

## How to Carry out the Transition towards a More Circular Tourist Activity in the Hotel Sector. The Role of Innovation

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### ABSTRACT

Tourism causes important environmental impacts and can generate great pressure on local resources, such as land, water, energy and food, generating large amounts of waste, as well as problems of congestion, noise and air pollution. The circular economy is presented as an alternative model to the linear model, which recognizes the fundamental role of the environment, its functions and the interaction between the environment and the economic system. The hotel sector and the tourism sector in general, have been criticized for not adequately addressing environmental problems and global warming. In order to carry out the transition to a circular economy (CE), it is essential to innovate in business models, designing a circular business model. The objective of this work is to design guidelines on possible actions and opportunities that allow us to carry out a successful transition towards a circular model in hotel companies, as well as to design a model for this transition in a tourism destination, analyzing the roles of the different agents in this transition. Findings identified the main opportunities and benefits of this transition in the hotel sector and describes a three-axis model to carry out this transition in a tourism destination, identifying the roles of public administrations and DMOs, resident population and the tourism sector. Future research implications are also discussed.

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### 1. INTRODUCTION

Until now the tourism sector has not received much attention in the circular economy literature and development framework. However, the CE has a great potential for the tourism industry to achieve a sustainable development and greater profitability mainly in the provision of services in different sectors (hotel sector, food and beverage sector, leisure sector) and the flow of materials related to construction, energy, food, water, etc. In addition, tourism has the potential to contribute to employment and economic growth, as well as to the development in rural, peripheral or less developed areas (World Tourism Organization (WTO) (2017)). Indeed, infrastructure created for tourism purposes contributes to local development, while jobs created or maintained can help to counteract industrial or rural decline.

However, tourism causes important environmental impacts and can generate great pressure on local resources, causing negative externalities. In addition to the use of land, it requires resources such as water, energy and food, producing large amounts of waste (solid waste and wastewater), as well as congestion on roads, noise and air pollution, and hence, CO<sub>2</sub> emissions (Rico et al.2019). In fact, Saito(2013) through a survey of resource use and waste generation by the tourism industry on the Big Island of Hawaii (considering five sectors: Accommodations, food and beverages, golf courses, tour services and rental cars) estimates that the tourism sectors accounted for 21.7% of the island's total energy consumption, 44.7% of water consumption and 10.7% of waste generation. Rico et al.(2019) demonstrate that the average carbon footprint of a tourist in Barcelona is 111.6 kg CO<sub>2</sub> eq/day and 43.0 kg CO<sub>2</sub> eq/day for a day-tripper, much higher than the value for a Barcelona

citizen (5.8 kg CO<sub>2</sub> eq/citizen-day on average). Additionally Pablo-Romero et al.(2017) demonstrate an increasing positive relationship between the hospitality sector electricity consumption and overnight stays in Spanish provinces. Furthermore, in some destinations all these problems and negative externalities are aggravated by the concentration of visitors in time and space due to the seasonality of the tourist activity, combined with the fact that some destinations may not be designed to withstand such pressures.

Even though the concept of circular economy (CE) has received an increasing attention between policy makers and stakeholders worldwide, the CE literature on tourism is very scarce, and in fact, a systematic literature review on sustainability and related concepts through the Scopus database, Niñerola et al.(2019) demonstrate that the keywords circular and blue economies do not give rise to many papers. Furthermore, literature does not include previous studies that identify the specific guidelines to carry out the transition of the tourist sector towards a circular economy as we can find in other sectors such as the industrial one; however, the guidelines established for other sectors are applicable to tourism given that the flows of resources and materials used are the same as those needed by other sectors and therefore, these constitute a reference for the tourism sector (Manniche et al.2017).

In order to carry out the transition to a circular economy, it is essential to innovate in business models, designing a circular business model. However, literature on innovation has focused mainly on studying the phenomenon of innovation in tourism sectors, in measuring the degree of innovation of tourism companies in certain tourist destinations (e.g.,Hjalager2010;Jacob et al.2003;Orfila-Sintes and Mattsson2009;Orfila-Sintes et al.2005;Souto2015;Sundbo et al.2007); in identifying the determinants of innovative activity in hotel companies (e.g.,Divisekera and Nguyen2018;Martín-Rios and Ciobanu 2019;Nieves and Haller2014;Nieves and Segarra-Ciprés2015;Souto2015); in measuring impacts of innovation on business performance (e.g.,Hu et al.2009;Martínez-Román et al.2015;Shin et al. 2019;Tugores and García2015;Verreynne et al.2019); and few papers specifically on environmental innovations or eco-innovations and management and/or environmental and green practices in hotels or restaurants (Alonso-Almeida2013;Alonso-Almeida et al.2016; Bastić and Gojčić 2012; Chou2014; Jacob et al.2010; He et al.2018;Horng et al.2013;Kularatne et al.2019;Le et al.2006;Mak and Chang2019;Martínez et al.2019;Radwan et al.2011;Teng and Chang2014;Vourdoubas 2016). For example, Vourdoubas(2016) demonstrates that the average annual CO<sub>2</sub> emissions in five operating summer hotels in Crete was estimated at 12.1 kg CO<sub>2</sub>/p.n.s. and they use several renewable energy sources including solar thermal energy, solid biomass and low enthalpy geothermal energy. Radwan et al.(2011) analyzed solid waste management (SWM) practices in green accredited and non-green small hotels in Wales. Findings showed that green small hotels used landfill as a last resort for the disposal of waste and preferred other waste hierarchy options.

