-innovative [15] processes, products, and solutions that are likewise aimed at improving guest experience and business profitability. Similarly, ethical consumers are looking for and actively supporting these business initiatives.

This paper discusses Hortel's regenerative business model (RBM). Hortel is a startup initiative that, between 2016 and 2017, sought the market validation of a turnkey service for high-end hotels. This project was proposed as a practical application of the theoretical concepts of RS, which to date has been a largely unexplored area in the hospitality sector. The following argument describes more than a year of the startup's activities, including a detailed literature review showing the current transition of the hospitality sector toward regenerative practices. This prototype of the service implemented in a fully functional hotel located in Italy can be considered a case study to provide evidence on how hotels can become—along with other measures—RS hubs with today's competences and by deploying simple, economically effective, nature-based solutions (NBS) to diversify and eco-innovate [15] their business.

2. Literature Review

This literature review briefly describes the latest evolution of sustainability within the hospitality sector, starting from the lens of tourism to have a wider perspective of the matter. The following discussion presents the ideas that initially inspired Hortel's business model and the multiple values underpinning it. Additionally, this section provides evidence that Hortel should be considered as an RBM and the stakes for the various participants in the project.

2.1. From Sustainable to Regenerative Tourism

The implementation of sustainability principles in tourism evolved over the last thirty years toward a regenerative model that has the potential to completely disrupt the way the industry operates worldwide.

The tourism sector took a huge step forward when the historical definition of sustainable development—according to the Brundtland Commission [16]—and the triple bottom line became the cornerstone of the framework entitled "12 aims for Sustainable Tourism" [7] promoted by the United Nations World Tourism Organization (UNWTO). A broad agenda for change was laid out, which was underpinned by the fundamental characteristics of tourism wherein economic, social, cultural, and environmental aspects are perceived as interwoven. As such, tourism should be conceived as a driving force for the mutual enhancement of these aspects. The 12 aims framework raised attention to the conservation of natural and cultural heritage in maintaining the sociocultural authenticity of host communities via tourism activities, which is seen as enabling tolerance and intercultural understanding and dialogue. In 2005, the UN's Millennium Ecosystem Assessment [17] demonstrated that the clearance of land for tourism development was one of the causes for the loss of key ecosystems. The first criteria for sustainable travel and tourism, known as the Global Sustainable Tourism Criteria (GSTC), came out in 2008 after an extensive consultation process [18]. The GSTC provided a set of voluntary standards for the effective sustainability planning and management of businesses in tourism, including a detailed set of criteria related to biodiversity conservation.

Biodiversity conservation became a priority for tourism activities because cities ultimately depend on thriving ecosystem services. Further economic evidence is provided by an initiative called *"The economics of Ecosystem and Biodiversity"*, which was released in 2010 [19]. If biodiversity is vital for tourism, businesses have a vested interest in the overall attractiveness of the place where they operate, because one the main reasons for traveling is to enjoy high-quality and biodiverse destinations [20]. Threatening biodiversity can lead to relevant economic losses [21,22] because this has both a direct ripple effect on other activities tourists can carry out when traveling (e.g., shopping, cultural, etc.) and an indirect effect on the local stakeholders (e.g., taxes).

The One Planet Network (OPN) has identified a "green recovery" in the post-COVID-19 era [23] as a unique opportunity to further accelerate the rate of decarbonization, or net-zero tourism, by 2050 in alignment with the Paris Agreement [24] and sustainable development goal (SDG) 12. The OPN vision focuses on the centrality of nature-based solutions (NBSs) and considers biodiversity conservation to be a driver of a new tourism model. This paradigm shift sees a model that moves away from the consumer–producer duality aimed at profit maximization toward the health and well-being of socioecological systems [25] where the main stakeholders, in particular local communities [26], act as agents of change. Through transparent governance, local communities and other stakeholders can develop their environmental stewardship and be involved in the co-design of place-based innovative tourism products, services, and experiences. The creation of regenerative hubs or communities of practice can ultimately enable this sense of ownership and belonging to make the place where they live fit for future [25].

2.2. From Sustainable to Regenerative Hotels

Buildings used for accommodation purposes include peculiar features: from the original definition of hospitality, they must provide food, short-term accommodation, and some form of entertainment. Over time, high-end hotels have diversified their business models to include conference and convention facilities, signature restaurants and bars (and all the related food and beverage activities), and well-being facilities such as SPAs, swimming pools and gyms. Such a complex set of activities may be why this sector tends to have a proportionate carbon footprint [6]. Indeed, the term "green building" was mainstreamed thanks to the diffusion of voluntary third-party green building rating schemes (GBRS), such as the first edition of BREEAM (1991) and LEED (1996) [27]. They both released a set of stringent criteria applicable to the design of eco-efficient stand-alone buildings, whether new or pre-existing. A sustainable eco-efficient hotel, as described by Caruso and Buhagiar [28], must take into account the conditions of the building site, energy efficiency, indoor environmental quality, waste management and prevention during construction and operation, water management, materials, and the outdoor quality.

In 2002, organizations willing to move beyond eco-efficiency and promote eco-tourism, though still adhering to the logic of profit maximization and mass tourism, had only the *"International Ecolodges guidelines"* as a reference [29]. Beyond the GBRS features, it was recommended to implement the "whole life thinking" approach. This approach emphasizes (1) the design and technical solutions in support of the conservation of the surrounding flora and fauna; (2) a development designed to fit a specific physical and cultural context; and (3) landscaping, site-specific plants, the promotion of permaculture, and a rich color palette as well as the use of vernacular architectural motifs. Furthermore, the business operation should also contribute to the awareness of the surrounding natural and cultural environments via educational programs dedicated to tourists and employees. Hence, an ecolodge would be the main driver of tourism development where the clear intent is to purposely benefit the local community and land.

