Haaga-Helia
University of Applied Sciences Ltd.

Implication of circular economy in the tourism industry. Case study – Lahti, Finland

Bipin Dawadi

Master's thesis
Aviation and Tourism Business
2022

We have only one planet earth.

Haaga-Helia
ammattikorkeakoulu Oy

Abstract

03.03.2022

Author(s)
Bipin Dawadi

Degree
Master's Degree in Aviation and Tourism business

Report/thesis title
Implication of circular economy in tourism industry. Case study – Lathi, Finland

Number of pages and appendix pages
70+4

The circular economy (CE) in tourism is a relatively unexplored area, and this study helped to contribute to the literature on circular tourism. The main aim of the thesis was to analyze and examine circular tourism in Lahti, Finland. Lahti was recently awarded as a European green capital in 2021 and has the vision to be completely circular by 2050. No similar single study was found in Lahti regarding circularity in tourism before this research. To fulfill the aim of the research work, it has answered three essential questions: 1) What is the current state of circular tourism in Lahti? 2) What are the challenges to achieving circularity in tourism in Lahti? 3) What are the new plans from the tourism sector in Lahti to become more circular?

The theoretical section of the thesis includes a description of tourism and sustainability, CE, and why CE should be implemented in tourism. Based on available literature and best practices of CE in tourism, a circularity framework was created, then compared with Lahti's tourism industry.

A qualitative case study method was used as a research strategy to find the research answer. A document analysis was performed, and seven semi-structured interviews with tourism professionals from different backgrounds were conducted.

The findings of this study show that, although no single business with substantial CE values was found, circular elements were present in tourism businesses in Lahti. A significant advantage for the Lahti tourism sector in becoming circular is its green energy and efficient recycling system. Educating customers and food waste from events were weak areas in circular tourism in Lahti.

Challenges related to cost, communication with customers, and infrastructure were identified. Plans to become more circular included creating a communication plan, improving infrastructure, participating in the eco-level certification, reducing waste, and continuing with current good practices. Based on the results of this thesis, new and further research recommendations are included in the conclusion section.

Keywords
Circular economy, circularity in tourism, Lahti tourism, circular elements, CE

Table of content

1 Introduction

This chapter presents the background and motivation to do this thesis work. It also explains the research gap, objectives, scope and limitation, and a simple thesis overview.

1.1 Background/Motivation

Humanity is living beyond the availability of resources from the planet earth. We have been extensively using finite resources, the emission of greenhouse gases is upward, and the earth continues to heat up. (PACE 2021, 12.) If we continue to consume the natural resources in the current linear model, by 2050, we will need three planets to sustain our lifestyle (United Nations 2021). Countries worldwide keep on signing the climate agreement, but greenhouse gas emissions keep rising, and the earth keeps on heating at an alarming rate (Council on foreign relation 2021).

It now looks clear that the national climate promises were never powerful enough to keep the earth below the 2-degree goal; with every year of slow progress, the challenge is growing. Global carbon emission was recorded high in 2018, and despite the lockdown lifestyle due to the global Covid pandemic, we are still far off the track. (PACE 2020, 12.) Our current response to fight the climate crisis is insufficient.

"More than 91 percent of what we take from the earth is wasted" (Circle Economy 2021). The world is in reverse circularity. In 2018, the world was 9.1% circular, and 8.6% in 2020 (PACE 2021, 19). "To keep our world liveable and thriving, we need to double global circularity from 8.6 to 17 percent" (Circularity Gap 2021). Extraction and processing of natural resources are responsible for 90 percent of the loss of global biodiversity and water, as well as causing half of the global greenhouse gases emission (UNEP 2019, 65). An extensive transformation of the production and consumption system is necessary to protect biodiversity loss.

The subject of the thesis is based on an author's passion regarding CE. As a tourism Degree student and professional in the field, the author wanted to combine his passion and studies with his thesis work. The tourism industry has been organized in a linear model, and the economic configuration of the tourism industry also contributes to environmental degradation (Cabrera & Lopez-del-Pino, 2021). A compelling new paradigm and set of tools offered by the CE can guide the tourism industry to a more sustainable future (UNWTO 2021).

Lahti city in Finland is chosen as a case for this research work. Lahti is one of the most popular tourist destinations in southern Finland and is currently one of the leaders in the CE movement. Lahti has a bold vision to be a zero-waste CE city by 2050 (Green Lahti 2021). Mayor of Lahti city Pekka Timonen (European Union 2020, 18) points out that, "Lahti has shown bold ambition, undergoing a green transformation from being a poor, industrial city in the early 1990's to a city of the future today."

Lahti is a very early mover in the CE journey and a growing tourist destination. Lahti's tourism industry's experience in becoming a circular city could be explored scientifically, and the knowledge would inspire other cities. It will be fascinating to see what kind of global message Lahti city gives to other tourist destinations worldwide.

1.2 Research gap in Circularity and tourism

Much research has been done in the CE with a total of 5696 scientific papers. However, very little research has been done in CE and tourism sector. Only 55 articles and books were published in English until 2020 in CE and tourism. The majority of the existing research conducted is in the manufacturing area and neglects the service sector such as tourism. The tourism industry will still receive much attention from academics, practitioners, and policymakers in the future at the international level. (Rodriguez, Florido & Marta 2021,8.)

Sanchez (2018, 645) analyzed that the lack of understanding regarding the CE concept is why the scarcity of academic resources in CE in tourism. There is a necessity for a deep theoretical foundation provided by the literature on the CE to develop through empirical data and context-based theoretical models in the tourism sector regarding the CE. The current literature lacks a detailed explanation of the CE in the tourism industry. (Sciacca 2020, 372.)

1.3 Research objective

The thesis aims to examine and analyze the circularity in tourism at a tourist destination. The literature review of the thesis work will create a framework for circular tourism and will be compared with Lahti city, Finland. The research will study a wide range of tourism organizations in Lahti, such as different types of accommodation, restaurants, museums, sports centers, and event venues.

The thesis will answer the following question: 1. What is the current state of circular tourism in Lahti, and what majors are applied towards circularity? 2. What are the

challenges to circularity in tourism in Lahti? 3. What are the new plans from the tourism sector in Lahti to become more circular?

Circularity is a relatively less explored area in tourism. The thesis work may become a source of inspiration for other cities to research circularity in tourism. The research will value the scientific resource for the Lahti city, sustainability and tourism actors, and academia alike.

1.4 Limitations

Due to the study being conducted solely from a tourism organization's perspective, the customer perspective was not included. The companies who did not agree to participate in the interview did not seem to have any sustainability content on their website, and the interview was conducted with only seven people; therefore, the results cannot be generalized to the entire Lahti city. It might have been difficult for the respondent to explain their views in detail because the interviews were conducted in English and not in a native language.