What differentiates a circular business model from a sustainable business model is that, in the circular economy approach, based on systemic thinking, nature is not understood as a place or domain separate from that of society; both are seen as interconnected in complex systems that makes it difficult to distinguish one from the other. It is not about achieving a zero impact (objective of the sustainable development approach), but about designing solutions with a positive impact on the system (Manniche et al.2017).

The objectives of this work are first, to design guidelines on possible actions and opportunities that allow us to carry out a successful transition towards a circular model for accommodation companies within the tourism sector, and second, to design a model for this transition in a tourism destination.

This study focus is in the hotel sub-sector and in a mature destination: The Balearic Islands, where there is a huge pressure on resources (energy, water, land and materials such as fossil fuels, minerals, metals and biomass), food waste, and negative externalities due to tourism (congestion problems, loss of biodiversity, CO<sub>2</sub> emissions and pollution) and hence, hotel companies and destinations need to do this transition towards a CE. In fact, the Balearic Islands leads the classification of Spanish autonomous communities in terms of waste production per inhabitant (INE2018 1) with 740.2 kg per inhabitant/year compared to a national average of 471 kg per inhabitant/year, the transition to a circular destination would bring great economic, social and environmental benefits to the destination. Indeed, in the Balearic Islands, according to data from the INE(2018), this percentage rises significantly: If we consider a resident population of 1,176,627 inhabitants, and an entry of 14,037,640 tourists with an average stay of 5.88 days, we would obtain that tourists are responsible for more than 30% of Balearic waste. In fact, Mateu-Mateu-Sbert et al.(2013) estimate that an additional tourist on the island of Menorca generates 1.31 kg/day of waste, a figure higher than that of a habitual resident inhabitant.

For this, after the introduction the paper is structured as follows: In the second section a literature review is presented where we first focus on the new rules of CE and the three main principles; second we describe what are the potential benefits that the transition from a linear business model to a circular business model would bring to the hotel sector; and third, we analyze what type of factors drive and/or slow down this process and specially, the role of innovation; the third section evaluates the opportunities and benefits for the hotel sector of carrying out the transition towards a circular model, examining some examples of circular strategies in the hotel

sector; the fourth section presents a three-axis model for a circular destination, analyzing the case of the Balearic Islands; and finally, the main conclusions of this analysis and future research implications are described.

**2. LITERATURE REVIEW**

*2.1. Circular Economy: New Rules of the Game*

The current economy is based on a linear economic system, focused on manufacturing without trying to optimize the materials to avoid their depletion and favor their recycling or recovery, generating garbage and waste, causing the depletion of resources and the generation of an excess of pollution and landfills, something which is unsustainable. Additionally, natural demographic trends and the consequences of global warming<sup>2</sup> pose a series of challenges. These challenges are the consequence of migratory flows, or the concentration of the population in large cities; in fact, we will have to decide what to do with the amount of waste that this increasing population will generate- which has been estimated to double from five billion to ten billion persons in the next century as most natural and artificial wastes finally reach the sea floor with time (NOAA2019a). With this increase in demand, coupled with an increasingly reduced supply, a significant increase in the price of raw materials as well as in energy sources and materials can be envisaged. This can cause a serious instability of the socioeconomic system, if you do not have the necessary tools and mechanisms to guarantee supply provisions, correct consumption patterns, and facilitate the transition to a new sustainable and fair production model for future generations. Therefore, the situation of the planet indicates that we must face the problem and try to see it as an opportunity (resilience) to improve and reverse the situation and in order to achieve this the economic rules of the game will have to change, a change that will guarantee sustainability from the beginning to the end of the production process, becoming sustainability the heart of business and company mindset. Not only the products have to be sustainable, but the entire company and its business strategy. The goal is integral sustainability (Zhexembayeva2014).

Faced with this reality, the circular economy is presented as an alternative model both from atheoretical and practical point of view in which the fundamental role of the environment is recognized, including its functions and the interaction between the environment and the economic system. Its objective is to minimize the ecological and environmental impact of economic activity through a process of disruptive innovation and sustainable competitive advantages (launch new products, new business models, new markets and all this generating profits).

Therefore, the CE is a systemic transformation that involves transforming production, services and consumption, both within global value chains and in different value chains, thus closing circles of resources in the whole set of economic activities (Hislop and Hill2011).