Since the "whole life-cycle" thinking was limited to eco-tourism, interest for ecoefficiency began to spread throughout the world to hotel owners and managers. Indeed, an eco-efficient hotel can minimize *Scope 1 and 2 "direct" emissions* [30,31], these being the major energy- and water-consuming activities. According to a survey carried out in 2011 [32], a typical hotel energy footprint is based on heating, cooling, ventilation and air conditioning (HVAC) uses, accounting up to 45%, which is followed by lighting (18%) and hot water production (14%). Less energy intensive are kitchen operations (13%), laundry operation (4%), and other uses (e.g., office equipment, TVs; up to 6%). The water footprint was estimated by Gossling in 2015 and found to be as high as 350 L per guest per day [33]. The *Best Environmental Management Practices* (BEMPs) were released by the EU commission in 2013 to encourage the careful consideration of the impacts of the hotel operations via audit and monitoring tasks. Also, specific and detailed requirements for gardening (water management and gray-water reuse), laundry services (e.g., cleaning of linen upon request), and kitchens (e.g., heat recovery) were introduced for the first time [34]. In 2008, the GSTC released the industry criteria for hotels, with the third update released in 2016, to make sustainable hotels a concept embedded with strict environmental and social requirements [35]. Indeed, in 2016, the Italian GBRS ClimaHotel [36] introduced new criteria to address not only direct emissions but also qualitative indicators on *"indirect" Scope 3* [30,31] reduction strategies, such as the priority to procure goods from local and regional supply chains. Other aspects to mention are the activities related to raising awareness among clients about the hotel's green features (e.g., the hotel brochure) at the time of check-in and employees' continuous training to upskill them and to help them better understand this new approach.

Debates around the so-called regenerative hotel were opened by the ecolodge concept, which was mainstreamed by the GSTC criteria based on the idea of assessing (at least qualitatively) the overall life-cycle impacts of the hotel while avoiding green washing when declaring environmental and social commitments. Since hotels must do their part to promote biodiversity conservation, the new challenge is to provide business-friendly, science-based criteria to evaluate the impact of hospitality beyond simply the building infrastructure. The first certification targeting hotels, in line with SDG 12, was the Nordic Swan ecolabel [37]. This ecolabel is offered as a mark of quality and emphasizes the role of a third-party audited environmental management standard, continuous staff training, guest information, monitoring and reporting. It is interesting for the following aspects:

- The procurement of chemicals for general cleaning, dishwashing, and laundry;
- The strict requirement to prevent loss of biodiversity for hotels with gardens and outdoor areas over 1000 m² (chemical and pesticides);
- The reduction in food waste;
- The reduction in waste (prevention, reduction, reuse, recycling) and promotion of material recovery and prohibition of disposable items.

In March 2022, in alignment with the GSTC criteria for biodiversity, the EU Taxonomy [38] included specific technical screening criteria and the principle of *do not make substantial harm* (DNSH) for accommodation. The EU taxonomy was introduced to facilitate the evaluation of how sustainable business organizations are and to prevent them from greenwashing a company's declaration.

The EU taxonomy criteria for hospitality impose having operational energy uses in line with the local definition of near zero-energy building and implementing pollution prevention strategies for combustion plants. Other environmental objectives are climate change mitigation and adaptation strategies. Similarly, to Nordic Swan the circular economy criteria look into banning single plastic use, promoting food waste prevention, and multimaterial waste separation at the source. Further recommendations include [38]:

- A biodiversity management plan should be developed to regulate operations according to the carrying capacity and the limitations of acceptable change in the area where the hotel is located.
- Sustainable supply chain: to plan an increasing rate in the procurement of products (food, drink, furniture, paper and cardboard) certified according to environmental standards starting at a minimum of 40% to reach at least an 80% threshold in three years. These are to be verified via third-party certification. For accommodation with more than 50 employees, a third-party verified environmental management system (EMAS, ISO 14000 or similar) is required.

In conclusion, Figure 1 concisely presents an overview of the path toward regenerative sustainability in hospitality.



Figure 1. The overlapping transition from sustainable to regenerative hospitality in the context of the transformation of the tourism industry.

2.3. Regenerative Hotels Enhanced by Biophilic Design and Regenerative Urban Agriculture

One of the main reasons for the net loss of urban green and tree canopy cover is the uncompensated land taken for constructing buildings in previously vegetated areas [39]. A rapid urbanization was forecasted by the UN: by 2030, two-thirds of the world population will live in cities [40]. Living in post-industrial knowledge-based economies suggests that human–nature interaction primarily occurs in cities rather than outside. At the same time, cities around the globe need to tackle the Urban Heat Island (UHI) effects caused by soaring temperatures. This is especially valid in the Mediterranean context, which is considered a hotspot for human-induced climate change [41]. Mitigating the adverse impacts of global warming on human health is necessary for bringing nature back to cities. NBS and strategically planned green infrastructure (GI) are viable solutions aimed at reversing the loss of urban biodiversity [42]. According to the International Union for Conservation of Nature (IUCN) and the World Bank, the typical NBSs favorable for urban resilience are living walls, green roofs, and intermediary landscapes (both private and public) [43].

The EU is leading the way on these matters because it has proposed unprecedented, legally binding urban biodiversity targets to ensure there is no net loss of urban trees and green canopy cover. It aims at boosting a systematic integration of vegetation into urban planning from public spaces and infrastructure to building design (facades, roofs, and their surroundings). It also imposes on Member States that they increase their rate of national urban green spaces by at least 3% by 2040 and 5% by 2050 compared to the 2021 targets [44].

Some positive outcomes of these NBS are primarily environmental; they describe the natural capabilities to reduce disaster risk, build climate resilience, and restore urban biodiversity [45]. Recent research shows interesting positive economic impacts for hotels [46]. On top of that, there is also humankind's innate need to affiliate with nature, otherwise understood as "biophilia", which is a concept coined by Erich Fromm [47]. Using biophilia as a design tactic is more than adding vegetation to buildings, as discussed by Zhong et al. [48]. The underlying theme is the physical and emotional connections to natural environments. Natural features, when these are implemented in the built environment, increase people's physical and mental health, fitness, and well-being [49,50]. For these reasons, today's hotels should merge the biophilia and hospitality experiences regardless of being a new build or in transforming an existing one. This enhancement of human health and well-being when closer to nature can be facilitated by the presence of natural shapes (arches, spheres, spirals), the stimulus to human senses due to plants and vegetation color, smell, and daylight. It also favors any place-based historical and cultural relationships with the surroundings where the green area is located [46].

Gastronomy is another important part of the hospitality industry, and the way it is made available to the hotel's guests has an impact on *indirect Scope 3 emissions* generated by the hotel operations [11]. As a decarbonization strategy, it makes sense to use NBS (green

roof, green facades, outdoor areas) as a vegetable garden to produce, at least partially, the food supplies needed by the hotel. Indeed, these can positively contribute to reducing emissions related to the non-renewable and energy-intensive transportation and packaging, because the soil used for cultivation acts as a carbon sequestrator along its life cycle [51–54]. Additionally, an organic method of cultivation [55] may be used, such as the synergistic model proposed by the Spanish farmer Emilia Hazelip [56]. From the available evidence, it can be concluded that NBS and biophilic tactics can be applied in any building and in particular to hotels for the reasons listed in the Table 1.

