

Understanding circularity in tourism

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ABSTRACT

The spread of the idea of the circular economy has already appeared among service providers; therefore, a growing interest in tourism can be observed. Due to its seasonal nature and because tourism is primarily operated by for-profit actors, whose aspirations focus on economic benefits, tourism in recent years has developed in the direction of mass tourism. By overriding the approach of sustainability, all this strengthens the damaging effects of tourism on nature and society. The aim of the study is to understand and interpret the circular economy model in the tourism industry; explore the relevant literature through a review analysis and based on the synthesis of principles found in the literature, show directions of how the circular economy can be interpreted in tourism. The main contribution of the study is that besides the contextual understanding of circular tourism, it aims to provide practical issues and examples about circular solutions. The study also highlights that in addition to physical parameters, some solutions could be achieved only by reorganizing processes and practices. Furthermore, based on industrial symbiosis, tourism can support sustainable development at the individual and the regional level.

KEYWORDS

circularity, circular economy, circular tourism

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1. INTRODUCTION

The ideas of the circular economy and circular business models have emerged in recent years. Currently, circular economy is a key priority in the European Commission (Naydenov 2018). According to Naydenov (2018), the tourism sector hitherto did not really come into the spotlight in this context. However, the connection between traveling and circularity is unquestionable: circular tourism can align with sustainable resource management, the goal of which is to produce goods and services which devote attention to environmental impacts (Naydenov 2018). Behavioral changes in tourists and staff are necessary (Aryal 2020).

The main aim of the study is to understand the circular tourism phenomenon; explore the relevant literature, and, based on its synthesis, show examples of the ways it can be interpreted in practice. There is an increasing emphasis in the scientific literature on integrating different sustainability principles into tourism, which was analyzed in the past especially from the demand side. The reason for this is that, at the same time, in the economy as a whole, companies using circular solutions are gaining more and more prestige in the eyes of consumers; customers prefer products from organizations that operate based on the circular economy model. In the study of Nielsen, it is stated that in 2014, only 50% of customers were willing to pay more for sustainable products, whereas in 2015, that proportion rose to 66% (Nielsen 2015). In Sweden, a study of 1,000 shoppers between the ages of 17 and 70 found that 66% of respondents considered sustainability important, and 29% also considered it an important factor when buying services and products (Mostaghel – Chirumalla 2021).

In the background, we have to pay attention to the changing demand in tourism as well. We need to realize that both social pressure and tourism demand are increasingly favoring close-to-nature tourism solutions, and service providers are increasingly applying a sustainable and, within that, a circular approach (Martínez-Cabrera – López-del-Pino 2021). As a countermeasure to mass tourism and as a result of overtourism, the market share of alternative tourism has been gradually expanding for more than ten years, covering eco-tourism, rural, gastro, and active tourism, both domestically and internationally (Higgins-Desbiolles et al. 2019). Visitors increasingly prefer and appreciate proximity to nature.

By now, it has become clear that an organization that is not starting to prepare for a circular approach can expect a significant drop in demand in the medium term (in addition to the loss of prestige and brand value). For example, Zsóka and Vajkai (2018) stated that operating with sustainable models will be a competitive advantage, and issuing sustainability reports can increase corporate reputation and brand value.

Due to the above, the spread of the idea of the circular economy has already appeared among service providers. Therefore, there is a growing interest in tourism as well. For-profit organizations in the tourism sector, non-profit service providers, and other stakeholders have recognized that the traditional tourism system significantly impacts the environment, meaning that the current approach is unsustainable.

Thus, circular tourism follows the logic of the circular economy, whose business model is consistent with the principles of sustainable development. Circular tourism proposes a model in which each tourism actor (traveler, host, tour operator, and supplier) adopts an eco-friendly approach. In addition to the traditional interpretation of sustainability, the circular approach means that tourism organizations are familiar with the business model of the circular economy, the toolkit of ICT supporting sustainable tourism, the basic elements of system thinking; have



competencies in the areas of design thinking, the circular shaping and management of the urban environment and the methods of shaping the circular approach of communities.

Our goal is to support the supply side in transitioning from the linear to the more circular economic model. The literature on circular economy has primarily approached the issue from the point of view of infrastructure investments and technological innovations. However, the circular economic model can often be implemented in practice by organizing processes and cooperating with stakeholders. In tourism, as a service sector, these solutions may prove to be useful in the short term.

In order to accomplish this mission, we explore the relevant literature about circular tourism through a systematic literature review and based on the synthesis of principles found in the literature, show directions to the supply side of tourism on how circular economy can be put into practice. Based on these, service providers can be inspired and find solutions that are compatible with their missions, and can be implemented without serious economic effort. It is also important that the circulation of tourism cannot be achieved by the actions of a single actor; well-proven symbiosis and cooperation in the industry are needed here as well.