Comparing both models (linear and circular), the production and creation of value in the linear model take place mainly along unidirectional supply chains, while the creation of value in a circular economy is related to continuous cascades of related activities and resource flows, totally hiding the up/down direction of linear supply chains.

Therefore, we need New Rules of the Game (Zhexembayeva2014) which are described in Table1.

**Table 1.**New rules of the game.

From linear to circular	New vision of the value chain; behaving like nature “from cradle to cradle (McDonough and Braungart 2002)
From vertical to horizontal; new business vision	New vision of business. Go beyond the limits of our own company and our sector. Include intermediate segments as suppliers and customers
From growing to growing differently	Be able to create more with less. Motivation to innovate
From plans to models; move from business plans to business models	Agile, evolutionary models open to change
From partial thinking to overall global vision	Change mentalities, be creative. CE is regenerative by design (Ellen MacArthur Foundation 2012). Rupture with programmed obsolescence; avoid waste and the generation of waste

Source: Zhexembayeva 2014.

Ghisellini et al.(2015) carry out a review of the literature of the last two decades, on the origins, principles and characteristics of the CE, focusing on the future perspectives of the implementation of the CE model, as well as its advantages and disadvantages. It highlights the different ways to implement the model with reference to the case of China and other areas such as the EU, Japan and the US. In China it is proposed as a top-down national policy objective while in the European Union, Japan and the United States, its implementation aims to design environmental systems and waste management policies. The ultimate goal in all cases is to decouple economic growth from the use of resources, for which it is necessary to involve the different actors at the macro, meso and micro levels, that is, the participation of all the actors in society, involved in the adoption of cleaner production standards at the company level, increased responsibility and awareness among producers and consumers, the use of renewable technologies and materials, and the adoption of adequate, clear and stable policies and tools to achieve an integral sustainable development. After conducting this extensive literature review on CE from the late 90s until mid-2017, Ghisellini et al.(2015) consider that CE emerges mainly through three main actions, the so-called 3R principles: Reduce, Reuse and Recycle (Table2).

**Table 2.** 3R Principles.

Reduce	Overcome rebound effect of eco-efficiency and eco-sufficiency strategies
Reuse	Maximum reusability of materials; repair, remanufacture
Recycle	Make another product with the waste; business opportunities turning garbage into money.

Source: Ghisellini et al. (2015).

As indicated by Ghisellini et al.(2015), CE is a means to increase productivity, optimize the use of natural and human resources and increase efficiency in resource management. However, it has not been generalized in industry or in academic research. Indeed, although the CE concept has received an increasing attention between policymakers and stakeholders worldwide, the CE literature on tourism is quite limited. It has been carried out mostly in China (McDowall et al.2017), focusing mainly on general issues related to the incorporation of the concept of CE to tourism (Pattanaro and Gente2017). Although the CE concept has received an increasing attention between policymakers and stakeholders worldwide, the CE literature on tourism is very scarce (Niñerola et al.2019) and mostly carried out in China (McDowall et al.2017) and focused on issues related to the incorporation of the concept of CE to tourism (Pattanaro and Gente2017). In the academic literature the study of the importance and role of CE in the hotel industry is very limited (Manniche et al.2017), although its application to the hotel sector can accelerate the business itself (environmental and financial benefits) and advance in sustainability, involving all the actors implicated in industry and tourism (Van Rheede2012).

*2.2. Benefits of the Transition from a Linear Business Model to a Circular Business Model*

For CE to take place, a consumer demand for reused and remanufactured products is important, hence the importance of designing durable products for multiple cycles; combined with incentives for companies to choose business models based on returned or remanufactured products (Prendeville et al.2014;Ghisellini et al.2015).

Therefore, in the transition to a circular economy it is essential to innovate in business models, designing a circular business model. Thus, if in the linear business model based on –basic resources-product-final consumerl we include sectors and segments of the intermediate value chain as suppliers and customers, we are going beyond the limits of our company and sector, considering the opportunities offered by the environment and seeking new and more dynamic business opportunities.

**Table 3.** The Framework Resolve.

REGENERATE	Regenerate the change to renewable energy and materials; reclaim, retain and regenerate the health of ecosystems; and return recovered biological resources to the biosphere.
SHARE	Share. Shared resources (for example, cars, rooms, appliances); reuse or use second-hand; prolong life through maintenance, design for durability, upgrade capacity, etc.
OPTIMIZE	Optimize. Increase product performance/efficiency; eliminate waste in the production and supply chain; take advantage of big data, automation, remote sensing and management.
LOOP	Reuse products or components in loops; recycle materials; digest anaerobically; extract biochemicals from organic waste
VIRTUALIZE	Virtualize books, music, travel, online shopping, autonomous vehicles etc.
EXCHANGE	Change. Replace the old made with advanced non-renewable materials; apply new technologies (for example, 3D printing); choose new product/service (for example, multimodal transport

Source: Ellen MacArthur Foundation and McKinsey Center for Business and Environment 2015.



