



Circular Economy in tourism: Review of recent developments in research

Sanna-Mari Renfors, *Satakunta University of Applied Sciences*

Abstract

The article provides a review of the recent developments and trends in the research on Circular Economy (CE) in tourism and identifies possible research gaps. CE is becoming one of the hot topics in tourism research due to its increased importance in policymaking, especially in Europe. However, the review shows that research on CE in tourism is in its early stages. The studies have mainly focused on CE in tourism at the micro level from environmental and business management perspectives especially in hotels and restaurants. In addition, emerging research themes include circular consumption behaviour, CE and smart tourism, cooperation and networking with the local supply chain as well as circular tourism destination development. Thus, tourism scholars are encouraged to shift their perspective more from micro to macro level to get a holistic picture of CE in tourism. The article outlines some ideas for a research agenda on CE in tourism.

Keywords: Circular Economy, Circular Tourism, circular economy practices, sustainable tourism development, tourism SMEs

Introduction

Tourism has many positive and negative effects. It contributes significantly to employment and GDP in many countries and regions. Tourism accounts for 10% of global Gross Domestic Product (GDP), one in ten jobs worldwide and 7% of world exports (UNWTO, 2018). However, it has various negative environmental impacts and pressure on local resources caused by resource use and waste production. In fact, tourism consumption has increased globally to the point that it is unsustainable and contributes to climate change (Manniche et al., 2021). It is estimated that tourism is responsible for 8% and will constitute a growing part of carbon dioxide (CO₂) emissions globally (Lenzen et al., 2018). In particular, there has been extensive criticism on the immense CO₂ emissions attributed to the increasing number of air travellers as well as the excessive consumption and waste of water, energy and food due to unsustainable practices in the hospitality and catering sectors.

Likewise, the tourism industry has experienced an unprecedented crisis due to the COVID-19 pandemic. This means that the recovery and rebuilding of the industry calls for innovative and sustainable approaches. Therefore, researchers have estimated that COVID-19 will accelerate the acceptance of new models like Circular Economy (CE); an approach which would transform the function of resources in the economy (del Vecchio et al., 2022; Preston, 2012; Prideaux et al., 2020). All the negative impacts mentioned above

highlight the need to shift towards CE in tourism, since it is considered a possible solution to the existing problems and a strategy to deal with the economic factors which have caused climate change.

This article reviews the recent developments, trends, and possible gaps of the research on Circular Economy (CE) in tourism. Despite of the importance of CE for sustainable tourism, it is an underresearched topic in tourism, and the academic debate on CE in tourism has been so far quite limited (Florido et al., 2019; Pattanaro & Gente, 2017; Rodríguez-Anton & Alonso-Almeida, 2019; Sorin & Sirajavah, 2021; Vargas-Sanchez, 2018). In fact, Rodríguez et al. (2020a) recently identified through an extensive literature review from 2009 to January 2020 only 55 articles and books published on the field of CE and tourism. However, they categorised the literature into different streams according to the keywords and did not consider the systemic nature of CE as this review does. Thus, research related to CE in tourism is in its infancy.

Simultaneously, authors (e.g., del Vecchio et al., 2022; Jones & Wynn, 2019) propose that there is fertile ground for research and a growing interest in CE within the tourism research. This can be ascribed to the fact that the topic of CE is high on the political agenda, especially in Europe. In 2020, the European Commission adopted the new Circular Economy Action Plan (CEAP), which is one of the main building blocks of the European Green Deal, Europe's new agenda for sustainable growth. The Green Deal aims to boost the efficient use of resources by moving to a clean, circular economy and stop climate change, revert biodiversity loss and cut pollution (European Commission, 2019). Because CE is receiving exponential attention from policy makers, it has also received more interest in tourism research. As Martínez-Cabrera and López-del-Pino (2021) point out, it is not surprising that the concept of CE has been gaining ground among tourism scholars recently. Indeed, CE is becoming one of the hot topics in tourism research.

As transition towards CE involves all the actors of society, CE literature (Ghisellini et al., 2016; Kirchherr et al., 2017; Merli et al., 2018) often considers three different levels of research and implementation: micro (products, companies, consumers), meso (supply chains) and macro level (city, regions, nation, governments). This article adopts the same approach and reviews CE in tourism by focusing on these levels as scale of analysis. In this way, the article considers the systemic nature of CE, which has been neglected in tourism studies.