We first give an insight into the circular economy itself, then based on data collected, we support the importance of change of attitude in tourism. The third section analyzes, circular tourism based on the literature, and finally, practical solutions are introduced.

2. CIRCULAR ECONOMY

There is no clear information about the birth of the circular economy concept (Winans et al. 2017), since its elements are much older than the concept itself. At the same time, the spread of the concept of the circular economy (CE) is primarily due to the promotional work of the Ellen MacArthur Foundation. Based on Rodríguez et al. (2020), the Foundation accelerated the transition from the linear towards a circular economy. They had also collected the different kinds of schools and approaches on which the circular economy rests. These are the Cradle to Cradle, the Performance Economy, Biomimicry, Industrial Ecology, Natural capitalism, Blue Economy, and Regenerative Design (Rodríguez et al. 2020).

The Ellen MacArthur Foundation has formulated three key principles, which in their view are the foundations of the circular economy:

- preserve and enhance natural capital: on the one hand, this means that the finite stocks have to be under continuous monitoring; on the other hand, it means greater reliance on renewable resources because of the lack of finite stocks;
- optimize resource yields, which can be achieved by circulating product components and materials in the supply chain, attaining the highest utility in both technical and biological cycles;
- system effectiveness: foster to reveal and design out negative externalities (Ellen MacArthur Foundation 2015; Manniche et al. 2017).

2.1. Conceptual approaches of the circular economy

Based on the above-mentioned principles and relying on other approaches, many authors defined the circular economy differently. Table 1 summarizes the most crucial points and pivotal elements included in the analyzed conceptual approaches.



Table 1. Crucial points and pivotal elements of the circular economy concept

Resource usage reduction	United Nations Environment Programme (2006)
	Feng et al. (2007)
	Sauvé et al. (2016)
	Geissdoerfer et al. (2017)
	Kirchherr et al. (2017)
	Naydenov (2018)
	Suárez-Eiroa et al. (2019)
	Martínez-Cabrera and López-del-Pino (2021)
Extended lifetime	Kirchherr et al. (2017)
	Naydenov (2018)
	Suárez-Eiroa et al. (2019)
	Sorin – Einarsson (2020)
	Martínez-Cabrera and López-del-Pino (2021)
Recycling	Ellen MacArthur Foundation (2013)
	Kirchherr et al. (2017)
	Rodríguez et al. (2020)
	Sorin and Einarsson (2020)
	Martínez-Cabrera and López-del-Pino (2021)
Renewal of natural systems, productivity	United Nations Environment Programme (2006)
	Hu et al. (2011)
	Naydenov (2018)
	Rodríguez et al. (2020)
	Martínez-Cabrera and López-del-Pino (2021)
Closed-loop flow	Ellen MacArthur Foundation (2013)
	Sauvé et al. (2016)
	Geissdoerfer et al. (2017)
	Suárez-Eiroa et al. (2019)
Economic development	United Nations Environment Programme (2006)
	Feng et al. (2007)
	Ellen MacArthur Foundation (2013)
	Kirchherr et al. (2017)

(continued)

Table 1. Continued

Extraction of waste	Ellen MacArthur Foundation (2013)
	Sauvé et al. (2016)
	Geissdoerfer et al. (2017)
	Suárez-Eiroa et al. (2019)

Source: authors.

In most conceptual approaches, circular economy means resource usage reduction. Five authors mentioned that circular economy includes extended product lifetime, recycling, renewal of natural systems, and productivity. The closed-loop flow, economic development, and waste extraction are mentioned as circular economy model elements by four authors each.

The logic of the 4R (reduce, reuse, recycle, recover) was mentioned by [Hu et al. \(2011\)](#), [Geissdoerfer et al. \(2017\)](#), and [Kirchherr et al. \(2017\)](#) when describing the circular economy. The renewal of the production and consumption systems can be found in [Kirchherr et al. \(2017\)](#), [Suárez-Eiroa et al. \(2019\)](#), and [Sorin and Einarsson \(2020\)](#). Emission extraction was mentioned in the concept description of [Geissdoerfer et al. \(2017\)](#) and [Suárez-Eiroa et al. \(2019\)](#). According to [Kirchherr et al. \(2017\)](#) and [Rodríguez et al. \(2020\)](#), social equity and human life are parts of the circular economy. [Sorin and Einarsson \(2020\)](#) also mentioned sharing platforms in the concept.