1.5 Structure of thesis

The thesis work has been illustrated in 6 chapters. Chapter 1 - Introduction, presents the motivation and background of the research work and states research aims and objective. Chapter 2 - Literature review, gives the theoretical background of the thesis work and case overview. Chapter 3 - Methodology, presents the research approach, methods of data collection and data analysis techniques. Chapter 4 - Findings and analysis, presents the collection of data. Chapter 5 - Results, finds the answers to the research question. Chapter 6 - Conclusion, finally the research is summarized.

2 Literature review

This chapter includes the theoretical framework of the thesis work. The chapter consists of areas such as sustainability problems in tourism, an overview of CE, and its relation to tourism. Furthermore, this chapter presents the framework for achieving circularity in tourism.

2.1 Tourism and sustainability

According to UNWTO, sustainable tourism development is defined as "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities" (UNWTO 2021). For tourism development to be sustainable, it needs to find the balance among the different sustainability dimensions, environmental, economic, and socio-cultural. Therefore, sustainable tourism must:

- Making use of natural resources should be optimal and help maintain the ecological cycle and protect natural heritage and biodiversity.

- Respect the social-cultural authenticity of the destination.

- Ensure the long-term social-economic development and employment opportunities for host communities and help alleviate poverty. (UNWTO 2021.)

The number of international tourist arrival in 2019 was 1.5 billion, which grew by 6 percent from 2018, and the tourism-related earnings rose to USD 1.7 trillion, contributing to 3.6 percent of the global GDP (UNWTO 2020, 2). Tourism is one of the most rapidly growing industries and is intended to grow exponentially in the future. However, the contribution of the tourism industry to climate change is undeniable. Tourism is a bivalent sector; on the one hand, it contributes to socio-economic status and, on the other hand, creates the degradation of the natural environment. The tourism industry is considered one of the post-polluting sectors. (Vecchio, Malandungo, Passiante & Sakka 2021, 2.) Tourism creates numerous environmental impacts by using natural resources and waste generation. Travel significantly contributes to C02 emissions and the demand for luxury product experiences is resource-intensive. Likewise, tourism depends on easily available and cheap natural resources causing problems like solid waste, water waste, and other negative environmental consequences. (Sorensen & Baerenholdt 2021, 2.)

Table 1. Validating and prioritizing tourism hotspot (UNECE 2021, 9)

Impact category / *Tourism element*	*Energy use*	*Water use*	*Other resource use or over-consumption*	*Waste*	*Climate change*	*Bio-diversity*
Accommodation: Buildings	Warm	Warm	Warm	Warm	Warm	Warm
Accommodation: Operations	Hot	Hot	Hot	Hot	Hot	Cold
Restaurants and bars: Buildings	Warm	Warm	Cold	Warm	Cold	Cold
Restaurants and bars: Operations	Warm	Warm	Warm	Hot	Warm	Cold
Transport: Local	Warm	Cold	Cold	Cold	Warm	Warm
Transport: Origin to destination	Hot	Cold	Hot	Cold	Hot	Warm
Activities: Events, attractions and festivals	Warm	Warm	Hot	Hot	Cold	Warm
Services (tour operators, travel agencies, financial and booking services)	Cold	Cold	Cold	Cold	Cold	Cold

Notes: Cold spot | Warm spot | Hotspot

Table 1 above presents different elements of tourism compared with key environmental categories. Environmental impact is considered to be a hotspot (red) if it contributes to more than 50 percent of total lifecycle impact across all of the product or service lifecycle stages in any given impact category (for example energy use, water use, waste, climate change, biodiversity) warm spot (yellow) if it contributes 25-30% of total lifecycle impact across all lifecycle stages and cold spot (blue) below average or even irrelevant (One planet network 2019, 30).

2.1.1 Energy use and emission

Before the COVID pandemic, tourism accounts for 8% of global greenhouse gas emissions. Due to the falling air travel prices and the growth of the middle class, the number of tourists was growing at 3-5% every year. (Carbon brief 2018.) Travel and tourism account for almost one-tenth of the total greenhouse gases emission. The ratio of carbon emitted per dollar in tourism spending is around 1kg, which is relatively higher than the manufacturing (0.8) and construction (0.7) industries. (Sorin & Stefan 2021, 21.)

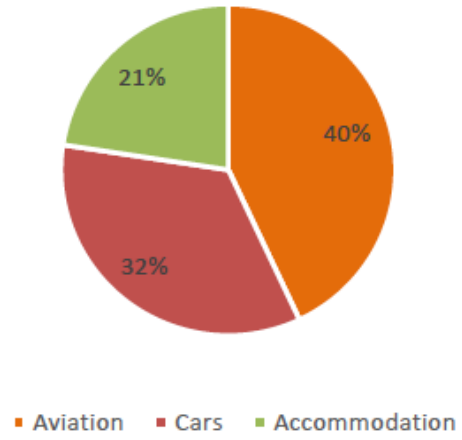

Figure 1. Share of Co2 emission from tourism (UNWTO & UNEP 2008, 34)

UNWTO and UNEP published their report related to climate change and tourism in 2008 that has contributed widely to the research in this area. Tourism industry carbon emissions are of 2 types. 1) Carbon emission from direct energy consumption. 2) Carbon emission from consuming products from tourism-related industries. (UNWTO & UNEP 2008, 34.)

However, the carbon footprint measurement in recent years has moved from direct to both direct and indirect measurement in all the tourism sector (Tang, Zhong & Ng 2017, 704-718). Even though the transportation sector has an immense contribution to tourism emissions, a significant contribution also comes from consuming other goods and services (Sorin & Stefan 2021, 21). By definition, the carbon footprint of tourism should include all the sectors that are related to travel such as food, accommodation, infrastructure, and shopping. The total carbon emission from tourism should include the entire tourist life cycle or supply chain. (Lenzen, Sun, Faturay, Ting, Arne & Malik 2018, 1.) Depending on the level of luxury and facilities of tourism service providers, there can be significant differences in the energy consumption of tourists (UNECE 2021, 12).

2.1.2 Waste production

Increasing numbers of tourists will generate more solid waste, putting pressure on waste management systems in local communities. Waste management will be one of the biggest challenges of sustainable development in the future. Hotels and restaurants provide a significant amount of biomass waste, and as a result, more than 70 % of all waste is biomass. (Nedyalkova 2019, 6.)

According to FAO (2019,120) the research on food waste has been going on for 40 years. The issue of food waste in tourism has been on the discussion in the media frequently to raise consumer awareness but the academic attention in tourism-related food waste has been very insufficient. Most research on food waste is published under environment management and sustainability, but the research on food waste conducted under hospitality is rare. The lack of academic works regarding food waste represents that the academic community is unaware of the scale of hospitality and its severe negative impacts. (Filmonau & Coteau 2018, 235.)