Environmental Aspects	Physical and Mental Benefits	Economic Benefits		
Reduced summer heat gain and cooling demand [57]; reduction in Scope 1, 2 emissions.	People close to green areas likely to achieve recommended minimum amounts of physical activity [58].	Reduced energy costs, extended lifespan of major building elements (e.g., roofs) [57,59].		
Mitigation of Urban Heat Island effect (UHI) [39].	Vegetation cover positively associated with lowered prevalence of depression, anxiety, and stress [60–62].	Property value increased by 2.5% and land value increased by 2% if a green facade is applied, while planting street trees may enhance property value by 4.7% and green spaces near the building by 9.5% [57,63].		
Improved air quality, increased absorption of pollutants [64].	Self-reported higher mood levels, perceived office attractiveness, and (in some cases) perceived comfort when plants were present [65].	Consumers show a greater willingness to pay (WTP) for accessible green roofs (up to 5% per month the rent value) [66].		
Improved water management, pollutant removal from graywater reuse [67].	Natural elements and sunlight exposure related positively to job satisfaction and organizational commitment.			
Reduced noise pollution [68].	Direct exposure to plant associated with a reduction in health complaints and improved feeling of well-being [69].			
Increased thermal comfort [64].				
Reduced <i>Scope 3 emissions</i> related to self-production of raw food supplies, carbon sequestration along the life cycle through the urban soil, and regional procurement [51–54].	The reduction in health complaints during the period with plants may also be explained by an improvement in the feeling of well-being; they are an effect of increased attention [69].			
Mitigation strategy to UHI, air quality, climate change adaptation [59].	Workplace satisfaction, self-reported levels of concentration, and perceived air quality [70].			

Table 1. The main benefits of biophilic design in buildings.

There is evidence that the hospitality concept is evolving over time to embrace holistic and ecological approaches. At the moment, energy and water-saving strategies, material recycling, and reducing greenhouse gases (GHGs) pollution [71,72] are the main objectives pursued by most hospitality businesses at the building level. Indeed, a resource-efficient green building is merely doing less bad and slowing down its damage to the environment.

When understanding that preserving and maintaining the environmental quality of touristic destinations (and hence their attractiveness) are not episodic tasks but must be based on continuous adaptation, then the accommodation sector can start its journey toward becoming a regenerative hotel, putting into practice an ecological worldview and living system thinking [25]. Du Plessis and Brandon present three main arguments that are valid for regenerative built environments in hospitality [73]:

 The design and construction process must become a co-creative process of the physical product (the building and other related infrastructure) aimed at becoming the wave

- The technologies, design strategies, and materials need to favor human encounters with nature (e.g., biophilic design) to provide a net positive impact not just merely reducing negative impacts.
- Regenerative sustainability assessments must become decision-making and monitoring tools rather than compulsory reporting tasks in the overall performance in order to continuously adapt and improve (the co-evolutionary approach) as well as allow all of the stakeholders to thrive.

2.4. The Transformation of the Accommodation Sector Driven by Corporate Social Responsibility and the Regenerative Sustainability Mindset

The discourse around the concept of responsible business started in the 1950s initially at the academic level [74]. However, the first *OECD Guidelines for Multinational Enterprises* was not published until 1977 [75,76]. At that time, the main concern was the respect of basic human rights, such as good working conditions and a decent salary. Based on these topics, the International Labor Organization (ILO) promoted the *Working Conditions (Hotels and Restaurants) Convention* [77]. Officially, it was only after the Rio Declaration in 1992 that the main policy focus started including social and environmental sustainability [16]. A very popular definition of the Corporate Social Responsibility (CSR) derives from the *EU Charter of Fundamental Rights* and *Green Paper on CSR in the European context* published in 2000 and 2001, respectively [78,79]. Similarly, the United Nations' (UN) Global Compact [80]—now signed by several hotel chains—proposed to align organizations' business operations with the UN's Ten Principles on human rights, international labor standards, the environment, and anti-corruption.

Responsible businesses are now aware that they need to evaluate their performance across three dimensions instead of two: risk, return, *and* impact. The common ground of a reinvented capitalistic model mainly emphasizes the necessity to steer away from unsustainable business models that institutionalize social and environmental harm and hold back progress on SDGs [9]. For example, the EU encouraged the introduction of due diligence to increase transparency on non-financial aspects, which resulted in the formalization of CSR, based on the 2014/95/EU, Non-Financial Reporting Directive (NFRD) [79].

Following this holistic mindset, CSR is about delivering value beyond profit maximization and long-term benefits to all stakeholders by integrating economic, social, and ecological aims into companies' business strategies. This prevents organizations from having "carbon tunnel vision", which is a form of selective attention based on a decarbonizationonly pathway [81]. In essence, companies that voluntarily develop CSR initiatives operate according to Crane et al. [82] by going beyond the minimum prescribed by the law. Their management is also questioning why these organizations exist in the first place; in other words, they look for the purpose behind their day-to-day activities. This business mindset is more than a philanthropic approach because they consider themselves accountable to multiple stakeholders and not to shareholders only. That is why they internalize and manage in some ways negative externalities so that the triple bottom line of environmental, social, and economic responsibilities is aligned to maximize the company's profitability. This can be a form of innovation and a potential source of long-term competitive advantage according to Ioannou [83]. They can engage in a so-called "superior profitability" if they can solve apparently conflicting economic, social, and environmental aspects of their business.

The main hotel chains have recognized that having a sound ESG policy makes business sense because this covers all the spheres of their operation. Indeed, the overall socio-economic and environmental impact on communities and territories where the hotel is located can be directly associated with the activities of construction, operation, and (potentially) demolition of the hotel premises. Other direct and indirect impacts are due to the transportation of guests, retail activities, restaurant and food service, and water uses like laundry services [9]. The analysis provided by Kalitsch [84] in Table 2 offers the criteria under which it is possible to compare the common aspects that are found in CSR policies of major hotel chains: IHG—Journey to Tomorrow [85], Marriott—Serve 360 [86], and Accor [87]. It has been found that the main areas of commitment are focused on business conduct, environmental precautionary principles, impact on communities, and marketing and communication.

Table 2. The comparison of the main hotel's chains CSR commitments.

Business Conduct	ess Conduct Environmental Precautionary Principle		Impact on Communities	
Community involvement: human rights of indigenous people, non-discrimination and diversity. The promotion of gender balance and the increment of under-represented groups across their leadership. Upskilling work force to make them motivated and satisfied brand ambassadors with customers.	Reduction in accommodation footprint (water, energy, waste) with particular attention to promote buildings retrofitting according to third-party GBRS. The exploitation of renewable energy systems. Zero plastic policy and other circular and recycling initiatives are also adopted.	To engage clients and create awareness of company's commitments.	The promotion of employees' voluntary services for the local community where the hotel is located. The promotion of reforestation and aid to communities facing natural disasters around the world.	