Based on this collection, it can be concluded that the circular economy is a form of closed-loop economic development, whose aim is to extend the products' lifetime, enhancing productivity by applying the 4R principle, recycling and emission and waste extraction. It also aims to renew the natural systems, reduce resource usage, generally change the production and consumption systems, and strive for social equity.

2.2. Circular economy concepts and their applicability to tourism

Before defining circular tourism, notice that among the approaches defined in [Table 1](#), we can realize that some references can be connected to tourism. Feng's definition (a mode of economic development based on the ecological circulation of natural materials, requiring compliance with ecological laws and sound utilization of natural resources to achieve economic development) points out that the circular economy itself is not just about nature conservation, but it is also a business model, a way of economic development. This implies that CE can also be interpreted in the services market.

[Rodríguez et al. \(2020: 4\)](#) defined CE as what 'can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing and recycling.' However, these features focus on the physical elements, and according to the 7P principle of service marketing (product, price, place, promotion, people, process, physical evidence), it can also be grasped in tourism.

[Kirchherr et al.'s \(2017: 224\)](#) broader definition gave a real insight into tourism. The concept represents the spatial, destination-level approach of tourism:

a circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in



production/distribution and consumption processes, / thus operational at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond) [...]

According to Sorin and Einarsson (2020), circular economy is a toolbox, while the sustainable development goals (SDG) of the United Nations are a kind of communication and metric framework. Both can help to reach the final goal; sustainability (Sorin – Einarsson 2020). Accepting Nedyalkova's statement, namely 'the Circular Economy is presented as a model for operating sustainable principles' (Nedyalkova 2018: 3), we can conclude that there is a strong link between circularity and the SDGs.

Based on Frodermann (2018), the transition from the linear to the circular economy requires a complete change of attitude in all aspects of the economy. This is true not just for the product itself but also for the production and organizational processes (Aryal 2020; Frodermann 2018). Following this line of thought, the human and social aspects are just as important. Kocsis (2018) stated that in terms of the human and social aspects, responsible sustainability is a vision in itself, but an environmentally sustainable entity is socially futureable, too. This line of thinking anticipates the social aspects of sustainability and circular economy in tourism, with particular reference to consumer needs and demand trends.

3. TOURISM AS ONE OF THE MOST POLLUTING INDUSTRIES

Rodríguez et al. (2020) drew attention to the contradiction that only a few references were found regarding pollution in circular tourism, even though this sector is one of the most polluting ones with huge energy and water consumption, food waste, congestion problems and CO₂ emissions (Rodríguez et al. 2020). It is indubitable that the tourism industry is an important sector to study due to its economic importance and its negative environmental impacts.

Martínez-Cabrera and López-del-Pino (2021) stated that the tourism industry is a major contributor to environmental degradation, since its structure is based on the linear economic model (Martínez-Cabrera – López-del-Pino, 2021).

The significant environmental impact of tourism can be attributed to the following factors:

- the tourism industry is responsible for 8% of the global CO₂ emissions (Lenzen et al. 2018);
- the industry uses a large number of goods, products, which often infer delivery and plastic packaging (based on the Eunomia Research & Consulting, over 80 per cent of the plastic entering the marine environment comes from land-based sources, 5% originates from beaches);
- tourism facilities claim a significant amount of energy and raw materials;
- tourism facilities (swimming pools, spa and wellness facilities, golf courses) need extra amounts of water (direct water use varies from 80 to 2000 L per tourist per day);
- air travel is considered the main tourism contributor to global warming (Midžić-Kurtagić 2018).

Based on the above list, Vargas-Sánchez (2018) declared that the tourism industry has a significant role in the economic transformation to the circular economy, since tourism has a multiplier effect and a wide ranging supply chain (Vargas-Sánchez 2018).



4. INTERPRETATION OF CIRCULAR TOURISM

The authors also analyzed the state of the art of CE in tourism. Their findings match Vargas-Sánchez's (2018: 659) results: 'scarcity of scientific literature available in this field and the lack of a common understanding of this concept.'

The World Tourism Organization knows the concept of sustainable tourism, but Nedyalkova (2018) stated that the tourism sector had not received significant attention as a possible industry for circular economy initiatives. Nowadays, the European Union started to focus on circular tourism, which is approached through the circular economy business model and is consistent with the principles of sustainable development. It also has to be mentioned that in the circular tourism model, each actor (traveler, host, tour operator, and supplier) is involved and adopts eco-friendly approaches (Nedyalkova 2018).

According to Sørensen et al. (2020), the transition to a circular perspective in tourism is difficult to achieve due to the large number of actors involved and the hedonistic consumption pattern of visitors (Sørensen et al. 2020).