Gathering information about food waste in various sectors is challenging, and there are no international standards measurements (FAO 2019, 120). There is a lack of clear information and data about food waste in the tourism industry. The indicator that is used to significant food waste is only on the macro level that provides the food value chain of the world region. The generation of food waste only does the general estimates and does not precisely describe the tourism-related activities. Some hotel chains have their own scale developed to measure food waste, but there is no published data. However, food waste studies from the hotels in Finland and the UK have the data available but cannot be extrapolated because they differ largely between hotels and countries. (IDB 2020, 27.)

All-inclusive hotels have food service as a major part of their services. Due to their business model, these hotels offer their guests all-you-can-eat buffets with a wide range of food and room services. A similar thing happens with the breakfast buffets, where the quantity of food represents the perception of the hotel. (IDB 2020, 22.) There is a massive gap in how tourism food waste is understood and calculated.

Food waste hotels, restaurants, and events are generally understood as food waste from the tourism industry. However, as the tourism industry gets diverse, so do the sources of the waste, such as the tourist households. (University of Eastern Finland 2019.) On the one side, there are all-inclusive hotels, resorts, and cruises, and on the other side, there are boutique hotels, family-run guesthouses, and Airbnb. The tourism industry does not have a clear food waste reduction target since even the counting have not yet developed how much food waste can be reasonable. (IDB 2020, 27.) Even though the problem of food waste in the hospitality industry has been recognized, there is insufficient data on the scale of food waste. This problem is exceptionally high in developed countries, but the European Union does not have a standard to measure food waste. (Filmonau & Coteau 2018, 236.)

2.1.3 Water use

It is becoming increasingly recognized that tourism consumes significant amounts of water on a local, regional, and global scale. As a result, tourism is facing the challenge of efficiently using water resources. The world's direct water footprint of tourism amounted to 1km3 kilometres of freshwater. (Gössling 2015, 233-234.)

Table 2. Water used categories and estimated use per tourist per day (Gössling & al. 2012,7)

Water use category – direct	L per tourist per day
Accommodation	84–2000
Activities	10–30
Water use category - indirect	L per tourist per day
Infrastructure	n.a.
Fossil fuels	750 (per 1000 km by air/car)
Biofuels	2500 (per 1 L)
Food	2000–5000
Total per tourist per day	Estimated range: 2000–7500

A considerable indirect water footprint is associated with tourism, as the sector relies on other sectors' inputs. Indirect water uses values for food, constructions, and fuels remain poorly understood, and there is not enough research on water footprints in general (Gössling 2015, 234-235.)

Accommodations are the location of most water consumption in tourism; tourists use water directly during their stay. Even though most tourism research has focused on hotels and other accommodation, our understanding still has considerable gaps. Indirect water use, such as food, fossil fuels, energy used at the hotel, or the construction of tourism-related infrastructure, is considerably more uncertain. Increasing tourism and the trend toward higher-standard accommodations will increase water pressure in many destinations, especially those already facing water security threats. (Gössling 2015, 235-243.)

2.2 CE

We need to consider the big picture when thinking about CE. The origin of thoughts on the CE goes back to the 1960s and was generated from several schools of thought. It does not have a single origin or originator. The CE is built on a deeper understanding of resource efficiency and resource productivity led in the 1990s by Japan, Germany, and other countries. It is essential to point out that the concepts of CE have overlapping ideas

and similar goals; they also differ in certain characters. Therefore, interest and research have grown in recent years, and various interpretations have been made on CE. (Charter 2019, 27-34.)

2.2.1 Defining CE

There is no universally accepted definition of CE, and the term used around CE is interchangeable with few explicitly related to sustainable development. It is essential to recognize that the idea of CE is still in constant development and may mean different things to different people at different levels in different countries. (Charter 2019, 3.) The challenge with defining the CE is that it is a holistic and multidimensional concept, and the definition varies on who is defining it (Sillanpää & Ncibi 2019, 7). Few definitions are presented below:

The European Union parliament defines CE as "a production and consumption model that involves reusing, repairing, refurbishing, and recycling existing materials and products to keep materials within the economy. It implies that waste becomes a resource, consequently minimizing the actual amount of waste. The circular model is generally the antithesis of a traditional, linear economic model, which is based on a 'take-make-consume-throw away' pattern" (European Parliament 2021, 1).

Ellen MacArthur's foundation definition on the concept CE: "A circular economy 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 for the elimination of waste through the superior design of materials, products, systems, and business models (Ellen MacArthur Foundation 2021, 7).

2.2.2 Principles of CE

According to Ellen MacArthur Foundation (2021) the CE is based on three core principles and are all driven by design.

i) **Design out waste and pollution:** In a new innovative way of designing, waste does not exist. We can ensure that the waste and pollution are not created in the first place by changing our mindset to view waste as a design flaw and harnessing technologies and new materials.

ii) **Circulate products and materials:** We can design products that can be reused, repaired, and remanufactured. Making things that can last forever is

not the only part of the solution; we have to be able to get used products as a resource and put it back into the system and not throw it in the landfill.

iii) **Regenerative nature:** There is no such concept as waste in nature. Everything is cyclical and works in a close loop without any loss. We can enhance the natural resources by returning the nutrients to the soil and other systems. (Ellen MacArthur Foundation 2021.)

Moreover, the concept of the CE that was primarily build in 3Rs model is expanded to 12 Rs: reduce, reuse, recycle/reclaim, repair, refurbish/recondition, repurpose, redesign, remanufacture, research and development of process and technological innovation, reskilled people, reverse supply chain management and re-industrial green revolution (Charter 2019, 66).

2.2.3 Flow of material in CE

Figure 2. The CE diagram (UNIDO 2018, 3)

Figure 2 above is a simple circular economic diagram that illustrates the design for the circularity of raw materials in the CE. The materials used to create new products are derived from old ones and are designed to be durable, reusable, and recyclable.

Everything is used as much as possible, remanufactured, recycled, and sent back as new raw material. The entire circle is carried out through cleaner production (UNIDO 2018, 3.)