The article contributes to the theory and professional practice by providing better understanding of how scholars approach CE in tourism. It supports the tourism industry in moving towards circularity and provides them directions about features and viewpoints to be considered, implement better holistic CE solutions and take into account all stakeholders involved. The article provides a review of the recent developments and trends in the research on CE in tourism and identifies possible research gaps. The research questions are: How do scholars approach CE in tourism? What are the recent developments and trends in the research on CE in tourism? What could be the future research topics?

The article is structured as follows. First, the CE concept and CE in tourism are introduced. Then, the research methodology used for conducting the research is described. Next, the literature of CE in tourism is presented according to the levels of research and implementation. In addition, the articles approaching CE in tourism from a general perspective are explored. Lastly, the article concludes with the discussion of main results and outlining some ideas for a research agenda on CE in tourism.

Circular Economy

Circular Economy is an economic system that represents a change of paradigm in how human society is interrelated with nature (Prieto-Sandoval et al., 2018). CE is a system-level production and consumption model of economy operating within the planetary boundaries and aiming at regenerating natural and social capital (Sorin & Sirajavah, 2021). In other words, CE aims at an in-depth transformation of the way resources are used; resources are reused and kept in a loop of production and usage (Preston, 2012; Urbinati et al., 2017). Thus, it is a systemic transformation which involves transforming production, services, and consumption.

The most popular definition of CE is that of the Ellen MacArthur Foundation (2013, p. 7): 'CE is an industrial system that is restorative or regenerative by intention and design. It replaces the "end-of-life" concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims at the elimination of waste through the superior design of materials, products, systems, and, within this, business models. Another widely used definition comes from Kirchherr et al. (2017, p. 224) who define CE as follows: 'A circular economy describes an economic system, based on business models which replace the end-of-life concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption with the aim to accomplish sustainable development'. The concept of CE is transversal and multi-disciplinary by nature. It is evolving and it seems to be an umbrella concept (Merli et al., 2018) as well as an overarching label (Borrello et al., 2020) that still needs development to strengthen its definition, boundaries, and associated practices.

CE is characterised by three different levels of research and implementation: micro (products, companies, consumers), meso (supply chains) and macro level (cities, regions, nations, governments) (Ghisellini et al., 2016; Kirchherr et al., 2017; Prieto-Sandoval et al., 2018). Therefore, involvement of multiple stakeholders is essential to facilitate circularity, although the change mainly occurs at the micro level. CE calls for the involvement of all players, increased collaboration between the private and public sector, a cross-sectoral approach and a broader perspective (Pattanaro & Gente, 2017).

CE transformation requires a paradigm shift in the way things are made (Preston, 2012). CE is much more than recycling and reuse of materials and resources. It includes infrastructure and regulations, new production and consumption patterns, and new partnership agreements between different stakeholders and industries (Pattanaro & Gente, 2017). CE in tourism requires innovation of novel technologies, business models, supply chains and the

formation of new interactive partnerships with tourists and local stakeholders (Manniche et al., 2021). In sum, CE involves technological changes, as well as changes in regulations, laws and infrastructures, networks, and consumer cultures (Florido et al., 2019).

Circular Tourism

Tourism is a sector where CE unfolds vast opportunities. Regardless of being classified as a service sector, tourism depends on enormous quantities and flows of exhaustible natural resources. The tourism industry has a significant role in the ongoing economic transformation because it has a multiplier effect on the whole economy and can encourage circular flows among its suppliers and customers (Vargaz-Sanchez, 2021). The tourism industry is strongly interlinked with other key industries, especially agriculture, construction, water supply, waste management, electricity, sewage, transport, and logistics as well as food, drink, and textile manufacture industries. Thus, the tourism industry actors have an important role as enablers within the circular transition (Einarsson & Sorin, 2020).

The first academic papers on tourism and CE were mostly authored by Chinese scholars as in China CE is seen as a new development model and its implementation has been strongly supported since 2011 (Pattanaro & Gente, 2017). In 2017, Girard and Nocca (2017, p. 68) raised further awareness about the possibilities of CE in tourism and introduced the concept of Circular Tourism. They defined it as a model which can create a virtuous circle by producing goods and services without wasting the limited resources of the raw materials, water and energy of the planet. They emphasise that Circular Tourism is not solely connected to limiting the consumption and waste of non-renewable energy sources, but it also implies to recovery, reuse, redevelopment, valorisation, and regeneration. As also Manniche et al. (2017) argued, it is necessary to understand that CE is about rethinking the tourism company as a producer of a multitude of (by-) products that can be valued instead of wasted.