4.1. Circular tourism in the scientific literature

In order to gain insight into circular tourism, we carried out a systematic literature overview (SLR). SLR can be interpreted as a method that rests on the theoretical and scientific foundations needed to understand a given topic through the collection, understanding, synthesis, and evaluation of scientific work. The SLR has various steps that were followed in compiling the present study. SLR starts by defining research questions and a search strategy. After documentation took place, we have to define acceptance/exclusion criteria when evaluating the articles. Next comes the interpretation of the received information, and then finally, a kind of quantitative analysis.

Our study's main research question was how circular tourism appears in the literature, what definitions and theories have emerged in the topic, and how they are interpreted. Our search strategy was based on English language sources. The overview included the analysis of the Web of Science (WoS) and the Google Scholar databases from 2001 to 2020, looking at trends, and how the topic was raised. In the analyses, we used:

- the Web of Science database, with the title and abstract including the terms 'circular' and 'tourism', a timespan=All years and the SCI-EXPANDED, SSCI, A&HCI, ESCI indexes;
- the Google Scholar database, with the preference of allintitle: circular tourism.

As acceptance/exclusion criteria we have focused specifically on circular tourism, we excluded from the results those that were, for example, about the circular economy without tourism or sustainable tourism, but without mentioning circularity in their title and abstract.

The WoS databases contained a total of 11 publications, whose title and abstract included the circular and the tourism expressions together. These articles were published in 11 different journals, two of them in the Sustainability journal. The total citations of these 11 publications are 162 (126 of these were citations for just one publication).

The Google Scholar database contained a total of 118 publications, whose titles included the circular and the tourism expressions together. Based on Fig. 1, the emergence of the circular



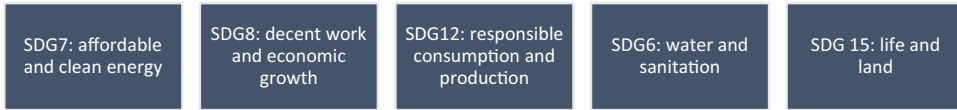


Fig. 1. CE contribution to the SDGs.

Source: Midžić-Kurtagić (2018)

tourism topic peaked in 2009–2010, when 10–14 publications were available on Google Scholar. Following a drop in the number of publications, 23 were available in 2020 (Fig. 2).

Besides the growing interest in scientific research in circular tourism, there is a lack of shared understanding about CE and tourism. The state of the art in this field is in its infancy (Martínez-Cabrera – López-del-Pino 2021). Rodríguez et al. (2020) also mentioned that specific guidelines could not be found to interpret the tourism sector in a circular economy context (Rodríguez et al. 2020).

4.2. Circular tourism definitions

If we want to categorize the theories published on circular tourism, we can discover a kind of focal point deviation.

The first authors dealing with this topic transposed the concept of sustainable development to tourism or just wrote about the greening of tourism and the differences between circular and green tourism.

Accordingly, Nedyalkova (2018) defined circular tourism as a model able to create a virtuous circle that produces goods and services without losing the limited resources of the planet that are raw materials, water, and energy, which limits the impact on the environment and (travelers, host, tour operator, supplier) adopt an ecological and responsible approach.

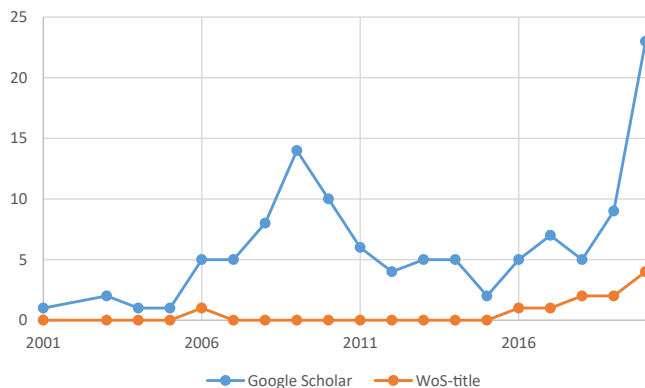


Fig. 2. The emergence of circular tourism in scientific publications.

Note: the figure shows the actual data on 20 May 2021.

Source: authors



Girard and Nocca (2017) drew attention to the fact that circular tourism is not equal to green tourism. The latter focuses on limiting the consumption and waste of non-renewable energy sources. However, in circular tourism recovery, reuse, redevelopment, valorization, and regeneration are the key words.

According to Rodríguez et al. (2020), circularity in tourism can be found in rural and cultural tourism (like in urban cultural landscapes); in the application of renewable energy in the tourism sector (like renewable energy and cleaner production solutions); in hotels and tourists' circular practices (like eco-innovations); in the maritime sector affected by tourism (like marine litter and microplastics); in waste generation in tourism (like recycling and secondary raw materials) and in resources in the tourism sector (like infrastructure, climate change etc.).