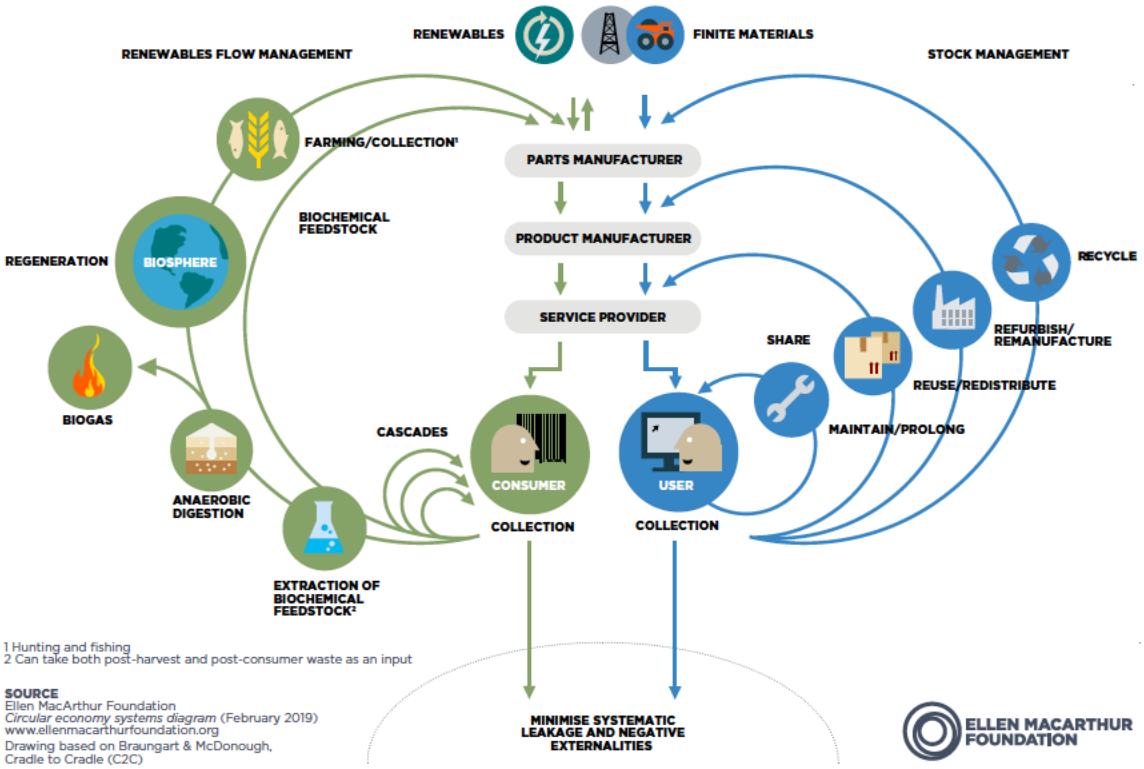

Figure 3. The butterfly diagram (Ellen MacArthur Foundation 2013, 24)

Figure 3 above is widely known as a butterfly diagram. It is a powerful diagram that presents a holistic view and helps us understand the CE's workflow in practice. The diagram presents the difference between the technical and biological cycles. As part of biological cycles, food or materials derived from the natural world (such as cotton or wood) can be cycled back into the system through composting or anaerobic digestion. Technical cycles involve reusing, repairing, remanufacturing, and recycling products, components, and materials. The Cradle has inspired the diagram to Cradle design protocol by Braungart & McDonough, which Ellen Macarthur further adapted. (Ellen MacArthur Foundation 2013, 24-27.)

2.2.4 Linear vs CE

The fossil-based linear economic system is largely based on the mass production and consumption pattern and "take-make-use-dispose" model (Sillanpää & Ncibi 2019, 37). The resources that are collected to make products are thrown away after use. The linear economic system business practices need constant natural resources resulting in excessive ecological destruction. All the three steps of the "take-make-dispose" model

affect the ecosystem. The collection of the raw materials, production process, and eventually the discard of the products back to the nature all needs high energy, huge water consumption and causes harmful emission. (Het Groene Brein 2021.)

CE has a regenerative property that designs waste and pollution out of the system, focusing on keeping the raw materials at the highest value and continuously in use (Temarry Recycling 2021). In a CE, we close the cycle of the raw materials by using the 3Rs approach: reduce, reuse and recycle. The resources used are minimized, reusing of the products are maximized, and the raw materials are recycled to a high standard. The goods are shared with more people, for example sharing cars. Products can also be used as a service, for example, Spotify. (Het Groene Brein 2021.)

Table 3. Linear vs CE model. (Het Groene Brein 2021)

	Linear	Circular
Step plan	Take – make - dispose	Reduce-reuse-recycle
Focus	Eco-efficeincy	Eco-effectivity
System boundaries	Short term, from purchase to sale	Long term, multiples lifecycle
Reuse	Downcycling	Upcycling, cascading and high-grade recycling
Business model	Focuses on product	Focuses on service

2.2.5 Similarities and difference between sustainability and CE

Brutland (1989,31) defines sustainable development as " development that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs." The core concept of sustainability includes the triple bottom line for the balanced economic, environmental, and social performance (Elkington 1999, 180).

Both sustainability and CE carries the notion to emphasize intra- and intergenerational commitments motivated by the degradation of the environment and give the importance of private and public deliberation on the multiple pathways for development. Both share a global perspective, view problems on the planetary scale, and current multi or interdisciplinary approaches where innovation and design are the main drivers. Co-

operation between the stakeholders and the importance of diversification to take advantage of the value creation is applied to both concepts. (Geissdoerfer & Savaget, Bocken & Hultink 2016, 762-763.)

However, we can also find differences between these concepts in literature reviews. The idea of CE has been developed recently in comparison with sustainability. The tracing of the involvement of CE goes back to many schools of thought, such as cradle to cradle and industrial ecology. However, after the Brundtland report, sustainability was considered older and institutionalized by environmental movements. The CE aims to create a closed-loop and create no waste and leakages; the sustainability is open-ended, and the multitude of goals changes depending upon the interest. The purpose behind sustainability is diverse and often depends on the context, but a CE aims to use the resources better and reduce waste and emissions. (Geissdoerfer & al.2016, 763.)

2.2.6 SDGs and circularity

Figure 4. 17 Sustainable development goals (United Nations 2021)

CE has gained increasing prominence to present the solutions for the world's most sustainability challenges (United Nations 2021). "Sustainable development establishes goals to be achieved in order to solve the problems and their consequences, whereas CE is a tool to address some of the causes of these problems" (Suarez-Eiroa, Fernandez, Martínez & Soto-Onate 2019, 955). CE practices such as reducing, reusing and recycling, repairing, and remanufacturing are directly aligned with SDG 12 Sustainable Production and Consumption (Circular Economy Earth 2021).

A CE is a holistic approach that goes across various sectors, including climate change, energy, agriculture, water, and sanitation. It has the potential to help also achieve other

sustainable goals, including SDG 6 on zero hunger, SDG 2 on zero hunger, SDG 3 on good health and wellbeing SDG 6 on clean water and sanitation, SDG 9 on industry innovation and infrastructure, and SDG 11 on sustainable cities and communities. (Circular Economy Earth 2021.)

2.3 CE implementation

Adopting CE is the key step towards the climate targets and achieving zero-carbon prosperity. The transition to the CE moves us beyond minimizing our emission from our current extractive linear economic system (Ellen Macarthur Foundation 2019, 12.) After relying upon our economic pattern has for many years relied on fossil-based, unsustainable, and waste generation systems, a growing number of scientists, environmentalists, politicians, and experts from different fields calling for the extreme need for an urgent shift to other kinds of environmentally friendly economic model as well as deal with economic and societal issues on a global scale (Sillanpää & Ncibi 2019, 26).