Indeed, CE began to be understood as a tool supporting the tourism industry in achieving sustainable development in 2010s. Tourism companies can work towards sustainable tourism by applying the principles of CE (Girard & Nocca, 2017). Furthermore, there is growing recognition that employing CE practices is fundamental and a toolbox for achieving many of the Sustainable Development Goals (SDGs) (Einarsson & Sorin, 2020). As Manniche et al. (2021) emphasise, sustainability is the goal and circularity a way.

Reviewing the literature

To identify potentially relevant full-length articles, 'Circular Economy' AND 'Tourism' and 'Circular Tourism' in the fields 'abstract', 'keywords' and 'title' were used to collect the data. The results were filtered by using the timeline option of 'since 2010' because the focus of this article is on recent developments of research. The search was also limited to journals published in English. Conference papers and book chapters were excluded.

First, Scopus and Web of Science databases were selected as sources to trace articles for analysis (Figure 1). A total of 74 scientific articles published since 2010 in journals were

identified by Scopus and 73 by Web of Science database for the present analysis. Altogether, 147 articles were extracted to an Excel spreadsheet to organise articles and screen duplicates. At this stage, 60 duplicate articles were removed, which resulted 87 articles for review.

Next, eligibility of the articles was assessed. Abstracts were read individually to see whether they were related to the research objective. As a criterion for inclusion, the articles must be directly linked to tourism as a context and be clearly related to CE. This narrowed down the results to a total of 29 articles, which included the inclusion criteria established and were considered relevant to the objective of the study. The main reasons to reject articles were that were not directly linked to tourism context or CE. In some articles, tourism was also one of many contexts covered by the article.

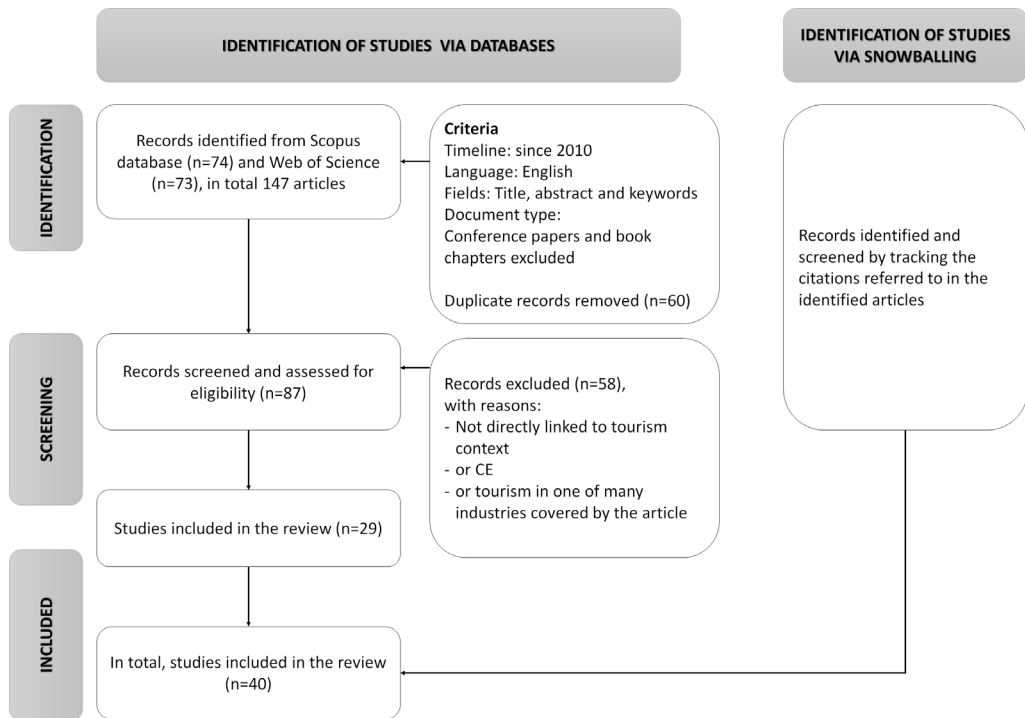


Figure 1. The study flow diagram

Since CE research in tourism is in its early stages, it was deemed important that the review is not limited only to top-ranking tourism journals but includes full-length articles from a wide range of journals across disciplines and countries. Therefore, a snowballing process was utilised with tracking the citations referred to in the identified articles to reach a broader coverage. By reading the abstracts of these cited articles, a total of 11 articles were found eligible to complement the list of 29 articles already identified as relevant to the objective of the study.