To facilitate the change in the conceptual framework, the Ellen MacArthur Foundation and McKinsey Center for Business and Environment (2015) develops a business action framework to guide companies from a conceptual point of view in their search for where and how to start taking measures towards the CE. The framework is called Resolve and implies (Table 3).

The implementation of circular business models in the tourism industry will help it to achieve a sustainable development and greater profitability mainly in the provision of services in different sectors (hotel sector, food and beverage sector, leisure sector) and the flow of materials related to construction, energy, food, water, etc., because many CE solutions can be applied to tourism businesses and destinations to reverse the trend and reduce consumptions of natural resources, waste and CO<sub>2</sub> emissions.

### 2.3. *What Factors Facilitate or Difficult This Transition Process towards a Circular Business Model*

The transition process from a linear model to a circular model is a multilevel process in which we can distinguish three different levels (macro, meso and micro) in which the processes of change occur (Geels 2002).

This multilevel transition perspective implies that the macro, meso and micro levels are organized in a nested and hierarchical manner, which means that the meso level is integrated within the macro level and the micro level within the meso level. Thus, the macro level (external context) includes factors such as the price of oil, economic growth, wars, emigration, globalization, political coalitions, cultural and normative values, environmental problems such as climate change and scarcity of resources, etc.; the meso level (institutional framework) refers to the rules that allow and limit activities within the community. The macro level is an external structure or context (Geels 2002) which is very difficult to change, while the meso level allows to generate with certain frequency incremental innovations, through R & D but, where the radical innovations characteristic of a CE model is at the micro level (market), for a given macro and meso context, responding to its problems rules and specific capabilities. It is the ideal framework for social learning processes such as those mentioned above (i.e., learning by doing, learning by using and learning by interacting), interacting through social networks that support innovations, supply chains and user-producer relations. Consequently, the micro level is crucial for the socio-technological transition because they provide –the seeds for change (Geels 2002).

This perspective of a –multilevel transition helps to understand the continuous development and dissemination of innovations based on the principles of CE. In effect, these innovations take place in multiple smaller niches of companies, networks and supply chains in various industries and fields of activities, requiring the participation of actors at different levels, advisors and sectoral organizations and also intersectoral and inter-institutional collaboration.

In this multilevel framework we can distinguish several factors that facilitate and/or hinder the transition to a circular model. Vanner et al. (2014) found that there is rarely a single driver in a sector or value chain. In general, several factors are at play and often these factors influence each other. However among the facilitating factors we can distinguish:

- At the macro level, global political agreements to reduce climate change, the globalization of economies and the development of new consumer cultures based on new social networks, promote and allow innovations in companies and industrial and technological networks (micro level)
- At the meso level, policies to promote innovation at the micro level and economic incentives aimed at companies and individual markets (support for renewable energies, recycling in construction, . . .)

It is at the interface between the meso level and the micro level that new circular markets and business models emerge; new networks of collaboration and industrial networks, as well as supply chains, and new presumptions and demands on the part of consumers, which facilitate the transition to a circular model. Therefore, the element that promotes all this is the innovation in the business model and the element that slows it down is the institutional framework (the policies).

## 3. THE TRANSITION TOWARDS A CIRCULAR MODEL IN THE HOTEL SECTOR

Defining tourism as the temporary stay of a person in a geographical location different from his/her home, involves the consumption of services and experiences based on assistance and, therefore, an interpersonal relationship between the host and the guest/consumer (Mannicheet al. 2017).

This interpersonal relationship provides the opportunity for the place of lodging to have an impact on the value that the guest will give to the accommodation service and, therefore, may influence his way of thinking and behaving not only during the stay but also afterwards.

### 3.1. *Opportunities and Benefits of the Transition towards Circular Business Models in the Hotel Industry*

Awareness of and responsiveness to environmental issues is in fact imperative for the hotel firms (Martínez-Martínez et al.2019). Since the end of the last century, the hotel sector has introduced several environmental innovations and practices that save resources (energy, water, etc.) and hence, reduce costs for hotels, such as choosing not to remove towels daily. Furthermore, Teng and Chang(2014) indicate that hotel eco- friendly programs that are occurring in the distant future will be more effective if customers sign an environmental protection petition as a way to environment's commitment and hence, this will enhance customer intention to pay a premium price for an eco-friendly room or service.

The introduction of eco-innovations in hotels are a good first step, towards more circular business models but they are not enough. The CE goes further, it can become a central part of the host-guest relationship by including and involving guests not only from an environmental perspective, but also by making them participants in their actions to contribute to sustainability. In this way, tourism is presented as a unique opportunity to reconfigure the way people live, if only for a brief period of time, by immersing them in new environments and socio-technical configurations, allowing us to experiment with the way they organize the daily life of the individual (Manniche et al.2017).