2.3.1 Fight current climate crisis

A CE gives us an opportunity for a systematic response by reducing the emission and increasing the resilience to the effect of climate crisis. (Ellen Macarthur Foundation 2019, 12.) It plays a substantial role in reversing the biodiversity loss by reducing the area of land to produce resources, using renewable sources, reducing the greenhouse gases emission, reducing pollution, and designing the waste to be reused again (Ellen Macarthur Foundation 2021, 17).

Shift to renewable energy sources will reduce 55% of greenhouse gas emissions. However, the remaining 45% emissions are harder to reduce because they arise from the management of land and buildings and manufacturing goods, food packaging, and things we use in our everyday lives. Therefore, transformation is required in the way that the goods are produced. Failing to make such a transformation will make the climate targets unachievable. (Ellen Macarthur Foundation 2019, 12.)

2.3.2 Social and economic benefit

In the current fast scale consumer goods industry, about 80 percent of the 3.2 trillion worth of materials every year is not recovered. The CE views resources as valuable sticks to be used again, not as materials that once flow through the economic cycle (MC Kinsey 2014.) The research shows that the transition to a CE can make up to 5 trillion dollars in economic benefits by 2030 (WEF 2020). The CE creates an economic opportunity through material savings, supply risk mitigation, innovation, job creation, improved productivity,

and long-term resilience (WEF 2014, 18). The European Union pointed out that the closed-loop activities such as repair, reuse, or recycling generated 147 billion in added value in 2016, and four million employees were added in the CE sector (CIRTOINNO 2019, 8).

2.3.3 What is a circular business model?

There is a range of different understanding of circular business models reflected on many diverse ranges of definition. Geissdoerfer, Pieroni, Pigosso and Soufani (2019, 7) defined circular business models as "business models that are cycling, extending, intensifying, and dematerializing material and energy loops to reduce the resource inputs into and the waste and emission leakage out of an organizational system."

The CE requires a radical rethinking of business and investment models and new approaches. Traditional models that focus only on revenue generation need to be replaced with a new mindset of added value and less consumption. (Charter 2019, 165.) However, it is not easy for companies to shift their deep-rooted linear economic system to circular; that is why the companies seeking circular advantage need to develop a business model based on circular thinking. (Accenture 2014, 12.) A transformation to the CE economy model will not be easy in every aspect. However, the businesses that can change will outperform other companies from the market. The shift to the CE economy will add value to the economy. (SITRA 2019.)

Accenture (2014, 12) analyzed more than 120 companies' case studies that applied innovative ways to generate productivity improvements and summarised five underlying business models in table 4.

Table 4. Five circular business model (Accenture 2014,12)

Circular supplies	Use renewable energy and biobased or fully recyclable input
Resource recovery	Recover useful resources out of disposed products or waste
Product life extension	Extend the working life cycle of the product through repairing, upgrading, and reselling
Sharing platforms	Enable increased utilization by encouraging the shared use
Product as a service	Offer customers paid access to products and make a move away from product ownership

2.3.4 Global attention to CE

Globally, the CE concept is currently a hot topic, and policymakers, leaders, academics, industrialists, and NGOs assert that circular economies must be adopted urgently in helping solve the global environmental problems and economic challenges (Silanpää & Ncibi 2019, 207). A study related to the geographical origin of the CE concept shows that the European continent is leading the moment forward throughout the world. The study also shows that the government of China has been prominently active in implementing the CE strategies in recent years. (Jesus & Mendonca 2818, 80.)

The European Commission in 2020 unveiled a new package concept of the CE, following an earlier version. In collaboration with economic actors, consumers, citizens, and civil society organizations, the new CE Action Plan from the European Commission provide a roadmap to achieving a cleaner and more competitive Europe. (European Commission 2020, 2.)

An increasing number of companies across many industries adopt circular principles to reduce costs, increase revenues, and manage risks. About 70% of supply chain management companies invest in the CE in 2020-2021. Governments are increasingly creating new regulations and policy initiatives favoring the CE, for example, developing a national CE roadmap in Finland, China, Chile, France, and the Netherlands. (Ellen Macarthur Foundation 2020.) In North America, a CE movement shifts production and manufacturing patterns, primarily based on a linear economy model towards a CE model (Silanpää & Ncibi 2019, 237).

2.3.5 Challenges and limitations of CE

As mentioned in the above section, a CE has many benefits, but at the same time, practical implementation can have numerous challenges and problems. The scientific research based on CE approaches is still in its infancy. Many key questions are still open, such as the nature of the self-organized complex socio-ecological system, material flow exceeding the man-made boundaries, and biomaterials still face unresolved methodological and other limitations. (Korhonen, Honkasalo & Seppälä 2018, 41). The idea of a CE cannot be implemented entirely in all sectors. For instance, paper recycling is limited to a certain number of cycles, and not all hazardous waste can be recycled (Circular Academy 2021). Some of the limiting factors of the CE are explained below:

i) **Thermodynamic constraints:** In practice, a completely closed material cycle cannot be accomplished as there will always be physical and qualitative losses.
ii) **Regional or spatial constraints:** As the material cycle is global and products are exported, improvements of environmental objectives on regional and local levels are challenging problems. Change in land use due to the CE can be challenging to access comprehensively. For example, scaling down of mining operations due to less need of new materials, but at the same time, more land area is required to produce renewable energy.
iii) Cost-effectiveness perspective: The use of virgin natural resources is less expensive than using recycled materials, and also there is no market for recycled materials. Taxation and licensing procedures for the waste processing companies impact the progress of the CE.
iv) The benefits are not equally distributed: Industrial sectors, business operations, regions, and social groups that produce new raw materials are likely to suffer.
v) Legislation: The use of materials that are regarded as waste requires regulation, and there is a requirement for a permit to process waste professionally. The health and environmental risks are associated with using the waste materials and require regulation and supervision.
vi) People's attitude and values: Ownership is regarded as social status and value, which can be an issue to adopt a CE. Society's viewpoint needs to be changed to favor a CE. (Helsinki University 2021.)

2.4 Tourism and CE

CE in tourism has recently started to get attention in the academic field and therefore, still lacks a proper definition. Girad and Nocca (2017, 68) define circular tourism as “a model able to create a virtuous circle producing goods and services without wasting the limited resources of the planet that are the raw materials, water, and energy.”

Figure 5. Circular tourism (Circular city funding guide 2021)

Figure 5 above shows a basic model to help tourism by thinking circularity. The entire tourism process can be circular from the pre-travel phase through the stay and afterward. We will discuss the tourism value chain more in detail in the coming sections. The tourism industry has a substantial role to play in the transformation of the current linear economic model due to the multiplier effect that highlights its significant impact on the entire economy and its capability to encourage the flow of circularity in its value chain (Vargas-Sanchez 2018, 2).