Once the sample of 40 articles was settled the full content of these articles was read and qualitative content analysis performed. Since CE is a system-level model characterised by different levels of research and implementation, the articles were classified accordingly to

identify the scale of analysis and the key themes concerning each level. This approach was adopted from CE literature reviews (e.g., Merli et al., 2018). Accordingly, in addition to general approaches to CE, destination, multi-sectoral and supply chain, company, and tourist level articles emerged as the main levels of analysis. In other words, the articles were first classified according to their level. Then, the specific research themes related to each level were explored and grouped.

Findings

Geographically, the empirical context of the studies is the following: Europe (17), Asia (9), South America (2), and Oceania (1). The European studies were conducted in the Mediterranean (13), Scandinavia (2), and the Eastern Europe (2). Studies in Asia originate from China (5), South Asia (2), and Southeast Asia (2). In addition, the articles include review articles (7) and studies conducted by using worldwide databases and case studies (4). The published articles appeared mostly in Sustainability (7) and Journal of Cleaner Production (4). Most of the articles (25 out of 40) were published in 2020-2021 (Table 1).

Characteristics	Source
General approach (7)	Girard and Nocca, 2017; Manniche et al., 2021; Pattanaro and Gente, 2017; Prideaux et al., 2020; Rodriguez et al. 2020a; Vargas-Sanchez, 2018, 2021
Multi-sectoral and supply chain approach (3)	Immacolata, 2018; Jia et al., 2014; Joshi et al., 2020
Destination level (10)	Falcone, 2019; Florido et al. 2019 ¹ ; Iodice et al., 2020; Kiradjieva et al., 2020; Liu, 2014; Lu and Hu, 2014; Pongsakornrunsilp and Pongsakornrunsilp, 2021; Rudan et al., 2021; Schumann, 2020; Xuamei and Cong, 2015
Company level (17)	Arayal, 2020; Camilleri, 2021; Cornejo-Cortega and Chavez Dagostino, 2020; del Vecchio et al., 2022; Florido et al., 2019 ¹ ; He and Mai, 2021; Ionnadis et al., 2021; Jaroszevska et al., 2019; Khan et al., 2021; Khodaiji and Christopoulou, 2020; Lang et al., 2021; Martínez-Cabrera and López-del-Pino, 2021; Pamfiliet et al., 2018; Rodriguez-Anton and Alonso-Almeida, 2019; Sorin and Sivarajah, 2021; Vatansever et al., 2021; Yang and Lin, 2022
Tourist level (4)	Julião et al., 2020; Patti, 2017; Rodríguez et al., 2020; Sørensen and Bærenholdt, 2020

Table 1. Selected literature on Circular Tourism

¹ The article by Florido et al. (2019) concentrated both on destination and company levels

The existing literature falls into five different groups: general, destination, multi-sectoral and supply chain, company, and tourist level. When classifying the articles based on their level of analysis, 43% of the studies are conducted at company level, 25% at destination level, 10% at tourist level, and 8% has taken a multi-sectoral and supply chain approach. The rest of the articles are focused on general issues related to CE in tourism.

The results show that the company level studies highlight CE strategies and practices of tourism companies, mainly hotels and restaurants. The company level studies also stress business models, opportunities, transition barriers and challenges. Tourists' awareness and engagement in CE practices and their attitudes towards CE are the key themes in tourist level. The multi-sectoral and supply chain approach mainly addresses agriculture and rural tourism. The destination level studies focus on circular transition, business and governance models, development strategies and actions as well as the role of different stakeholders, stakeholder cooperation and partnerships in CE.

General approach

First, the results show that authors (Girard & Nocca, 2017; Manniche et al., 2021; Pattanaro & Gente, 2017; Vargas-Sanchez 2018, 2021) focus on general issues related to the introduction and incorporation of the concept of CE to tourism. They write mainly about the importance of stimulating transition towards CE in tourism and its transformation power. For example, Vargas-Sanchez (2018) argues that the tourism economy will be more and more circular. As a result, CE in tourism will deserve much more attention from academics, practitioners, and public policymakers. Furthermore, Manniche et al. (2021) argue that CE has a significant potential as an integrative and instructive framework for encouraging more sustainable tourism practices. However, Pattanaro and Gente (2017) conclude that the concept of CE in tourism needs to be first better defined.