Thus, tourists enter -living laboratories, where they can experiment, play and radically modify the organization of their daily life, which is not only very interesting from a social perspective, but also from the commercial point of view, since it represents a market opportunity for companies, operators and tourist destination organizations, which act as facilitators in the process of transformation towards the circularity of linear tourism markets, emphasizing spending, hedonism and the unlimited use of resources, by using vacations as experiments in circularity, selling the destination as a window into the future, and differentiating itself from the rest of competitors (Manniche et al.2017).

In this way, tourism influences the personal responsibility of each guest in the use of resources, helping guests and the industry itself become aware that they can take a vacation and at the same time reduce our ecological footprint and so it is likely that this attitude becomes a status symbol.

A specific way to encourage change is through guaranteeing user commitments. Thus, instead of designing, for example, hotel rooms as spaces of unlimited use of resources, hotels can provide an aggregate scoring system on guest behavior in relation to the use of resources (through a system of monitoring based on the internet of things) and reward those who are more aware, either financially, with loyalty bonuses or simply with good conscience (Manniche et al.2017).

For this change to be successful, the interaction between the guest and the hotel staff (cleaners, receptionists, waiters, etc. ) is important, as a happy, well-paid employee will have a greater predisposition to participate in circular practices and strategies in order to create an environment of learning and social innovation between the guest and the staff.

Therefore, in addition to establishing sustainable growth strategies for companies and destinations, circular practices cover many areas such as: Respecting the limitations of the destination (minimizing the impact on nature and culture); support the local economy; carry out environmentally sustainable activities; actively contribute to the conservation of nature and culture; etc. Circular strategies would involve, for example, improving the development of tourism infrastructures and the quality of services as a tourist destination, as well as reducing the seasonality of tourist services, diversifying tourism activity (cultural tourism, business tourism, health tourism, ecological tourism ) with a circularity approach. To make this possible, a holistic approach is important to allow transitions to be made.

Focusing on the hotel sector, a circular strategy would be to strengthen cooperation in the hotel industry, for example, through local organizations and networks that seek to promote CE solutions such as: Measures to prevent food waste; green certificates, increasing use of capacity through shared economy platforms, self-sufficiency in terms of sustainable energy, implementation of circular agricultural practices that involve local farmers. In the latter case, greater self-sufficiency would be achieved with respect to local foods, local bio-waste would be transformed into fuels and fertilizers, establishing circular synergies between tourism and local agriculture, as well as job creation and new business strategies circular.

For these types of practices to be feasible, it is desirable to have an institutional and governance framework for innovation in relation to sustainability issues and environmental aspects stable and unique among countries and regions.

In this way, a systemic transition of CE would imply that the hotel sector would be understood as a set of circular flows of interrelated and more or less closed materials, allowing a cascade display of the materials between activities or services (accommodation, restaurants, well-being and leisure, etc.). (Manniche et al.2017). Thus, for example, within -accommodation we would have a circular construction, circular restoration, accommodation operation, implementation of circular management systems between the management, the staff

in interaction with the guests. In the field of restoration; set of flows of biological material in food products, its packaging, transportation, food preparation, cleaning, storage flows and, circular handling of food waste. In the field of leisure and well-being; energy and water flows, chemical flows, circular handling of gray water, etc.

Some of these practices are carried out today, for example the improvement of waste materials for use in the construction sector, including the use of secondary raw materials; the design for the dismantling and prevention of waste, by means of which the buildings and products are flexible and allow the reuse of components and products; non-toxic building materials; as well as clean technologies on the material content and details of the construction and optimization of cooperation, to cover the entire construction process through the reinvention of supply chains and business models (State of Green 2016).

However, energy saving is not only possible thanks to the use of higher quality construction materials, but also depends on the technologies involved in improving the energy performance of buildings (Winans et al. 2017).

Finally, based on the 3Rs that characterize the CE, reuse is better than recycling in most cases, since recycling often means destroying, while reuse preserves the material in its original form and uses the article again and again for the same or different purposes. Thus, different circular practices via reuse could be implemented in the hotel sector, such as:

- ✓ G Reuse of textiles: Reuse broken sheets, towels, aprons, tablecloths to make laundry bags, aprons, children's bedding, small covers, etc. Replace single-use items such as napkins, tablecloths and hand towels for reusable items.
- ✓ G Reuse of containers: Implementation of reusable container systems to reduce freight costs, etc.
- ✓ G Reuse of bottles and glasses: Bulk drinks or bottles for reuse (Legrand et al. 2016).

In this framework, having local business partners on issues of more global distribution and redistribution systems would make the model more circular, since one of the objectives of the CE is to boost the local economy and generate employment.

### 3.2. *Some Examples of Circular Strategies in the Hotel*

Gaglia et al. (2007) and Pieper (2015) consider that hotels that incorporate energy management systems to establishments demonstrate a high awareness of environmental sustainability. However, these additions are incremental and non-circular innovations per se. A more circular behavior would reduce and optimize the use of energy within the company. It would be desirable that when a hotel is designing its facilities takes into account that this can affect the management of resources and the possible elimination of waste and therefore the environmental management of it. For this it is necessary to adopt a strategic management plan with energy audit, systemic reviews of consumption and minimization objectives thereof. New technologies would help achieve these objectives allowing a more rational use of energy and a reduction in consumption (Sloan et al. 2013).