The authors then wrote specifically about circular tourism, but focused on its physical, mainly investment-related aspects. According to Brightley (2017: 3), by 'optimizing the energy efficiency of buildings and making them self-reliant for water supply and waste management, using green energy sources,' with the necessary regulation, the shift could be made to a resilient tourism industry. Falcone (2019) declared that in order to carry out the transition from linear toward circular economy, a cross-disciplinary approach is required. This includes new production and consumption models (it is necessary to generate less waste), using biodegradable products, protecting cultural values (like heritages), greening tourism (by thinking long-term during the investments).

Just as the circular economy appears not only in the engineering but also in the economic sense, it was an important point in the evolutionary process when the soft elements and then the management aspects of circular tourism appeared in the conceptual approaches. Rodríguez et al. (2020) also mentioned that the literature on CE was developed mainly for the manufacturing sector, and there are few references to tourism. However, many CE solutions can also be applied to tourism businesses and destinations.

In Kek et al.'s (2013) approach, circular tourism takes into account other soft aspects, in addition to the above-mentioned physically measurable indicators. These are:

- sustainable mobility (environmentally friendly types of transport, sharing economy);
- food (locally produced food, short supply chains, community gardens);
- community and other tourist accommodation (diffused hotels);
- reuse of items/objects (reuse centres, social entrepreneurship);
- other areas potentially associated with the closing of material loops in tourism (Kek et al. 2013).

Thinking in a system and managerial way, Midžić-Kurtagić (2018) focused on the construction of tourism facilities and summarized the most important business model element, according to which the facilities can operate in a circular way. This includes circular design, meaning that the entire building and the products and materials in it are designed to last longer, and are modularly built in order to be easier to maintain, repair, upgrade, refurbish, remanufacture or recycle. Circular recovery means that all revenue coming from the operation will be used in transforming products into new ones by adding value, reducing costs, or reducing waste. Circular use means that the management continuously monitors the assets and tries to retain their value. Finally, product-to-service models mean the usage of leasing and sharing services, extending the lifetime, services to facilitate the tracing, marketing, and trade of secondary raw materials.



After the extensive literature review, we concluded that the interpretation and implementation of circular economy in the tourism industry mostly focus on food waste, energy consumption, water consumption, and CO₂ emissions, climate change, and global warming. We can conclude that the tourism industry is slowly incorporating CE practices (Aryal 2020; Rodríguez-Antón – Alonso-Almeida 2019).

In order to achieve better indicators in the above-mentioned focus points, the tourism and hospitality sector should think about the reduction of the used resources, the reuse of existing products, recycling what is suitable for that, and redesign, replace, and rethink operations. Reduction means that tourism service providers reduce their energy, water, and plastic use, reduce CO₂ emissions, focus on food waste reduction, avoid inorganic fertilizers and pesticide use, and enhance sustainable mobility. Reuseage means the recycling of utilities (energy, water) and other appliances (amenities, furniture). In practice, it can mean using renewable energy, treated wastewater, or bedding materials prepared from recycled products. The redesign, replace and rethink method can be implemented in the interior design, which can be changed to reduce energy and water demands. Equipments that consume non-renewable energy can be replaced (Aryal 2020).

A future focus point could be on taking advantage of digitization. A smart destination/service provider/facility is able to collect data not just about the guests and their habits but also about the hard indicators of sustainability (like energy consumption, food waste etc.), as well (del Vecchio et al. 2021).

4.3. Circularity in the light of COVID-19

In the light of the health crisis resulting from the COVID-19 pandemic, which has now become a global economic and social crisis, a number of questions arise about its short- and long-term impact on the tourism sector. Covid has a significant impact on tourism, as we have already seen: there have been substantial changes in mobility, social contact, and consumption patterns, as well as in leisure and work and many other dimensions of our social life (Romagosa, 2020). The United Nations World Tourism Organization (UNWTO) estimates that the number of international tourist arrivals and related economic revenues decreased by about 30% in 2020 compared to 2019 (UNWTO 2020). Some say that this crisis could impact the sustainability of the sector, since the pollution of natural attractions such as forests, beaches, hills, water bodies is reduced in the epidemic situation. Due to fewer travelers, for example, there were fewer flights, the amount of waste generated on the beaches decreased, so, naturally, the pollution of water, soil, and air also decreased (Schanes et al. 2018; Zambrano-Monserrate et al. 2020). On the other hand, the pandemic, so to speak, has given the tourism industry a pause to consider what reforms and transformations would be needed to put tourism on a more responsible and sustainable path (Higgins-Desbiolles 2020). In the Charter for Sustainable Tourism after COVID-19, Chang et al. (2020) formulated the 10 points they consider necessary to create a balanced and sustainable tourism, travel, and hospitality industry. In this, they highlighted the nature-based tourism types (like adventure and farm tourism), where social distancing can be ensured.