In addition, Rodriguez et al. (2020a) investigate possible gaps and current research trends in the literature on CE and tourism. They classified the literature into eight streams according to the keywords as follows: a) agriculture and rural tourism, b) application of renewable energy in the tourism sector, c) cultural tourism and CE, d) the circular practices of hotels and tourists, e) maritime sector and tourism, f) resources consumption in tourism, g) Sustainable Development Goals, and h) tourism and waste generation. According to Rodriguez et al. (2020a) most of the existing articles focus on the 3R principle, i.e., Reduce, Reuse and Recycle and cover knowledge requirements on the environment and business management. However, they did not consider the systemic nature of CE and different levels of analysis in their review, when they categorised the literature into different streams.

Another set of studies (Martinez-Cabrera & Lopez-del-Pino, 2021; Prideaux et al., 2020) focus on CE in tourism in the context of the COVID-19 pandemic. These studies promote transition to CE as a strategy for post-COVID-19 recovery and propose solutions to more pandemic resilient CE for the future. Prideaux et al. (2020) suggest that the speed of the transformation of the current linear production system to circular will influence the tourism industry's long-term recovery. Martinez-Cabrera and Lopez-del-Pino (2021) propose

establishing a CE fund which could subsidise sustainability positions within the tourism industry to ensure the transition towards more circular economy. They also draw attention to the fact that during the COVID-19 pandemic, many regulations have been established in an ad-hoc manner to find solutions to reduce the risks of transmission quickly. These regulations have rarely encompassed CE principles. Therefore, work towards pandemic regulations which encompass the CE principles needs to be encouraged.

Company-level approach

CE principles and practices

CE can be achieved through three main actions, the so-called 3Rs principle: Reduce, Reuse, and Recycle (Ghisellini et al., 2016). In research on CE in tourism, the 3Rs principle has attracted attention in the context of the hospitality industry. For example, Ionnadis et al. (2021) examine the 3Rs environmental strategy among large hotels. They conclude that the environmental strategy centring on 3Rs has a significant role among hotels, and its implementation stimulates their success. Strategies focusing on the 3Rs principle are particularly rewarding. However, nine separate Rs contributing to circularity has been identified by 2017 (Potting et al., 2017), which should be also examined further in tourism research. It is also argued that existing research still lacks deeper understanding of how tourism companies can apply these in practice (del Vecchio et al., 2022; Pattanaro & Gente, 2017; Vargas-Sanchez, 2021).

The review indicates that CE is mainly framed into environmental sustainability studies exploring the practices related to cleaner production (Merli et al., 2018). This is also the case in CE research in tourism. In particular, environmental practices in the areas of energy, water, and waste are a widely discussed topic in the hospitality context (Florido et al., 2019; Ionnadis et al., 2021; Khodajji & Christopoulou, 2020; Pamfilie et al., 2018; Rodriguez-Anton & Alonso-Almeida, 2019; Sorin & Sivarajah, 2021). This is because the hospitality sector is perceived to cause risks to the environmental sustainability of tourist destinations due to the significant amount of energy resources it consumes and the waste generated (Rodriguez-Anton & Alonso-Almeida, 2019). The hotel operators interpret CE as a resource and waste management toolbox to prevent these risks (Sorin & Sivarajah, 2021). In addition, the adoption of environmental certifications or other tools such as carbon footprint would allow tourism SMEs to foster CE (Khan et al., 2021). Although the CE research in tourism has focused on circular practices, the lack of deeper understanding of how companies can apply these in practice is criticised (del Vecchio et al., 2022; Pattanaro & Gente, 2017; Vargas-Sanchez, 2021).

In addition, previous studies have discussed recycling of food waste in the restaurant industry. For example, Camilleri (2021) proposes that restaurants can adopt various preventative measures and recycling practices to minimise food waste. They can create sustainable menus, offer a choice of different portion sizes, include fewer options in their menus, utilise sharing economy platforms or donate food to recycle surplus food. However,

Lang et al. (2021) argue that the restaurant owners are not highly aware of food waste recycling, which should be increased to manage and recycle food waste effectively.