Therefore, a change towards circularity implies a process of radical innovation. However, this can be carried out in stages, allowing the passage of sustainable green measures towards circular green measures. For this, it is necessary to change the value chain and interact with other companies to ensure that resource flows are circular, creating what could be defined as the -circular infrastructure, that is, access to renewable energy sources, circular systems for the treatment of water, access to suppliers and users who base their commercial models on leasing, circular designs, exchange platforms, and above all an adequate institutional framework. If our objective is only to control the flows of resources within the company, we will never take the step towards a circular sustainable model (Legrand et al. 2016).

In addition, as we mentioned above, the change to a circular business model in hotel companies implies a system of treatment and administration of personnel related to the use of services and waste management, aware, trained and in constant interaction with the supply chain. That is, circular business models require interaction between companies and long-term relationships between suppliers and users (along the entire product/service value chain).

Moving from a linear business perspective to a circular one is a slow process, which begins with the application of sustainable practices that are transformed into circulars year after year, until the development of a -circular infrastructure through the development of business relationships is completed; in the long term with suppliers and external agents; which will lengthen the useful life of resources.

In the academic literature there is nothing about circular opportunities applied to the hospitality and/or food sector, probably due to the complexity of the food supply chain as indicated by Genovese et al. (2017), without forgetting that the research on the development of CE models that focuses on the tourism sector and hospitality is practically non-existent today.

Stahel (2013) or Ghisellini et al. (2015) argue that, in terms of resource efficiency and profitability, reduction and reuse are more circular and sustainable than recycling. This could be an important prioritization to guide the

possible steps of CE in the tourism sector. Thus, we distinguish three levels: At the organizational level of the company; business context; external context (Mannicheet al.2017).

- Waste management business models relevant to the hotel sector. They consist of adopting business models of waste management as part of their product line. Hotels can sell used textiles and bedding, hotel restaurants can sell food waste, grease from their sewage sludge and other cooking resources, while spas can sell gray water with specific qualities and chemicals.
- Ecodesign business models. Ecodesign as a business model can be applied to all furniture and products and devices related to energy. The ecological design in the renovation of hotels and in new constructions is treated in more detail when we analyze the potentials of CE in the hotel services.
- Leases of products. The tourism industry already offers that type of leasing services for tourists, who leave everything that cannot fit in a suitcase/car at home and rely on provision frames in their place of accommodation or destination. This can be a thriving opportunity for the hotel industry to take a step forward.
- Remanufacturing, although it is more advantageous for large companies; however, the tourist SMEs can conceptualize themselves as an important group of consumers.
- Collaborative commerce in tourism. Use of online platforms for loans of goods that tourists decide not to take with them to the destination such as: Bicycles, canoes, hair dryers, etc. with the local population. An example of this is the Dutch platform Thuisafgehaald (Shareyourmeal) that allows to share homemade food, reducing food waste and strengthening social relationships between foreigners and locals. Another activity is to establish a system through which tourists are invited to the homes of local residents, thus fostering cultural exchange.
- Other relevant circular business models. Hotels can be important consumers of remanufactured products, which helps create demand for those products. They may consider renting laundry or kitchen equipment, and thus obtain the most advanced technology and save on the related maintenance costs (water, electricity, etc.). The reuse of equipment, furniture, cutlery, etc., can be taken into account in the redesign of a hotel or restaurant.

#### **4. A THREE-AXIS MODEL FOR A CIRCULAR DESTINATION: THE CASE OF THE BALEARIC ISLANDS**

We can say that the transition model to a circular destination focuses on three main axis: The public administration and/or destination management organizations (DMOs), the tourism sector and the resident population. Each of them has a differentiated role in this transition, specifically (Figure1):

Role of the Public Administration and/or DMOs.

- To design incentives to promote the implementation of CE measures in the tourism sector (i.e., Tax deductions for investment in CE measures/technologies).
- To design laws and regulations that reduce the obstacles to the application of CE measures in tourism businesses.
- To involve the tour operators in the design of a program of awareness and changes in tourist habits. Role of the tourism sector (hotel)
- To design a branding strategy that enhances the social and environmental benefits of circular practices in the hotel establishment. This will lead to an increase in the reputational value of hotels.
- To raise awareness, train and involve hotel human resources in the design of a circular strategy for the hotel business.

In fact, Kang et al.(2012) demonstrate that the intention to implement green practices in the hotels sector is the result of the three environmental triggers (environmental knowledge, environmental awareness, and environmental concern) and ecological action, and that hotel employees with greater ecological behaviour are more likely to implement green practices. Furthermore, Mahachi et al. (2015) find that the availability of a comprehensive environmental sustainability program and strong environmental management values were the key factors for renewable energy adoption in two hotels in Botswana.