When it comes to marketing and advertising to engage clients, to date, only Accor with the Planet 21 initiative drives attention to this topic to effectively deliver a positive impact. The other two plans do little to highlight this aspect. Food is an extremely specific category for CSR in accommodation. A general commitment to minimizing food waste—via prevention, donation and divert plans—is addressed by all the plans analyzed. In particular, Accor promotes a farm-to-fork approach, and part of their raw food supplies are produced via vegetable gardens planted in more than 1000 hotels (as roof gardens or via aquaponics systems).

The vision of a responsible business operating in the 21st century should embrace the following principles [88]:

- Long-term thinking: business and investors should be aligned with much longer timeframes where social and environmental feedback loops play out.
- Regenerative: a business could actively contribute to the health of wider socioeconomic and environmental systems just like natural loops. All the forms of capital have to be nurtured: natural, social, human, and economic.
- Stakeholder-oriented: the governance model, corporate decision making, and incentive systems should be implemented with the purpose of creating value not only to shareholders but also in favor of employees, customers, suppliers, communities, and the natural environment.
- Accountable: businesses contribute to society by paying taxes. These have to be fair, and tax avoidance needs to be more difficult. Companies should adopt responsible stewardship practices and engage with ESG issues.

A recent and relevant contribution to the debate regarding regenerative business is offered by Konietzo et al. [89]. They combine literature reviews and six focus groups to clarify the concept of RBM and differentiate them from sustainable and circular models. This paper advances the field because it provides a much-needed framework to clearly identify what kind of value is created and offered for stakeholders to avoid the risk of generating new forms of greenwashing when adopting regeneration and net-positive impact narratives. The core aspect offered by a regenerative organization is to move away from an anthropocentric worldview toward business models focused on planetary health and societal well-being. Businesses of this kind recognize that their own health, and human health and well-being in general, is subject to the overall status of the biosphere in which society is deeply embedded. Furthermore, organizations implementing RBMs ought to achieve the following:

- Promote, manage, and align their activities with the living system that surrounds them through co-evolutionary processes in order to build resilience and adaptive capacity against external perturbations.
- Base their foundations of co-creative partnership on nature and justice and fairness, and integrate different cultural perspectives, especially from indigenous communities.
- Capture value through multi-capital accounting (e.g., economic, human, and natural) and ensure that profits are also enjoyed by local communities and are used to enhance and protect the surrounding environment.
- Aim for a net positive impact across all stakeholder levels: nature, societies, customers, suppliers and partners, shareholders and investors, and employees. The organization's handprint (positive impact in the market of the product or service) is bigger than its footprint (negative impact) along its life cycle.

2.5. Nature-Based Solutions and Biophilic Hotel Features as Marketing Strategies to Drive Pro-Environmental Guests' Behavior

It has been reported that companies now show a greater maturity in understanding the importance of embedding sustainability practices in business [90]. Hotels operating in a highly competitive market are eager to offer innovative services, very often based on environmentally sustainable practices (ESPs), to satisfy customers' environmental expectation and needs. These organizations are managed by ecologically aware C-suites that are proactively implementing ESPs in their operational plans. This can be explained by a recent survey [91] where it was found that 78% of global travelers are willing to stay in a sustainable hotel during their future travels. Another report from Expedia reveals that traveler willingness to pay premium is chiefly on food, activities and experiences; accommodation comes fourth after transportation [13].

Businesses should act to encourage pro-environmental behavior (PEB), which refers to the intention to change human behavior to benefit the environment. The literature on PEB as applied to hospitality is still nascent, but the main argument is that there needs to be congruence between the pro-environmental values of key personnel—owners, managers, employees—and those of the organization [92]. This connection must also resonate with clients' values. Social exchange theory (SET) explains that a person's self-identity is reliant upon individual and social factors. Therefore, if society places importance on green behaviors, then it is expected that society can influence individuals' patronage of green businesses, e.g., green restaurants [93] and hotels. This is especially relevant in the field of marketing, whereby green satisfaction (GS) means having environmental or green concern pleasurably satisfied. A rigorous study on a 5-star hotel in Egypt applied the SET model and discovered a positive correlation between ESPs and GS [94]. Furthermore, in the same study, customer citizen behavior-positive word-of-mouth, suggestions for service improvement, etc.—was also positively linked to ESPs. A conclusion from this paper suggests that the typical ways to encourage environmental awareness for hotel guests is via incentives (e.g., loyalty programs, special discounts) provided by hotel management to encourage customer participation in eco-friendly activities. Measuring GS periodically and asking for feedback on how to improve the service is also extremely valuable. When it comes to raising environmental awareness among employees, if GS is part of the organization's culture, then the upskilling of staff via continual training is essential.

A company's commitment to making a positive socioenvironmental impact is highly appreciated by ethical consumers [95]. Ethical consumers—like Generation Z (GenZ), or individuals born around the mid-1990s and now circa 32% of the global population—are well known to be engaged in PEB because they want to become actors of change in their communities, live a meaningful life, and overcome any form of eco-anxiety [95]. For example, Gen Zers tend to hold strong moral norms and attitudes toward environmental and social issues and are concerned about their consumption footprint on society and future

generations. Their actions usually include eating less meat, conserving water, supporting climate-friendly policies, and engaging in environmental activism. They are willing to pay a premium for green products to support companies' efforts in maintaining a net positive impact. They are also tech-savvy and well versed in the use of social media [93], which are now fundamental channels for any business willing to communicate directly to their customers (e.g., Facebook and Instagram) and to other stakeholders for B2B networking (e.g., LinkedIn) [96].

Although positive guest experiences and business profitability over environmental initiatives are the main concerns of hotel owners and executives [12], the hospitality sector is increasingly committed to a green and more responsible recovery from the pandemic, so a positive guest experience should be evaluated through the GS lens and must include ESPs to satisfy the needs of the ever-growing number of eco-conscious travelers. At the same time, 49% of travelers believe that there are not enough sustainable travel options available [96]. This high percentage might be explained by noting that three out of four accommodation providers have implemented some form of ESPs at their property, but only one-third of them actively communicate their efforts to potential guests at the time of the check-in [13].