Business models: Sharing economy, CE, and smart tourism

As Florido et al. (2019) claim, it is necessary to innovate in business models: to design a circular business model to implement the transition to CE. In addition, studies propose that CE opportunities might be available in new ownership and sharing models in the tourism industry. According to Girard and Nocca (2017), circular and sharing economy are not synonyms but related and complementary, and they can be integrated. In other words, CE refers to the lifespan of goods and sharing economy to a way in which they can be used during their lifespan (Girard & Nocca, 2017). Thus, sharing economy represents one of the business models associated with the shift towards CE, and it has received a lot of interest from tourism researchers. For example, He and Mai (2021) proposed a transition toward CE by integrating of ecotourism with the Airbnb model. Del Vecchio et al. (2022) explored the case study of Ecobnb operating into the promotion of green hospitality and an example of a successful CE business model for smart tourism.

In addition, CE and smart tourism have attracted increasing attention (e.g., del Vecchio et al., 2022; Yang & Lin, 2022), because CE in tourism requires innovation of novel technologies. Del Vecchio et al. (2022) present how digital technologies and big data can be targeted at a sustainable value creation process consistent with the perspectives of smart tourism and CE. Yang and Lin (2022) argue that by knowing how to analyse big data, it is possible to match the needs intelligently, enhance user experience in smart tourism Internet products and promote the development of the tourism industry based on CE. As Jones and Wynn (2019) conclude, tourism companies' growing needs to address CE is driving major changes in software functionality and design.

Opportunities, transition barriers and challenges

The review suggests that an overarching theme in CE research in tourism is the transition barriers and challenges of tourism companies from linear to circular economy (Arayal, 2020; Martínez-Cabrera & López-del-Pino, 2021; Sorin & Sivarajah, 2021; Vatansever et al., 2021). Some tourism companies are equipped to adopt the CE practices while others are not yet sufficiently prepared (Jaroszewska et al., 2019; Pamfilie et al., 2018). Authors (Rodríguez-Anton & Alonso-Almeida, 2019) have also concluded that many tourism companies have been making great efforts to be sustainable, but the strategies have not been very innovative.

Many authors (Arayal, 2020; Khan et al., 2021; Martínez-Cabrera & López-del-Pino 2021; Sorin & Sivarajah, 2021; Vatansever et al., 2021) suggest that lack of understanding the CE concept both among tourists and employees acts as a significant barrier when moving towards CE. As Cornejo-Ortega and Chavez Dagostino (2020) report, the tourism companies are only starting to recognize the term CE. In this sense, transition towards CE is possible when the tourism industry employees' awareness increases of the needed behavioural changes (Arayal, 2020). This argument is supported by Einarsson and Sorin (2020) who

note that the first step in the circular transformation is to explore and build awareness of CE, i.e., its key principles, concepts, practices and value creation potential. Thus, the personnel involved in tourism should be encouraged to apply the different aspects of CE and they should be provided with knowledge on efficient transition towards CE (Arayal, 2020; Jaroszewska et al., 2019; Martínez-Cabrera & Lopez-del-Pino, 2021). To accomplish this, many authors (Ioannidis et al., 2021; Martínez-Cabrera & López-del-Pino, 2021; Schumann, 2020; Sorin & Sivarajah, 2021) highlight that there is a need for education and training in CE for the employees.

In addition, tourism companies face other significant barriers, which are related to the incompatibility problems with the existing supply chain (Vatansever et al., 2021), financial problems, high initial investment costs and/or low returns (Arayal, 2020; Jaroszewska et al., 2019; Khan et al., 2021; Vatansever et al., 2021), the regulatory environment (Martínez-Cabrera & Lopez-del-Pino, 2021; Schumann, 2020; Sorin & Sivarajah, 2021) as well as the lack of adequate CE support by the government (Martínez-Cabrera & Lopez-del-Pino, 2021). Therefore, it is suggested that governmental organisations could finance economic investments of tourism companies adopting CE practices and provide them tax reductions to accelerate CE (Khan et al., 2021).

CE and tourists

It is important to acknowledge that the CE transformation is connected to new consumption patterns. CE requires the consumers to become more active participants in the recycling and reuse of products (Ghisellini et al., 2016). Several authors (Pattanaro & Gente, 2017; Sørensen et al., 2020; Sørensen & Bærenholdt, 2020) state that the tourists may have a significant role, and they could be a strength in the development of CE practices since production and consumption are inseparable in tourism. Thus, their circular engagement could be encouraged due to their role as co-producers and co-creators of travel experiences. Florido et al. (2019) suggest that for example the hotel sector could design awareness programmes for tourists to make them aware of their consumption of resources and its environmental impacts encouraging them in changing their attitude.