However, there is a consensus that it will never be the same again, and COVID-19 has changed the world forever (Chang et al. 2020). For example, Becker (2020) said that people have short memories, and there will be a pent-up desire to travel, as earlier. Based on the author's



view, a return is expected after the pandemic to the same operation of the tourism industry as it had been before the epidemic broke out.

5. CIRCULAR TOURISM IN PRACTICE

In this subsection, we are going to list those solutions that can contribute to the final goal: sustainability, using the toolbox of circular economy. Based on the literature overview and the methodology used in it, we grouped the collected practical solutions into five categories: reduce, recycle, reuse, redesign and rethink.

5.1. Reduce solutions

Reduction is one of the simplest and most obvious solutions to avoid or reduce pollution. In the tourism industry, there are some options to reduce our consumption.

The usage of completely renewable, recyclable, or biodegradable resources/materials in the facilities can highly reduce the amount of required resources. Clothes for example can be renewable, recyclable or biodegradable.

Planning buildings with energy-efficient appliances and systems, alternative energy supplies (like solar panels integrated into the facades and glazed ceilings) can reduce the required energy usage, or the facilities can obtain it from a renewable energy source. Even if the building itself was not planned along these principles, with today's technologies, such options can be installed later without causing major damage to the structure. Lighting and water usage can be considered the most important topics of energy-efficient solutions. Using lighting controls that are equipped with, for example, motion or brightness control sensors and implementing water-efficient bathroom fixtures (for example, taps) can significantly reduce the energy usage of any facility.

The short and local supply chains can help to reduce the waste and CO₂ emissions generated by transportation. Serving individual platters instead of buffets, or planning menus according to what food items are in season, or offering different portion sizes to suit customers in restaurants can reduce food waste.

The zenith of the reduced solutions is the implementation of Environmental Management Systems, which can help to monitor energy consumption, emissions, food waste and associated cost – savings opportunities (Aryal 2020; del Vecchio et al. 2021; Sorin – Einarsson 2020; Manniche et al. 2017; Midžić-Kurtagić 2018; Rodríguez-Antón – Alonso-Almeida 2019; Vargas-Sánchez 2019).

5.2. Recycle solutions

Speaking about sustainability and circularity, the first thing that comes to mind is recycling. It means that the products made and consumed by people are not treated as waste but used for some other functions.

In tourism, it can manifest in extending the life of products (like furniture). Instead of buying new ones, it is a better solution to repair, renew and resell them to a second market.

The above-mentioned food waste in restaurants can also be recycled, for example, into recovery energy or other resources from them. Food waste can be gasified or burnt, and the released energy can be used to support other activities.



A very simple solution is rainwater storage, which does not require a large investment, but can significantly reduce the burden on the environment by not watering plants and lawns with drinking water. However, wastewater and polluted water are generated in all facilities. This water can also be used to irrigate farms, parks, gardens – of course, only after proper cleaning. For this environmentally conscious activity, facilities can apply membrane water filtration technology, which allows for the recovery of wastewater for reuse in their laundry operations (Aryal 2020; del Vecchio et al. 2021; Sorin – Einarsson 2020; Manniche et al. 2017; Midžić-Kurtagić 2018; Rodríguez-Antón – Alonso-Almeida 2019; Vargas-Sánchez 2019).

5.3. Reuse solutions

A higher degree of recycling is reuse. With reuse, we try to recycle products on their own and endow them with other functions. In tourism, especially accommodations can take this opportunity by sharing use and access. This reduces the number of idles and half-runs.

Regarding the restaurants selling their food waste, grease from their drainage sludge and other kitchen-based resources can also be a reuse solution (however, it should be mentioned that under current legislation, this is illegal in some places). The bottles and glasses can also be replaced, and beverages can be stored in kegs or bottles. The leftover bread can also have a second life being turned into breadcrumbs or croutons. As it was partly mentioned earlier, the used oil from restaurants can be used to prepare biogas, which is a fuel used by transportation companies.

In tourism, a lot of plastic bottles and textiles are used, most only once. In a circular approach, plastic PET bottles can be used to make wall gardens for decoration; the used textiles and linens can be sold; and instead of disposable textiles, washable napkins, tablecloths, and towels can be procured (Aryal 2020; del Vecchio et al. 2021; Sorin – Einarsson 2020; Manniche et al. 2017; Midžić-Kurtagić 2018; Rodríguez-Antón – Alonso-Almeida 2019; Vargas-Sánchez 2019).