Hotels' ESPs cannot influence guests' booking choices unless their efforts toward ongoing socio-ecological transition is easily accessible and communicated clearly to guests [13]. As previously shown in Table 2, only Accor in its CSR pledge highlighted its specific communication and marketing strategy to engage clients and make them aware of the implementation of Accor's ESGs metrics in business operations [87]. This means that other important players are (apparently) not giving enough attention to them. This failure to promote ESPs—especially at the time of booking—can be seen by SMEs (covering circa 80% of the hotel sector) to be unimportant because most of the market leaders are not actively engaged in communicating their CSR efforts.

If the nexus to unlock resources for more ambitious RS commitments is the guest experience, then communication campaigns can support a cycle of supply and demand for sustainable travel choices. These can mutually reinforce each other, and green investments may amortize better and faster. This must start from the online experience, for example via social media, website pages, or when booking a hotel stay via online travel platforms. It is also important to promote sustainability reports accompanied by (possibly third-party) verified data. These efforts may pay off in the long run. Consider, for example, a recent survey from Expedia [13] that showed travelers' willingness to base their future decisions on tourism providers who declare their commitment to sustainable practices (from 34% to 40%). Participants also expressed willingness to book lodgings that are actively decreasing their environmental impact (the influence of ESPs rose interest from 40% to 45%).

It is important to point out that travelers prioritize authentic experiences that are representative of the local culture they visit and which reduce general waste and energy consumption (e.g., careful use of air conditioning and lighting) [91]. They need to find clear sustainable travel information possibly by leveraging visual formats. The brands need to be convincing, and the sustainability commitment needs to be authentic [97]. As a result of this, consumers are willing to pay up to as much as 38% more for sustainable travel options. The value and positive impacts of these conscientious choices need to be clearly illustrated over conventional choices [13].

3. Methodology

Nowadays, any form of eco-innovation targeting the hospitality sector should, in essence, be inspired by the Greek word *xenia* now reframed under the holistic concept of RS. The Hortel business model is presented as an answer to the research question inspired by the work of Legrand et al. [11], Hawken [98], and Konietzko et al. [89], which is adapted to the accommodation sector:

"How can the hospitality sector develop and operate businesses that are attractive to guests, healthy and engaging to workers, active in the community, sensitive and regenerative to the environment, efficient to operators, and profitable to hotel owners?"

To answer this research question, data triangulation [99] is used—in a qualitative matter—to explain why Hortel's services were intended to provide a practical solution to the complex nexus between food, urban biodiversity, biophilia, marketing and communication, architecture, and regenerative sustainability as applied to accommodation.

The following paragraphs are dedicated to the description of this practical example of an eco-innovative B2B service and its market validation of the prototype implemented in a fully functional high-end hotel located in Italy. The methodology used in this publication is based on the framework of the regenerative business model (RBM) proposed by Konietzko et al. [89] and Hawken's definition of a regenerative practice [98]. These publications have each provided a list of recurrent aspects of companies that take planetary health and societal well-being as their main value propositions. The mixed-method research includes the analytics obtained from social media, the type of audience who participated in the events, the information about the cultivation methods and maintenance phase of the garden, and the impact value chain. In particular, the impact value chain was instrumental to show the overlap with the GSTC criteria for hotels, which was to date identified as the most holistic requirements that a hotel organization can voluntarily implement in their business operation. Being also a startup initiative, Hortel's value proposition and business model canvas (BMC) is described and discussed through the well-known strategic tools made available by the business model framework developed by Osterwalder and Pigneur [100].

4. Hortel: A Regenerative Business Model for an Eco-Innovative B2B Service

4.1. A Brief History of Hortel

The portmanteau "Hortel" derives from the crasis of two words: "horticultural" (anything related to vegetable gardening activities) and "hotel". In 2016, this startup project won a competitive call for a one-year incubation program at Vulcanic Srls [101], which was then sponsored by the Four Points by Sheraton Catania (FPBS) Hotel [102]. The awarded team benefitted from strategic counseling provided by Vulcanic's mentorship program, which included the possibility to build a prototype by converting an underutilized garden available on site. The FPBS has a long history of CSR commitments because it is also part of the larger hotel chain Marriot Bonvoy Group. The mentorship program addressed business-related aspects, such as competitor analysis, value proposition, impact value chain, business modeling, and marketing strategy. These are duly discussed below.

FPBS is located in Acicastello, which is on the outskirts of the metropolitan area of Catania. Being close to the seashore, it experiences a Mediterranean microclimate. The main client's request was to further diversify the rich program of services already present at that time: a signature restaurant, an exhibition area for artists, pool services, a gym, an SPA, and a conference venue, on top of 4-star rated hotel facilities. The outdoor green area was initially used as leisure space and then selected to be converted into an urban vegetable garden to partially supply fresh raw food to the annexed restaurant. The main activities, described in the following paragraphs, were carried out between 2016 and 2017 as a result of several workshops, specialized lectures and aided by the mentors at the incubator. The client's feedback was collected, especially during the design of the garden. Renovation works were completed in April 2017.

4.2. Competitor Analysis

One of the most important tasks was to identify potential competitors before launching the B2B service in the market. What was found at the time were a series of projects and business initiatives whose main features neither targeted the hospitality sector nor included in full all the integrated architectural, agronomic, supply chain, and leisure activities that lay at the foundation of Hortel's value proposition. The comparison made in Table 3 includes the pillar of this eco-innovative project in line with the evidence described in the literature review regarding regenerative sustainability in hospitality. The criteria against which they were compared are as follows:

- Environment: water and energy efficiency, UHI mitigation, carbon sequestration through the soil;
- Agriculture and Urban Biodiversity: organic cultivation, use of local plants;
- Efficient Management: garden management, food waste prevention, composting;
- Ethical–Social and Stakeholders' Impact: co-design the area with the client, stakeholder involvement such as local associations, local organic producers, third-sector parties, garden accessible to all, training for employees;
- Networking: creation of a network of organic farmers and/or social entrepreneurs for events;
- Events and Marketing: co-creation of events for hotel's guests and local citizens, social media campaigns, and branded products.

Table 3. The competitor analysis used for Hortel's business model. "X" means that the header of the column is one of the project's features.

Services	Operating in Hotels	Environ- ment	Agriculture and Urban Biodiversity	Efficient Manage- ment	Ethical-Social and Stakeholders' Impact	Networking	Events and Marketing
St. Horto		Х	Х				
Horto La Scala	Х	Х	Х		Х	Х	
Top Ager	Х	Х	Х	Х	Х		
Orto Capovolto		Х	Х	Х	Х	Х	Х
Hortel	Х	Х	Х	Х	Х	Х	Х

The first project listed in Table 3 is St. Horto [103], which is an outdoor design project by the Italian firm OFL Architecture. It was chosen for its high-quality modular outdoor furniture design, technologies, and the ease of dismantling.