Due to the central role of the tourists, CE research in tourism is concerned with questions of promoting circular consumption behaviour (e.g., Julião et al., 2020; Patti, 2017; Rodríguez et al., 2020; Sørensen & Bærenholdt, 2020). The studies mainly focus on the tourists' attitudes and circular practices among tourists. For example, Rodríguez et al. (2020b) conclude that 86.5% of the tourists implement the same CE practices on holidays as at home. They mainly take into consideration energy-saving practices, the use of recycling bins and the reusable towel and linen schemes (Patti, 2017; Rodríguez et al., 2020b). The tourists claim that environmental sustainability has a positive influence on their hotel selection, but their willingness to pay extra is strongly related to their nationality and age (Juliao et al., 2020; Rodríguez et al., 2020b). Moreover, Sørensen and Bærenholdt (2020) emphasise that the tourists are considered primarily as the consumers of products and services provided by the industry, which means that tourists themselves are not required

to take the initiative. This means that there is a need to understand the tourists' practices regarding their ways of travelling and being a tourist.

Multi-sectoral approach and supply chains

The review suggests that the multi-sectoral approaches related to CE in tourism mainly focus on agriculture and rural tourism as they are strongly interlinked. This finding supports the claim by Rodriguez et al. (2020a) that agro-tourism is an effective way of developing circular practices in rural tourism. As Immacolata (2018) argues, rural development models should integrate and coordinate rural tourism as a component, which enables a balance between the consumption and reproduction of rural resources in terms of a new approach to CE. Joshi et al. (2020) highlight that developing convergence between tourism and agri-food supply chains could be a win-win situation with inclusive growth and sustainable livelihood. In other words, farmers should be encouraged to become part of the mainstream CE. Moreover, Jia et al. (2014) emphasise that the development of leisure agriculture can use local resources fully, extending the industry chain between tourism and agriculture.

In case of the hotel and restaurant industry, studies emphasise cooperation and networking with the local supply chain and actors. To advance CE transformation, Florido et al. (2019) remind of strengthening cooperation in the hotel industry through local organisations and networks. These seek to promote CE solutions such as increasing use of capacity through shared economy platforms and implementation of circular agricultural practices with local farmers. It is further recommended by Khodaiji and Christopoulou (2020) that hotels should create supply chain sub circles of recycling or reuse of products, inducting the local community, securing various acquisitions from the local community and uplifting of locality. Camilleri (2021) also sees that restaurant owners should be interested in procuring fresh ingredients from local farmers, bakers, and butchers. He emphasises that restaurant and hospitality companies should have close relationships with local suppliers and implement just-in-time purchasing systems to have fresh ingredients. In conclusion, involving local stakeholders and increasing cooperation within the local supply chain to promote CE solutions is considered highly relevant.

Destination level

The review shows that the circularity of tourist destinations with attention to multiple stakeholders and levels of research and implementation has so far gained limited interest. There are only a few practical examples of tourism destinations which are transitioning towards circularity. These include mainly coastal and island destinations such as Krabi (Pongsakornrungsilp & Pongsakornrungsilp, 2021), Guam (Schumann, 2020) and the Balearic Islands (Florido et al., 2019). In addition, transition towards CE in natural (Liu, 2014; Xuamei & Cong, 2015) and cultural (Iodice et al., 2020; Rudan et al., 2021) heritage sites have received some attention.

Hence, destination level studies usually focus on developing circular transition or business models, development plans and policy actions to promote CE in tourism at destina-

tion level. In addition, the studies explore how different groups of stakeholders cooperate when developing circular tourism destination and what is their role in this process. The studies (e.g., Florido et al., 2019; Pongsakornrungsilp & Pongsakornrungsilp, 2021; Rudan et al., 2021; Schumann, 2020) highlight that a holistic, more comprehensive transition system perspective involving all destination stakeholders and external players from policy to practice is required to make progress in the shift to CE in tourism. There is a need for collaboration and co-creation of a strong culture of CE among stakeholders. The tourism sector, the public administration and destination management organisations (DMOs), the resident population, and tourists should all act in synergy. Local partnerships at different levels and bottom-up encouragement are considered important, since transformation will depend on the initiatives and ideas of the entrepreneurs, managers, and staff (Florido et al., 2019; Rudan et al., 2021; Schumann, 2020). In addition, digital technology and social networking could play an important role in promoting CE at the destination level (Pongsakornrungsilp & Pongsakornrungsilp, 2021).