Role of the resident population

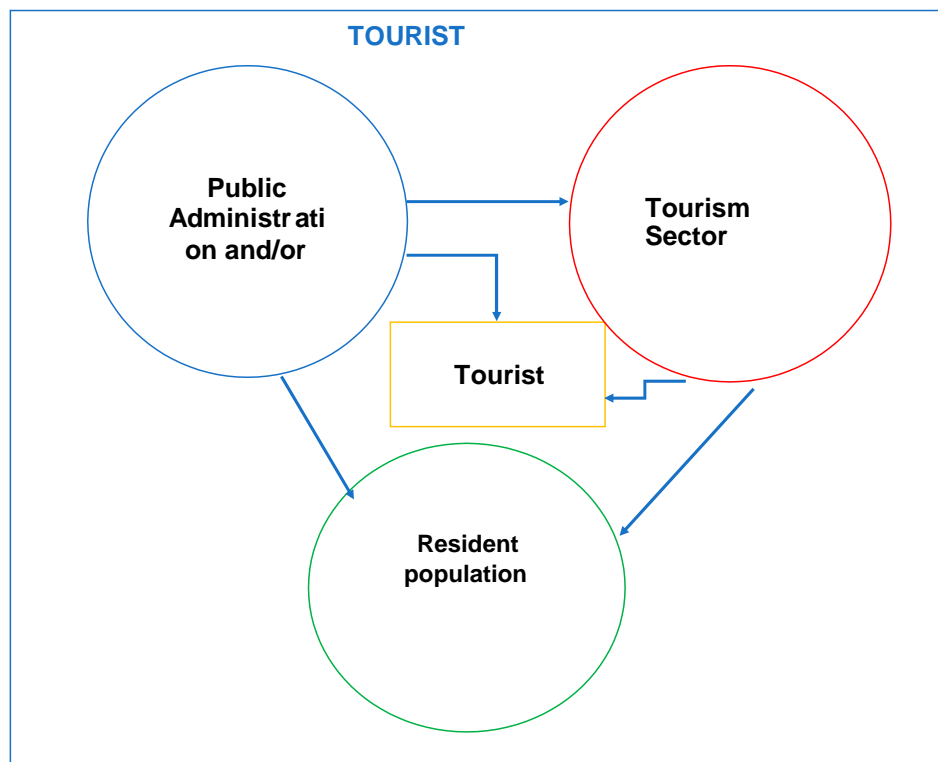
- To involve the resident population in the change towards a CE of the tourist destination.
- To promote social awareness about social and environmental benefits.



- To design a system of incentives/penalties to increase awareness and change in the consumption habits of the resident population towards a CE model.

Obviously, the development of these roles and their interaction at the destination level will lead to some impacts on tourists in terms of increase of reputational value of hotel companies and increase of environmental awareness when they are at the destination. This opens up opportunities for the revenue management departments to charge a premium price for circular services, for example, eco-rooms, etc.

**Figure 1.** Three-axis model. Source: Own elaboration.



Public administrations and DMOs, both locally and nationally, play a crucial role in the transition to a circular destination. Indeed, they face important planning challenges related to the protection of natural resources, water supply; the promotion of renewable energies, and the reduction of pollution, among others; and at the global level, the role of national tourism policies is decisive in facilitating the implementation of more circular practices. An example of a destination which has implemented a strategy to begin the transition towards a circular destination is the Balearic Islands where different lines of action have been implemented by the regional government and the hotel sector in order to achieve this goal in the near future, taking into account the resident population as well. In fact, they have considered the three-axis model described above, specifically:

Role of Public administration and/or DMOs, with the following measures designed and implemented:

- New Llei de Residus i Sòls Contaminants of the Balearic Islands (New Waste Law).
- Aid programs for the implementation of environmental quality certifications:
- Awarding of prizes to encourage the creation of ideas and innovative projects that can contribute to the achievement of the circular economy objectives

Role of Hotel and tourism sector

- Many multinational hotel companies of Balearic origin have designed and implemented CE measures within the corporate social responsibility (CSR) strategies.
- In the agri-tourism sector, due to environmental awareness sustainable and CE measures (reuse, waste minimization, use of local products, . . . ) have been developed and implemented, that leads to an increase in reputational value.
- Implementation of the international Cradle to Cradle certification in many hotel establishments (and when they have internationalized in other destinations) that contemplates measures on both water, energy and on

the raw materials used in the construction and conservation of hotel establishments whether they are conveniently recycled when the property goes into obsolescence.

- Demand segment via tour operators (TOs): TOs increasingly contemplate that those hotels that do not implement environmental measures do not enter into their offer catalog and those hotels that have more radical sustainable measures can be distributed at higher prices.
- Growing online demand segment: There is a growing importance of the hotel image in environmental terms that may allow price differentiation to be applied by the Revenue Management Department of hotel companies.
- ESADE study 20183 indicates that more and more tourists are not willing to choose a hotel that does not have a distinctive environmental quality, and even those hotels with CE certifications have rates 20% higher than the competition.