Orto of the Hotel La Scala [104] is the conversion of the topmost floor of the four-star *Hotel La Scala* into a roof garden. The production of raw food partially covers the demand of its annexed restaurant, which procures most of its supply within an hour from the hotel's location in Milan.

Top Ager [105] is an established French firm with a specialized know-how in landscape design and agronomic consultation. This firm provided turnkey services to install the vegetable garden on the green roof of the *Pullman Hotel* in Paris.

Orto Capovolto [106] was selected as a typical example of a design project aimed at regenerating urban voids inside cities with greening interventions. It also organizes events and activities, especially for kids, about sustainability, healthy food, and organic agriculture.

It is evident that Hortel stands out among the above competitors because the value proposition was purposely conceived to include the services that are coherent to each other but not applied in other projects. The main challenge that this business initiative had to face was to build a business model able to integrate these services in a cost-effective manner.

4.3. Hortel's Value Proposition Canvas

Value proposition entails matching the service offered with the client needs to be satisfied. The value lies in offering solutions to a client's problems. To apply the value proposition canvas [100], the identified customer persona is the hotel manager or owner, the latter especially in the case of small and medium enterprises (SMEs) where they often actively make decisions related to business operations and strategies. Figure 2 below shows a graphical representation of the value proposition canvas to aid the interpretation of the initiative.



Figure 2. Hortel's value proposition canvas, adapted from [107].

The typical *customer pains* are usually the unprofitable green outdoor area, which is considered an added cost in terms of maintenance, but also the insufficient time and skills of the employees to be dedicated to the development of new service of this kind that is able to satisfy a demanding clientele. The listed *customer jobs* are typically related to the optimization of the outdoor space (or green roof) to cater for vegetable garden. The hotel manager also has to implement strategies to diversify the clientele, especially the ethical consumer niche, and find reliable networks of organic farmers for the additional supply of raw food. In response to this requirement, Hortel offered a fast design and built a turnkey service to operate the vegetable garden along with a one-year maintenance plan. In parallel, the team also co-created events tailor-made for the hotel and its clients in collaboration, with other social entrepreneurs, to be hosted in the garden.

In a highly competitive market, hotel services are at risk of becoming obsolete and are subjected to the seasonality of demand. To reduce the likelihood of obsolescence, Hortel's *pain relievers* wanted to bring in the skills needed to activate the service and to convert the green area on time and within the budget.

In Figure 2, hotels have the need to constantly innovate their hospitality and gastronomic offers as well as find the most appropriate ways to carry out ordinary maintenance and the creation of the events. Hortel likewise needed to provide training to the hotel's employees on ordinary maintenance. The *gains* offered to clients by implementing in full all the Hortel's services chiefly include the improvement of brand awareness and reputation, the enhancement of customer retention, the acquisition of new clients and more frequent bookings from existing customers (both local and tourists), and the diversification of revenues. Employee upskilling and high-quality products harvested from the garden are other advantages.

4.4. Hortel's Brand Strategy

The overall goal of the team at the end of the incubation program was to kickstart a business whose official launch into the market had an already solid online presence. The marketing and communication campaign was based on the SMART principles of specific, measurable, achievable, relevant, and time-related tasks. The marketing aimed for two strategies: one of them was to collect business-to-business (B2B) leads such as hotel managers and owners or CSR experts working in hotel chains. The second aim was to support the business-to-consumer (B2C) communications for all Hortels. B2B communication and marketing revolved around sharing updates on the startup activities, namely invitation to talks, presentation, and awards. In the case of the prototype, the B2C communication strategy was co-created with the FPBS team to raise awareness among hotel clients and locals (mainly through FB and Instagram) and to promote public events.

The chosen channels were purposely diversified. For example, Facebook and Instagram aimed at attracting B2C clients for the FPBS via the sharing of good practices, social events, give aways, and co-branding with social media influencers, especially during the events. B2B communication used LinkedIn and newsletters to share information, such as data from maintenance activities and the award received by FPBS on 25 October 2017 for innovative business practices [108]. Hortel's prototype was also presented at an academic level during the national conference promoted by *Analisti Ambientali* (Environmental Analyst in English) held at the University of Napoli Federico II on 27 November 2017 [107]. On top of virtual communications, in-person events held at the garden definitely added value because travelers and locals could appreciate firsthand a biophilic environment and understand the whole initiative, including the social and environmental impacts of the project. At the same time, any potential B2B client willing to have its own Hortel could experience it firsthand in order to overcome doubts about this innovative service.

The first event was organized on 9 April 2017 (Figure 3a) at the inauguration of the garden. This initiative mainly targeted children. In Figures 1 and 2, a green facilitator shows the young kids how to find and collect vegetables and fruits inside the garden to be used to reproduce Arcimboldi's paintings (Figure 3b). Another event on 4 June 2017 was based on matching signature cocktails with Mediterranean spices: an expert bartender guided the attendees in choosing their preferred spices while inventing a cocktail on the spot.



Figure 3. (a) Hortel opened to public; (b) activities for children: Arcimboldi's paintings.

On 23 July 2017, an event with an all-white party with a local group of social media influencers helped to increase traffic on both social media pages. They were invited to create specific posts and stories during the private tour of the garden. An Instagram contest was organized a week in advance to obtain free tickets to attend the paid events (called *horto spring and horto colours*) on 22 April 2017. All of these types of events included a guided tour of the garden that explained the overall initiative. It was important to note that social media coverage did not need much paid advertisement but benefitted from organic growth with the highest peak of visualization happening in April 2017 (with almost 4000 visitors to the page). A steady growth of followers on Facebook and Instagram was also noted. At the same time, cross-posting with the hotel's official pages may have been beneficial, increasing this exposure.

Other planned activities did not actualize. One was the addition of a booking system for the B2C events and a map to the official Hortel website where all the future gardens would be geolocalized. Another was search engine optimization (SEO) and a search engine marketing (SEM) strategy. SEO and SEM aimed at positioning the Hortel company at the top of search engines, and the activity on social networks would then work in synergy with the website, while the main platform for booking events was to be held in the various Hortels. Each hotel included in the platform would have received a "special mention" (with related benefits such as free events organized by the Hortel team) once certain objectives regarding their environmental impact and energy efficiency had been achieved thanks also to the development of services offered by Hortel. Also, all of the these marketing activities should have been reflected in online booking platforms (e.g., Booking.com, Expedia) to highlight these features compared to competitors so that the lowest price was not the only reason to choose the holiday destination at the time of booking. The impact value chain [109] was introduced by the G8 working group to measure the success of an investment and to gain incremental levels of insight on its long-term social and environmental benefits. Figure 4 illustrates the Hortel prototype's impact value chain applied to a hotel like FPBS. The scheme is slightly modified to include GSTC criteria for hotels (v.3) [35] and related SDGs whenever relevant. Some of the GSTC criteria refer to the following:



Figure 4. Hortel's impact value chain.