2.4.1 Necessity of CE in tourism

There have been attempts to transform tourism into more sustainable development at all levels for more than two decades, but most of them have not succeeded (UNECE 2021, 7). Tourism sector is operating on a linear take-make-dispose model, relying on large quantities of resources while generating vast amounts of greenhouse gases and waste (UNIDO 2018, 15.) UNWTO (2017, 96) acknowledges that “approaches such as the CE promoting business models based on renewable resources, longer and diverse product life cycles, shared consumption and interconnected value chains can play a significant role when designing and improving resource management systems not only in the tourism sector, but also for the sustainable development of destinations.”

“By applying the principles of a CE, hospitality and tourism companies can accelerate their own business and move forward in our thinking and action to create a more sustainable experience for all stakeholders involved in the hospitality and tourism industry” (Rheede 2012, 1). The implementation of CE principles in tourism will help the industry achieve more meaningful sustainability goals and increase profitability in different tourism sectors such as hotel, food and beverage, and leisure. The flow of materials concerning the construction, energy, food, water, etc. are closely monitored using CE models that help the destination that helps to reduce the consumption of natural resources, decrease waste, and cut down CO2 emissions. (Floriodo, Jacob & Payers 2019, 5.)

As one of the biggest growing economies, tourism has a huge potential to transform itself into a circular business model. Application of CE in the tourism sector through the CE processes can reduce the economic leakages in the tourism value chain and reduce its impact on climate change and waste generation. It is an opportunity for the tourism sector to integrate the CE that promotes innovation and creates sustainable businesses adding green jobs value to the local economic development. (Kurtagic 2021, 17.)

Integration of the CE in tourism gives enormous opportunities for tourism to achieve sustainability goals and gain profitability. For obvious reasons, the manufacturing industry is the pioneer of the concept of CE as it involves the heavy flow of material resources. However, the tourism sector has not given much attention to the CE initiatives (Manniche, Larsen, Broegaard & Holland 2017, 7.) Therefore, the CE approach is an essential step for the tourism industry to develop possible future paths to sustainability.

2.4.2 Transition to circular tourism

“Sustainability transitions are long-standing, multi-dimensional, and essential transformation processes through which traditional socio-technical systems move towards new and more sustainable approaches of consumption and production” (Falcone 2019, 2). “Transformative tourism” is recently a new buzzword among tourism academics (Ateljevic 2020, 4). Visionary economists agree that the sustainable future is made by reassessing individuals, firms, and governments’ value systems, behavior patterns, and lifestyles. Few voices are calling for a change, but the tourism industry yet seems not to participate in the progressive economic debate. (Shelodon 2021, 2.) The tourism sector has been criticized for not addressing the environmental problem sufficiently (Floriodo, & al. 2019, 1).

The global tourism industry has been hit hard by the Covid-19 pandemic, affecting economies, livelihoods, public services, and opportunities worldwide. The pandemic has affected all sectors of the tourism value chain (UNWTO 2020.) It has shown us how

vulnerable our economy, the environment is, and, ultimately, our future. The need for a green economy in alignment with other global challenges has never been more pressing, and many see a unique opportunity to build a resilient, low-carbon economic future. The CE is an integral way to achieve this vision. (Circularity gap report 2021, 14.)

Even though the original idea of the CE was applied to industrial activities, this approach of sustainability has been widening in other areas including the service sector such as tourism. The roadway to the transformation is done by innovating new products and consuming tourism services and new business models. (Vargas-Sanchez 2018, 2.) In order to make the tourism industry more sustainable, the main idea of the CE can be transferred from the industrial field to the tourism sector by applying the business ideas that are based on sustainability models (Girad & Nocca 2017, 69).

The CE model is gaining momentum. There has been an increase in awareness towards all business sectors about the necessity to transform the current economic model to ensure it does not exceed our planet's ecological limits. Although in an early stage, the whole economy is changing from a linear to a circular model. The movement towards the CE is among the emerging paradigms when the global shift changes the direction of businesses. In this global shift, the tourism sector is not an exception and is affected by the transition. (Vargas-Sanchez 2018, 2.)

The tourism industry is dynamic, and the transformation includes many variables. Sustainable tourism indicates several different principles that can be implemented to the entire tourism industry. Some of the concepts could include 1) new models of production and consumption of water, food, and energy, 2) using CE model to minimize and reuse the waste, 3) conservation of the biodiversity and the environment by using the biodegradable products, 4) creating cultural values by preserving the culture, 5) greening the tourism industry by creating a condition to make tourism economy for low income generating group. (Pan, Gao, Kim, Shah, Pei & Chiang 2018, 16.)

Acknowledging that linear business models contribute to the further reduction of natural resources, the tourism industry needs to transition to the circular tourism economy (Kurtagic 2018, 15.) Circular tourism shifts the focus from only economic profits to protecting natural resources and the environment. It uses innovation to create solutions to maximize resource efficiency while reducing the externalities generated from tourism. (Sheldon 2021, 4.)

In general, the tourism sector has been comparably slower than other sectors to change with times. Nevertheless, now during the adverse effects of climate change, loss of

biodiversity, and other environmental problems, it is essential that the tourism sector show its actions towards obtaining a more sustainable future by applying CE strategies in their business activities (Zorpas, Pedreno, Panagiotakis & Dermatas 2021, 890). Even though the tourism industry is aware that natural resources are scarce and the linear model is no longer viable, the tourism sector has not shown any commitment to the transition to a CE (Rodriguez & al. 2021,7).

On the other hand, the positive side is that the tourism industry has been revolutionized by the rapid increase of the disruptive technologies that have contributed to the business model of collaborative consumption such as Airbnb, Homestay, CouchSurfing, Uber, and several others. This shift can be taken as conclusive proof that the tourism sector has already begun its transformation. (Seyedmousavi 2020, 10.) The idea of collaborative consumption or the sharing economy has been one of the merging drivers of change that has reshaped the business models across the tourism sector (Vargas-Sanchez 2018, 2).