5.4. Redesigning solutions

By redesigning, we can break down an already used product into elements and reuse the components thus obtained. However, redesign is not only an important approach at the end of the product life cycle; it is also worth keeping in mind when designing the product.

Eco-design aspects before construction are important issues as well. For example, installing reused bricks during the building process and also the roof membrane can capture and neutralize pollution particles from traffic.

It is also a solution to design any interior for modularity, with swappable, easy to repair, upgradable, customized materials and products for modular public partitioning. Room partitioning solutions create flexibility in adapting the property layout.

Redesign is also an important aspect in the operation of a building, for example, using ground-water for heating or cooling the facility or having a small biogas plant heated with food waste from the restaurant.

The various IoT (internet of things) solutions and sensor integration are also a huge step forward in sustainability and circularity. Such solutions can be used to monitor the consumption of resources (water, electricity), and automatically and remotely control these devices (shutdown of all devices, activation of heating/air conditioning, etc.). An advanced building



climate control system, which is connected to the booking system can control the room temperatures depending on their usage (Aryal 2020; del Vecchio et al. 2021; Sorin – Einarsson 2020; Manniche et al. 2017; Midžić-Kurtagić 2018; Rodríguez-Antón – Alonso-Almeida 2019; Vargas-Sánchez 2019).

5.5. Rethink solutions

In many cases, in addition to the practical and physical solutions presented above, reforming our way of thinking and our processes is of great help to the cycle. This is rethinking.

The phenomenon of Airbnb is widely spread, so Ecobnb can be a kind of branding option. This is an Airbnb-like certified accommodation solution, with 10-point evaluation criteria regarding sustainability aspects. The United Nations SDG framework could also be used as a marketing communication framework with an emphasis on the circularity issues at the facility.

The product-to-service models are not unknown in tourism. From the circularity aspects, the leasing of bedding, furniture, food and beverage equipment is a new form of it. These can help to access top-of-the-line technology and make savings on related running costs (for water, electricity, etc.).

On further thought, mutualization of resources, materials, and of idle assets can be one of the highlights of rethinking solutions. This means asset recirculation, or creating ‘intra-organisational’ sharing platforms.

Circularity aspects can also be utilized in events and procurement management. There is a kind of wide literature about sustainable event management, and having these approaches in mind enables circularity in the upstream supply chain, sourcing materials fit for a circular flow (Aryal 2020; del Vecchio et al. 2021; Sorin – Einarsson 2020; Manniche et al. 2017; Midžić-Kurtagić 2018; Rodríguez-Antón – Alonso-Almeida 2019; Vargas-Sánchez 2019).

Since the municipalities are one of the most important stakeholders of tourism, they are often the engines of the destination, therefore it is also worth to take into account their perspectives and opportunities.

Speaking about a spatial dimension, the sustainable mobility within a tourist destination can be crucial from sustainability aspects. Therefore, the municipalities should make incentives for environmentally friendly public transport, in the form of electric, methane- or gas-powered buses. Regarding private transportation, the municipality can also make incentives for the use of electric cars and other means of transport, like bicycle rental. The municipality can develop a supportive environment for the development of electric mobility, including charging stations for electric cars, assurance of data that are open and interoperable and guidelines for effective management of charging infrastructure. Besides the cycling infrastructure (cycling paths, charging points), a car-sharing system can also be a circular solution for tourists (Kek et al. 2013).

Regarding waste management, the municipalities have the option to use larger numbers of well-marked selective waste separation containers in public areas (Kek et al. 2013). Since tourists are unfamiliar with the destination, they may not know the local system and the exact locations of such containers.

Supporting the local (bio)producers is another way to fight against food waste. The development of a joint purchasing digital platform can bring together local food producers and the demand (Kek et al. 2013). This platform can be supported by different tax solutions, incentivizing the local tourism service providers to join.



6. CONCLUSION

Tourism is one of the leading sectors of the world economy, which still contributes more than 10% to the world's GDP. The ecological footprint of mass tourism service facilities is increasing year by year, so the environmental load imposed by tourism is also significant. Even though the idea of sustainability appears in more and more areas, including tourism, it currently dominates the field of alternative tourism. Mass tourism requires high-capacity facilities, and the production of amenities that serve tourists requires a significant use of resources.

There is a shift in the direction of mass tourism. Nevertheless, it has been recognized by organizations, non-profit service providers, and other stakeholders in the tourism sector that the current approach can no longer be maintained as the tourism system in the traditional sense has a serious impact on the environment. Although the importance of sustainability is acknowledged, its development and implementation in tourism are still rudimentary.