- Effective sustainable management and in particular staff engagement and customer experience;
- Minimization of negative impact by promoting urban biodiversity with native plants;
- Minimization of pollution for building-related activities, food waste, and water management;
- Maximization of social and economic benefits to the local community by supporting local entrepreneurs and, more importantly, environmentally preferable purchasing of building materials and food;
- Maximization of material and immaterial cultural heritage (the hotel location is in an area famous for the cultivation of citrus);
- Decent work conditions for training activities and ordinary maintenance.

A brief overview of what was previously discussed in the literature review and its relevance to Hortel with in relation to GSTC criteria is provided. The impact assessment starts from the main resources needed to start activities promoted by Hortel, in other words, the competences of human capital and the presence of high value natural capital to be converted (the outdoor garden or a green roof). The main activities are the design of the vegetable garden as NBS (GSTC A7), the organic cultivation methods (GSTC D2.6), the maintenance tasks and the co-creation of events (GSTC A4) with the hotel, the latter also thanks to the support of social innovators and entrepreneurs (GSTC A5 and A6). The immediate and tangible results expected (outputs) are the new multifunctional green area, a new service to be offered, the self-production of raw food and related monetary savings from external supplies. The proposed cultivation method also supports better water management (GSTC 1.3-4) and the elimination of food waste (when implementing composting and other similar strategies GSTC D2.4). The changes and effects on the organization (the outcomes) are related to the use of local plants, which contribute to the native species and are ideal for maintaining local biodiversity (GSTC D3.2) and the sustainable management of the hotel (GSTC A1). These changes also lower the hotel's carbon and water footprints (GSTC D2.1-2) and serve the creation of new jobs (green and local—GSTC B2) and the

attraction and retention of new talent. The impact is intended to be a change or effect on society and the environment, and it includes (1) facilitating the procurement of organic food purchased through local suppliers (GSTC B1) with environmental credentials or that support the local economy; (2) supporting urban biodiversity stewardship with native plants and the vegetable garden (GSTC A7.2, D3.1); and (3) promoting mental and physical health via biophilia (GSTC B7).

4.6. Hortel's Regenerative Business Model

The business model describes the rationale of how an organization creates, delivers, and captures value [100]. In 2017, the key partners identified were the FPBS (the client with direct contact with the Marriot Bonvoy group), the outsourced agronomist, who offered the direct connection with his network of local producers, and the Vulcanic incubator and Impact Hub networks (including social enterprises and young entrepreneurs). The customer segments considered a 4 to 5-star hotel ideal for applying the CSR strategy and ESG metrics in their operations. These hotels also have signature restaurants with highly qualified chiefs. In 2016, the market size of high-end hotels located in Italy's urban areas, and that were available on the online platform Booking.com, compared with a 2017 study [110] revealed the following:

- There were 393 five-star hotels and resorts with embedded restaurants, 27 of which were in Sicily. The same region showed a good business potential because 10 out of 27 (37%) had green areas that could be converted into productive vegetable gardens.
- There were 5354 four-star hotels and resorts with embedded restaurants, 288 of which were in Sicily. Of these 288, 140 (48%) were equipped with green outdoor areas with the potential to be used as productive spaces. Only 3 of these 140 hotels already exploited that land for agronomic uses, namely as vineyards, olive tree groves, or farms.

The key activities performed by Hortel were the integrated architectural and landscape design and consultancy on agronomic services. Key resources included professional competences and management skills, marketing and communication (because of digital and marketing experts present in the team), and architectural, landscape, and agronomic design skills. The expected customer relationship to be built focused on upskilling the hotel's employees for ordinary maintenance and the co-creation of events and the vegetable garden tailor-made for the hotel to support continuous marketing activities. A one-year maintenance of the garden included co-created events and opening the network to local producers and social entrepreneurs. The channels used to facilitate the diffusion of this initiative were identified in specialized trade fairs, local associations of producers, and through B2B networking with representatives of the hotel sector. As represented in the graphic abstract, the turnkey design and build service discussed here consisted of the following:

- Turnkey architectural, landscape, engineering, and agronomic design;
- Leisure activities to be carried out mainly in the renovated area with the aim of making it available not only to hotel guests but also to new customer segments, such as citizens, families, and local tourists (e.g., organic aperitif with products from the garden, yoga classes, team-building activities, and so on);
- Training programs for the hotel staff who will take care of the "horto" as ordinary maintenance (vegetable garden), extended not only to gardeners or maintenance workers but also to restaurant staff;
- Marketing and communication.

A visual representation of the Hortel's BMC is represented in Figure 5 below.



Figure 5. Hortel's regenerative business model, adapted from [107]."*" refers to the star rating.

Hortel activities can be interpreted according to Hawken's [98] definition of a regenerative practice and hence a RBM:

- Hortel "creates" more life by using organic agricultural methods and organizing events in the garden to create awareness;
- Hortel "heals" the future because the hotel can become a regenerative hub in the local community and kickstart a ripple effect in neighboring communities as well as inspire other local businesses;
- Hortel favors the "enhancement" of human well-being by providing increased amenities where clients and employees can improve their psychological and mental health;
- Hortel contributes to the "decrement" of global warming through its practical implementation of NBS;
- Hortel's activities "serve" the innate human need to affiliate with nature or biophilia. Also, the related upskilling programs provide workers with dignity, which they then use to enhance the human capital working for the hotel.

4.7. The Prototype Built at Four Points by Sheraton Catania

The project site is located in Acicastello (Italy) characterized by features of the Mediterranean climate. Because the location is at the center of the Mediterranean basin, climatologists see it as a hotspot for Climate Change studies. Indeed, environmental conditions can have a dramatic effect on the competitiveness and sustainability of climate-sensitive destinations in terms of length and quality of tourist seasons (extreme hot temperatures, water scarcity, draught, reduced rainfall patterns, loss of ecosystem services, etc.). These peculiarities were included in the design brief for landscape and agronomic consultancy.