The studies have also assessed the role of the government in this process and proposed new models of governance. The role of local and national level public administration is considered crucial in moving towards CE. Top-down government-driven support, i.e., adequate and faster legislation and regulatory frameworks, is regarded as a means to speed up progress (Rudan et al., 2021; Schumann, 2020). As Falcone (2019) suggests, to support the transition towards circularity, the objectives of policy strategies should include reducing the administrative burdens of bureaucracy. In terms of national tourism policies, they are also seen essential in facilitating the implementation of circular practices (Cornejo-Cortega & Chavez Dagostino, 2020). Furthermore, Kiradjieva et al. (2020) emphasise that the implementation of the CE approach and new models of governance are a necessity when reframing the municipality's tourism model. In practice, they consider the governance approach to motivate the collective commitment to sustainable tourism.

Conclusions and future research

This article has provided a review of the studies exploring CE in tourism. It is obvious that there are limitations to the approach of this article. As CE in tourism is in its infancy both in research and in practice, the terminology is not yet very well known. In addition, CE includes different meanings and there are many synonyms, complementary and integrated terms (e.g., sharing economy, collaborative consumption, carbon-neutral tourism, low-carbon tourism, zero waste concept). Therefore, the article is not intended to be an exhaustive review; rather, the focus is on those issues that have been most topical recently. The research related to CE in tourism is conducted mostly at micro level, especially in hospitality context. The content analysis of the literature reveals that tourism scholars have mainly focused on tourism companies' circular business models, strategies and practices in energy, water, and waste management. In addition, CE opportunities, transition barriers and challenges in tourism companies as well as their awareness, knowledge, and skills have raised interest among tourism scholars. Tourists and their circular practices and attitudes

as well as CE and smart tourism have been emerging research themes, which certainly need more emphasis in the future.

The review shows that the micro level research is mainly conducted in the hospitality context, which means that there is a need for more studies related to different contexts. As Sorin and Einarsson (2020) point out, different organisation sectors and market contexts in tourism will generate different circular transformations. The existing studies focus on these so-called heavy actors e.g., accommodation operators, but the light actors e.g., travel agencies and their circular transformation should also be examined. In addition, the CE framework could be explored in the events sector related to the production and delivery of events as well as among tourism programme service providers and Spas.

CE refers to the economy as a whole and is a joint action by all stakeholders, but macro and meso level studies in tourism are scarce. Therefore, calls have been made (Martinez-Cabrera & Lopez-del-Pino, 2021; Rudan et al., 2021) for a multi-stakeholder approach, network-level studies and further research on the destination level including various stakeholders, e.g., destination managers, local governments, and the local population. Tourism scholars are encouraged to shift their perspective more to macro level to get a holistic picture of CE in tourism sector. In addition, studies, which focus on the supply chain perspective in CE, are needed also in contexts other than agriculture and rural tourism. Involving other local stakeholders than farmers, for example natural cosmetics, textile, or furniture industries, to promote CE solutions could be highly relevant.

Moreover, scholars (Rodríguez-Anton & Alonso-Almeida, 2019; Vatansever et al. 2021) seem to have found a consensus about the idea that the role of the local and national government in the transition and motivating the tourism industry towards CE is pivotal. According to Jones and Wynn (2019), it is complex to develop a CE approach within the tourism industry, and it requires the implementation of appropriate legislation. Regulation and policy determinants influence and motivate the consumers' and suppliers' environmental practices, affecting the CE implementation (Prieto-Sandoval et al., 2018). In addition, national tourism policies should provide directions to promote CE in the tourism industry. Therefore, it would be useful to carry out studies aimed at examining the role of the government from various perspectives as a driver and facilitator of CE in tourism, since its role has been much overlooked.

It can also be concluded that the results are in line with the notion of Rodríguez et al. (2020a) that the scientific production on CE in tourism mainly covers knowledge needs on the environment and business management. For this reason, another interesting field of research would be the social dimension of CE in tourism at different levels. Socio-cultural issues are rarely considered except for the increasing interest in circular cultural tourism at destination level (e.g., Iodice et al., 2020; Rudan et al., 2021). As Einarsson and Sorin (2020) highlight, there is an underlying acknowledgement that CE transition leads to more prosperous and equitable societies, which is highly relevant in the tourism context centred on communities, people and their experiences and interactions. For example, studies related to jobs generation and circular employment opportunities, occupational health and safety

with the risks connected to COVID-19 as well as skills development and training in CE would be beneficial at this development stage of CE in tourism.

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