Role of Resident population

- The regional government started a citizen participatory process on the new Waste Law to promote resident awareness on the need to transit to a circular economy.

This perspective of theoretical multilevel transition is important for understanding the dynamics through which the CE is developed, since it helps to focus attention on how to implement the CE in the tourism sector, currently in an incipient phase which will require the participation of actors at many different levels, including companies, their advisors and sectoral organizations, but will also require intersectoral and inter-institutional collaboration.

## 5. CONCLUSIONS

Tourism generates important environmental impacts, a great pressure on local resources, producing large amounts of waste and CO<sub>2</sub> emissions, hence it is a sector where CE opens up enormous opportunities for business models. Although the circular economy has become a popular topic among policy makers and stakeholders worldwide, the CE literature on tourism is very scarce, and does not include previous studies on the transition of the tourist sector towards a circular economy or in how to design circular businesses in tourism.

Thus, this work focuses on analyzing how to carry out the transition from a linear model to a circular model in the hotel sector through the analysis of real practices. The objective is to design guidelines on possible actions and opportunities that allow us to carry out this successful transition towards a circular model in hotel companies, as well as to design a model for this transition in a tourism destination. The review of existing literature and empirical evidence on CE and environmental innovation in the hotel sector leads to the following conclusions:

- The tourism sector offers many opportunities to use vacations as experiments in circularity since normally a tourism trip invites to spend more and to use the services contracted as one desires.
- There is a large field in which to develop circular practices that help to raise awareness among tourists and in the company itself, not only with the sole objective of being more sustainable, but also with a greater awareness that leads to the design of tourism products and services based on the objectives of circularity.
- Hence, tourism acts as a living laboratory, where tourists and company staff experience new habits and more sustainable forms of organization, which will have not only a great social impact but also on the market (companies, operators and tourist destination management organizations) in terms of greater profitability and competitiveness.

This transition towards a circular model is a multilevel process in which all the actors interact (at the macro, meso and micro levels), although where the change really occurs is at the micro level. Therefore, truly circular business models do not involve a single company, that is, they cannot be implemented by individual businesses without interaction with external actors, this implies not only technological changes, but also changes in regulations, laws and infrastructures, industrial networks, consumer cultures, etc. Findings identified the main opportunities and benefits of this transition in the hotel sector and at the destination level, and a three-axis model to carry out this transition in a tourism destination is described, identifying the roles of public administrations and DMOs, resident population and the tourism sector, as a support framework that allows us to promote this transition process. In particular, the hotel sector can:

- Design awareness programs for tourists about their consumption of resources and environmental impacts of their consumption. For example, informing tourists about the amount of resources consumed and the need of infrastructure to provide the services they purchased,

- Design programs for customers encouraging a change of attitude in aspects such as the generation of waste and possible recycling or reuse thereof.

The transition to a circular economy is not a win-win situation with all-inclusive, but a situation that, at least in the transition phase, will generate winners and losers.

The paper also describes an example of a destination which has implemented a strategy to begin the transition towards a circular destination (the Balearic Islands) following a three-axis model taking into account the role of the public administration, of the tourism sector and of the resident population as well. This example is a pioneering model, especially with the approval of this precursor and courageous law at the European level to promote –a change of model that requires the commitment of citizens, administrations and firms.

Future research could focus on the study of how specific companies within the industry are adopting the CE and what are the challenges and barriers they face throughout their supply chain as well as in demand, attending fundamentally to the perceptions of the consumers that imply changes in the consumption process. In this context, information technologies in tourism and hospitality are increasingly important, playing a key role of sustainability in data management in terms of monitoring, providing information that allows us to define a series of indicators to be able to measure the degree of circularity in the transition process. Among the future lines of research is firstly the empirical application of the three-axis model presented to a specific destination, it will enable us to establish the synergies and symbiosis between the different sectors of the local economy and the conflicts between the interests of tourists and residents, allowing us thus, to harmonize economic, social and environmental objectives. The ultimate goal would be to optimize, reconciling the tourism sector and the sustainable management of resources, by reducing, reusing and recycling. For this, we will need to design evaluation and monitoring tools, defining indicators capable of expressing the synergistic effects that allow us to measure and quantify the progress in the transition and the positive as well as negative impacts.

Secondly, when focusing on the implementation of a circular business model in the hotel sector, a future research line is for example, the analysis of a real case of implementation of a circular strategy in a hotel, through a cost-benefit analysis, identifying barriers to that change. In this way, we could advance in the first steps of this transition process and identify good practices for the design of future circular strategies in the hotel sector.

Finally, to this day, circular development initiatives in tourism do not seem to have a strategic priority and organizations have to rely mainly on bottom-up initiatives carried out by actors and local government companies. That is, the change begins at the micro, local level, from bottom to top, not the other way around. Further research could focus on defining a circular strategy for a hotel establishment and on designing circular certifications for hotel establishments.

### Conflicts of Interest:

The authors declare no conflict of interest.

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