The literature on circular economy is quite extensive, and we can find many definitions. However, the definition of circular tourism is still in its infancy. To define it, we can rely on circular economy as a business model and as an economic development tool, but there is no common understanding of the definition of circular tourism. Different approaches to this focus primarily on the operation of physical facilities in tourism. However, in some places, there are also ideas for harmonizing revenues and expenditures from the circular economy model, based primarily on industrial symbiosis. Based on these, it is possible to define circular tourism, which, compared to the concept of circular economy, goes beyond it, primarily in a territorial dimension, cooperation, and social goals. In the literature overview, the paper emphasized the most crucial points and pivotal elements of the circular economy concept, harmonized the different kinds of approaches, and highlighted those which could also be interpreted in the practice of tourism.

Theoretical and practical examples of circular tourism show that experts interpret circularity primarily as physically measurable parameters; in other words, we can investigate it in terms of tourism serving facilities, tools, and equipment. The main focus points are energy efficiency, waste management, food waste, and reusability. In addition, economic models such as the leasing and sharing economy, although present in an objectified form in tourism, require a kind of reorganization and rethinking. In the study, we applied an approach that provides theoretical and practical solutions for the organization of processes in a circular way instead of the physical alternatives previously found in the literature. Our main contribution was to show examples of how tourism service providers can interpret the different kinds of circular solutions in operation – highlighting the attitude change and the processes.

A good example of this is the use of ICT solutions and sensors in facilities (such as a cooling, heating, and lighting system connected to a room reservation system that automatically controls the room depending on occupancy). These smart solutions, in addition to providing a regulatory environment to reduce resource consumption, also allow continuous monitoring. This is important because if we know the amount of energy and water used and the amount of waste generated, then we can formulate more specific measures, and we can also monitor the changes that take place. All of this can also be beneficial in communication. An important cornerstone of the concept of rethinking is the training of employees, as many solutions can only be implemented through employee training and attitude formation. According to [Rodriguez et al. \(2020\)](#) and [Sørensen and Bærenholdt \(2020\)](#), there is a research gap regarding the role of tourists in the circular economy.



The spread of the idea of circular economy in a consumer society can also be seen in everyday life; however, due to the hedonistic consumption of visitors, it is currently a less dominant area in tourism. At the same time, there is no doubt that the formation of tourists' attitudes and changes in their needs are also essential for the implementation of circular tourism. Changing tourism demand means that preference should be given to sustainably functioning tourism supply, modes of transport, and accommodation. The practical solutions introduced in the study can serve as an example library for tourism actors and service providers. On the one hand, the supply side can be inspired by and find solutions that are firstly compatible with its own spirit and mission; furthermore, it can be implemented without serious economic effort. On the other hand, we can achieve a change in the attitude of consumers and hit their level of interest if we present the initiatives discussed above in our operations. These solutions should not be done in the back office, but should be made public and brought to guests' attention using online and offline interfaces.

It can also be seen from the above that circular tourism is still in its infancy in terms of research. In addition to those presented in this paper, another area of research may be the marketing of circular tourism services. No knowledge is generated on the tourist, for example, on how to attract tourists to a circular hotel, circular tourist business or to a circular destination, or on the profile of the most sensitive customers to circular initiatives.

In addition to the above, another area of research could be the quality assurance of tourism enterprises, e.g., the development of circular certification of hotels and destinations. Although there is a green hotel concept, and there is also an EU regulation on green buildings, at the same time, the organization and management of the processes of a circular tourism service provider pose additional challenges.

Although the idea of a circular economy is significantly widespread, as we have seen, its implementation in tourism practice is currently focused on a limited range of solutions. As the profits of service providers in the tourism industry are provided largely by mass tourism, i.e., the highest possible number of guests, an extraordinary commitment is needed to give preference to circular tourism solutions. In addition, a number of issues still arise, and the topic requires further detailed research. As [Martínez-Cabrera and López-del-Pino \(2021\)](#) declared, the transition from linear to circular model is hampered by several factors. One of these is the tax system, which favors linear economy instead of CE (e.g., tax reductions for hotel buildings that are constructed in line with circular economy principles). There are no role models to follow in CE in tourism, no exact methods, measurements, especially business models. They have also highlighted that there is a lack of adequate governmental CE support (few available incentives/funding, and training), lack of willingness to cooperate in industrial symbiosis, and there is no trust across the value chain. There is a noticeable lack of awareness and interest about the more sustainable economic models, and in addition, some social conventions and customs also need to change. There is a kind of resistance against the change in the current behavior, values, and attitudes. These challenges can be interpreted as further research areas in understanding circularity in tourism.

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