2.4.3 Tourism value chain

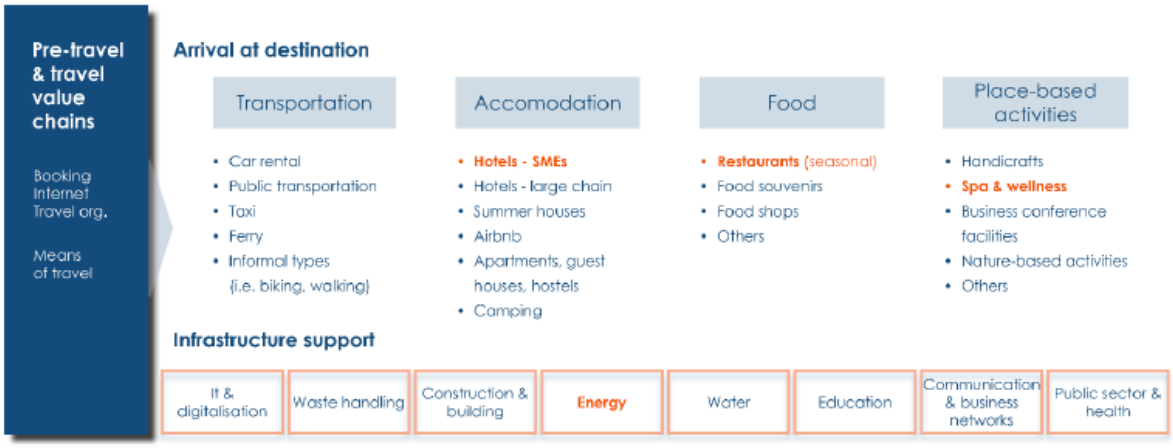

Figure 6. Tourism value chain (Manniche & al. 2017, 64)

Figure 6 shows a typical supply chain in tourism. The tourism sector can embrace a sustainable and resilient growth path by integrating circularity and further improving resource efficiency in its value chain. The process begins with pre-travel activities such as booking flights or destination places. After making his way to the destination, the traveller arrives using various modes of transportation. An accommodation provider provides a place for the visitors to stay. Guests are usually provided with food by their accommodation providers, with the possibility of nearby restaurants and food shops.

Following this, tourists can enjoy the local attractions or specialties offered within the host community.

The figure also highlights the importance of infrastructure support throughout the value chain. Transportation mode requires energy, and hotels require energy for heating and cooking. For tourism to function appropriately, all these infrastructures – information technology, waste handling, construction and building, energy, water, education, communication, and networks are essential.

For tourism to be a sustainable sector, the entire value chain within the tourism sector needs to adapt to participate in the system where nothing goes to waste. A single company cannot execute the transformation to the CE without engaging the other companies in the same sector. (Cabera 2020, 4.) A commute to the circular business model contains more than implementing new models and practices. It also needs a corporation within the entire value chain and a change in the organization's culture. (Zorpas & al. 2021, 890.)

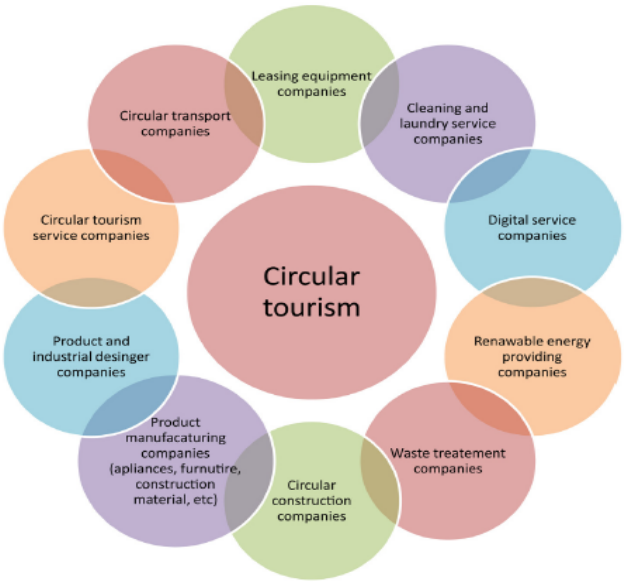

Figure 7: Example of companies that are necessary to achieve circularity in tourism (Kurtagic 2018, 22)

Figure 7 shows that a CE in tourism can lead to the development of many companies necessary to achieve the circularity of tourist services. Closing the value chain in tourism requires a range of other sectors that support the tourism industry, such as waste recovery and recycling companies, renewable energy suppliers, circular products, manufacturers of new products from waste, circular construction, leasing equipment, etc.

2.4.4 Challenges of implementing CE in tourism

Trying to apply the direct approach of a CE to acquire circularity in tourism by SME can also have methodological and practical problems and out of the tourism service cycle. The challenge of the tourism industry is to provide a memorable experience to tourists while drastically reducing its carbon footprint generated from its activities. The industry also needs to develop new products and services that differentiate it and add value to customers. Those in the tourism industry need to understand that implementing CE can take time. However, the benefits will be a future that is sustainable, secure, and full of opportunities that will enable them to achieve a unique position in their field. (Zorpas & al. 2021, 2.)

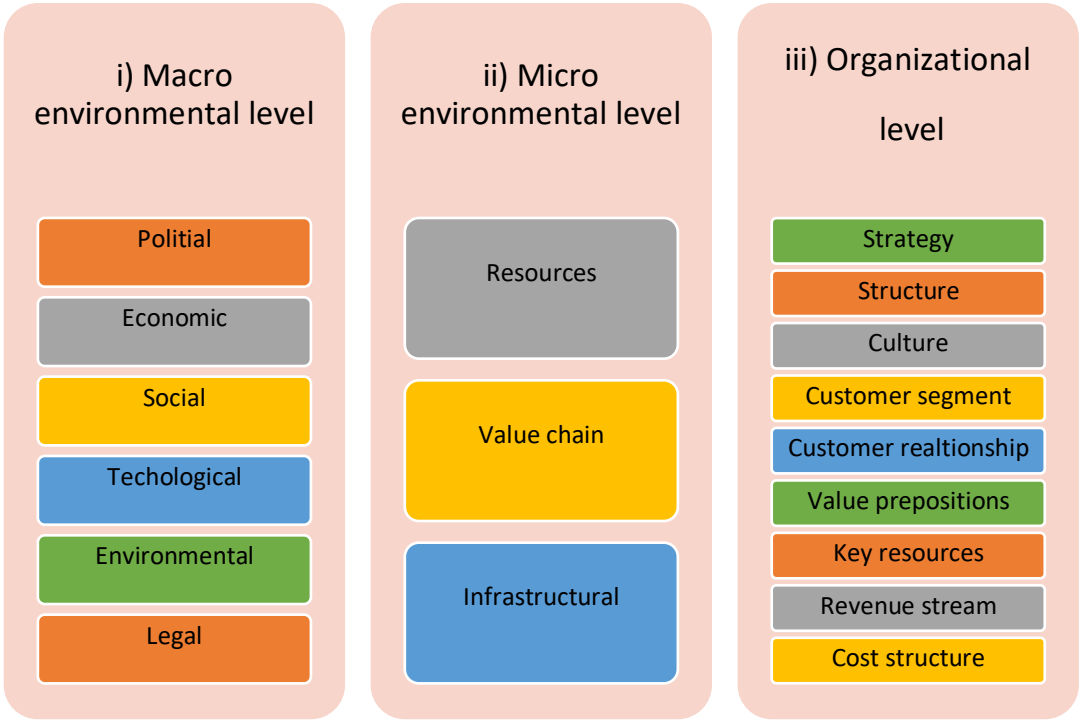

Figure 8. Challenges in implementing circular tourism (Adapted from Cabrera & Lopez-del-pino 2021, 23-41)

Macro environmental level: These are the challenges that the tourism business cannot control are external forces.