Climate can be a determining factor when people choose their holiday destinations. The proposed NBS can mitigate these detrimental effects. As shown by the satellite images in Figure 6a, the site was kept in good condition, and it is placed on the northwestern part of the site right behind the four-story buildings.

The garden was conceived for aesthetic purposes only, but according to the owner, it was barely used by the clients (Figure 6b).

The team proposed the conversion of this 450 m² garden characterized by two specialized areas. One would be rural with cultivation directly on soil because of the better solar exposure to daily sunlight (Figure 7a).

The other one would require higher aesthetic features with cultivation on raised beds and with a direct connection to the restaurant. The latter is penalized by the presence of the building casting shades for an extended time of the day throughout the year. In order to overcome this issue and clearly establish the threshold between the two areas (rural and aesthetic), the design team performed a sunlight hour simulation for 21 December, the winter solstice (Figure 7b) being the shortest day of the year in terms of solar exposure for the latitude of Acicastello (39° N). This allowed them to measure the distribution of the hours of solar exposure over the site with great precision, starting from the solar radiation database recorded by a local weather station. Therefore, the position of the raised bed is neither random nor arbitrary but, on the contrary, considers the real site conditions in order to maximize solar exposure of the plants throughout the year.



Figure 6. (a) Location of the hotel; (b) pre-existing garden before transformation. Reproduced from [107].



Figure 7. (a) Plan of the garden; (b) sunlight analysis on 21 December. Reproduced from [107].

In particular, the design of the raised beds was characterized by a pine wood cladding and steel structure, as shown in Figure 8a, to hold the soil protected by a waterproofing membrane. The height of these beds was designed to ensure maximum ergonomics for operators during maintenance. Cultivation on soil had to follow the specific requirements of synergistic agriculture, as seen in Figure 8b.

Another integrated design solution adopted was the drip irrigation system, which is useful for irrigating only near the roots, and it is also equipped with a control system to strictly manage the water flow according to an established schedule. Water is delivered in the morning at 7 a.m. and in the evening at 7 p.m. to limit evaporation during the hottest hours of the day. The mulching layer is a very important water conservation strategy to keep the soil moist during heat waves. It is also required by the synergistic cultivation method. Indeed, synergistic agriculture focuses on a self-established biological equilibrium between soil components (animals, plants, and microorganisms), the absence of chemical fertilizers, and the control of parasites. Plants are then fed with a natural exchange of carbon compounds with microorganisms of the rhizosphere derived from root exudates and dead cells [56]. The cultivation on the soil in the rural area utilized taller plants on

raised beds to cover their shorter counterparts. In raised beds, a jute cloth was also applied instead of leaves or other natural residues for a more elegant appearance.



Figure 8. (a) The raised beds; (b) cultivation on soil (credits FPBS).

The project team supervised the maintenance activities as an additional added value to the Hortel service, as demonstrated in Figure 9.



Figure 9. The cultivation and maintenance plan, reproduced from [107].

Each of these interventions were duly reported in a logbook called the *Garden Diary*, through which the client was constantly updated on costs, the type of intervention carried out, and also the operator who would perform these interventions. Figure 9 is an infographic that summarizes all of the interventions implemented in the garden since the plants were planted during 2017. The rotation of the crops was carefully managed in order to keep the soil in a healthy state via pruning, mulching, adding compost, and through various water management strategies. After the suspension of the startup activities in September 2017, the maintenance began to be carried out by FPBS.

5. Discussion and Conclusions

Hortel's initiative has highlighted the centrality of nature as a master architect to foster both human and environmental regeneration [46]. Since businesses and tourism have a vested interest in maintaining landscapes and natural assets, namely to benefit economically from the influx of tourists, they must contribute as much as they can to the

conservation and flourishing of local (urban) biodiversity. The increased scrutiny posed by the international public and private institutions about the way the travel industry functions and the strategies and plans for a regenerative future must prevent any risk of greenwashing. Nature-based solutions (NBSs), like green roofs and urban vegetable gardens, are science-based and effective solutions to greenwashing problems.

Business organizations are voluntarily testing and implementing regenerative practices and strategies to combat the ecologically unfavorable state of the living world and the need to go beyond sustainable development. On one hand, ecologically aware C-suites are eager to discover and apply innovative environmentally sustainable practices (ESPs) in their hotel's operations, especially if they already have robust ESG tactics in place. On the other hand, ethical consumers are looking for responsible businesses that are committed to bold actions and to monitoring sustainable actions. Hotels can become regenerative sustainability hubs starting from the principle that humans are fundamentally dependent on nature. Today's hotel concept should focus on merging the hospitality experience, whether in new or pre-existing buildings, with biophilia that fosters a net positive impact while enhancing the physical and psychological well-being of communities, employees, and guests.

Hortel is proposed as a regenerative business model (RBM) because of the willingness to offer a turnkey design and build service to solve the complex nexus between food, urban biodiversity, biophilia, marketing and communication, architecture, and regenerative sustainability as applied to accommodation. From the literature review and the related data triangulation earlier provided emerges the common problem that the abovementioned aspects are currently treated in a siloed fashion in the current commercial sphere of accommodation services, whereas Hortel shows that they can and should be integrated. At its conception, the Hortel service was clearly differentiated from its competitors who focused only on being less harmful to the environment via conventional sustainability strategies. For this reason, Hortel's business model combined architecture and landscape design with agronomic expertise to convert unproductive outdoor green areas (or flat rooftops) of high-end hotels into productive urban vegetable gardens. These areas must be managed with organic methods of cultivation to provide, at least partially, high quality raw food to the annexed signature restaurant. The organization of events, for both local customer and travelers, to enjoy the renovated garden increases public interest attention and constitutes an additional source of revenue for the hotel to speed up the return on its investment in the initiative.

Some critical comments must also be made as scope for future research. In particular, there is the need for water and carbon footprints and/or a holistic life-cycle assessment of the activities revolving around the garden. Such assessments are necessary to quantify the net positive impact, which is here described only theoretically and based on the alignment with well-known GSTC criteria for hotels. The argument made in this paper used mixed-method research to collect and obtain meaningful business-friendly information from the social media analytics, the type of audience that participated in the events, the information about cultivation methods and maintenance phases of the garden, and the impact value chain among other elements. High-end hotels can be supported by regenerative practices, like Hortel, embedding NBS and biophilic design and thereby kickstart a radical transformation of their businesses toward planetary health and societal well-being.

In conclusion, Hortel promoted a contemporary interpretation of the ancient Greek concept of *hospes*, with mother nature considered as the *xenos* bestowing a thriving and sustainable future for humanity.

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