1) Political: Tourism lacks government support such as incentives, funding, training, and legislation to become circular International alignment and collaboration regarding policies and agreements towards a CE are lacking in the tourism industry.

2) Economical: The tax system favors the linear economy and not the CE. For example, secondhand furniture is more expensive than the new ones.

3) Social: CE is not well known among tourists and employees in the tourism sector, which presents a challenge for moving to CE. Furthermore, Tourists are less conscious or careless of their behavior when they are on vacation than when they are at home.
4) Technological: There is a lack of technology available to implement selective waste sorting in origin to use organic waste generated at various points along the tourism value chain.
5) Environmental: Differences in geographical circumstances restrict applying CE solutions.
6) Legal: The tourism sector is suffering from a circular transformation because the legal models favor the continuation of linear economic models. For example, hotel managers face legal barriers to sharing assets, such as hotel halls. Specific regulations hinder the treatment of end-of-life waste in the supply chain and material utilization.

Microenvironmental level: This refers to the company's external factors but is part of the industry.
1) Value chain: Reverse logistics are complicated by tourism practices. In many cases, tourists are better off buying items at their destination than bringing them from their country of origin, using them in the destination, and throwing them away when they leave. It is complicated to apply the system thinking approach as many stakeholders are involved.
2) Infrastructural: Many infrastructures have already been established without CE in mind, and the changing represents a massive disruption of the established systems. The tourism industry is highly interested in water recycling to promote circularity in water. However, the costs are very high compared to not recycling, making it an unattractive practice to implement.

Organizational level: This refers to the factors which are inside the company.
1) Structure: There is a lack of key performance indicators to measure the circularity in the tourism business.
2) Strategy: The structure of the tourism businesses lacks the ability and the structure for the CE. For instance, the hotel chains have many hierarchy levels that make it challenging to get CE ideas approved.
3) Culture: Direct feedback loops of platforms such as Trip Advisor enforce a culture of fear in tourism Tourism businesses are naturally opposed to change. It is more common for tourism companies to have a reactive customer-centric culture rather than an innovative, proactive one.
4) Customer segment: The willingness of tourists to pay for CE is low.

5) Customer relationship: Communicating about CE with tourist customers is challenging.
6) Value proposition: The tourism sector relies heavily on customer satisfaction and loyalty. It is challenging to balance quality, quantity, and sustainability.
7) Key partners: It is difficult for tourism companies to find suppliers who adhere to circular economics.
8) Key resources: Even if tourism companies invest in waste management technologies, there is no transparency to determine whether those technologies have a significant impact in achieving CE. Tourism businesses also lack employees trained regarding CE.
9) Revenue stream: Travel agencies might not want to offer circular packages alongside their traditional ones due to cannibalization by circular offerings.
10) Cost structure: The tourism industry acknowledges that transition to CE needs heavy investment, such as reducing water consumption or upgrading hotel buildings to be more energy-efficient. (Cabrera & Lopez-del-pino 2021, 23-41.)

Covid 19: The momentum for environmental sustainability is difficult to maintain when faced with crises such as COVID-19. Organizations that faced economic challenges after the COVID 19 cut sustainability jobs first. Businesses have changed their priorities when it comes to sustainability. Since they lack the resources to invest in becoming a more circular business, they are more focused on survival. As a result, they are under much pressure to return to the status quo normal and maintain the ROI. As a result of COVID-19's new regulations, the current linear models are strengthened for safety and health reasons. Food and beverage use of single-use plastic products in the hospitality industry impedes progress toward reusable items. For example, in certain cafés, reusable cups have been phased out in favor of takeout cups. Due to strict mandates, cafes will not accept reusable cups, even if clients are willing to use them (Cabrera & López-del-pino 2021, 23-41.)

2.4.5 Best practises of circularity in tourism

The hospitality industry has focused mainly on energy, water, and recycling measures to promote sustainability. Some of these measurements may be considered to be pioneers in circular tourism. The CIROTINO project studied circular tourism in the South Baltic region and found that hotels practiced sustainability activities for several years. Their transition to circular practices was made primarily through 3R principles. Some of the examples of the circular practice are mentioned below:

Reuse practices: Looming hostel in Estonia has reused 99 percent of its existing furniture. The hostel employees have been trained regarding environmental

responsibilities, and the guests are encouraged to act respectfully to the environment. Paradores (Spain) and Albert Dock (U.K) are great examples of reusing the old historic buildings to tourist facilities.

Reduce practices: Stadthalle hotel in Austria produces energy needed for the entire year using solar panels. Hotel Alder-Feldberg collects the heat produced by the refrigerator in the kitchen and uses it to heat water in the hotel; 100 percent of energy used to heat the water has been saved. Winnow is food waste monitoring software from the UK that provides real-time data in the kitchen to reduce food waste.

Recycle practices: Sandymount hotel in Ireland is recycling 97 percent of its hotel waste. (Lindell & al. 2019, 221-225.)

2.5 Circularity framework in tourism

It is an ongoing process to develop and update CE indicators. There are ten indicators used by the European Commission to measure progress towards CE, grouped into four stages and aspects: a) production and consumption, b) waste management, c) secondary raw materials, and d) innovation and competitiveness (European Commission 2018, 3). Indicators mainly focus on waste and the movement of materials, partly due to the lack of other options and the lack of reliable data. In its 2021 resolution, the EU commission updated the previous CE framework. Besides including previous indicators in its action plan, it also desires to link circularity, climate neutrality, and zero pollution. (UNECE 2021, 8.)

Current academic literature and discussions on the Circular Economic framework emphasize industries and value chains that produce products or involve heavy resource-intensive industries and less focus on industries that provide services such as tourism. Unlike CE, which refers to the economy, CE must have active participation from a different range of actors across all sectors (Sorin & Einarsson 2021, 25.)

Circle Economic's 'Key Elements' framework is used as a reference model by the author of this thesis work to create a framework for CE in tourism. Key elements framework aims to make the framework of circularity more accessible by using various CE terms and definitions from across organizations are mapped, and the common themes are presented into a few key principles (Circle Economy 2021, 4).

The framework gives a holistic overview of the core and enabling strategies for a CE. Key elements are composed of core elements and enabling elements. Core elements (those that relate directly to material flow) and enabling elements (those that remove obstacles to

implementing core strategies) are outlined in the framework. The explanation of the framework is done in the subsection below.

2.5.1 Core elements

The core elements are related to the product, material, and energy flows, which should be cycled to decouple value creation from resource consumption (Circle Economy 2021, 5).

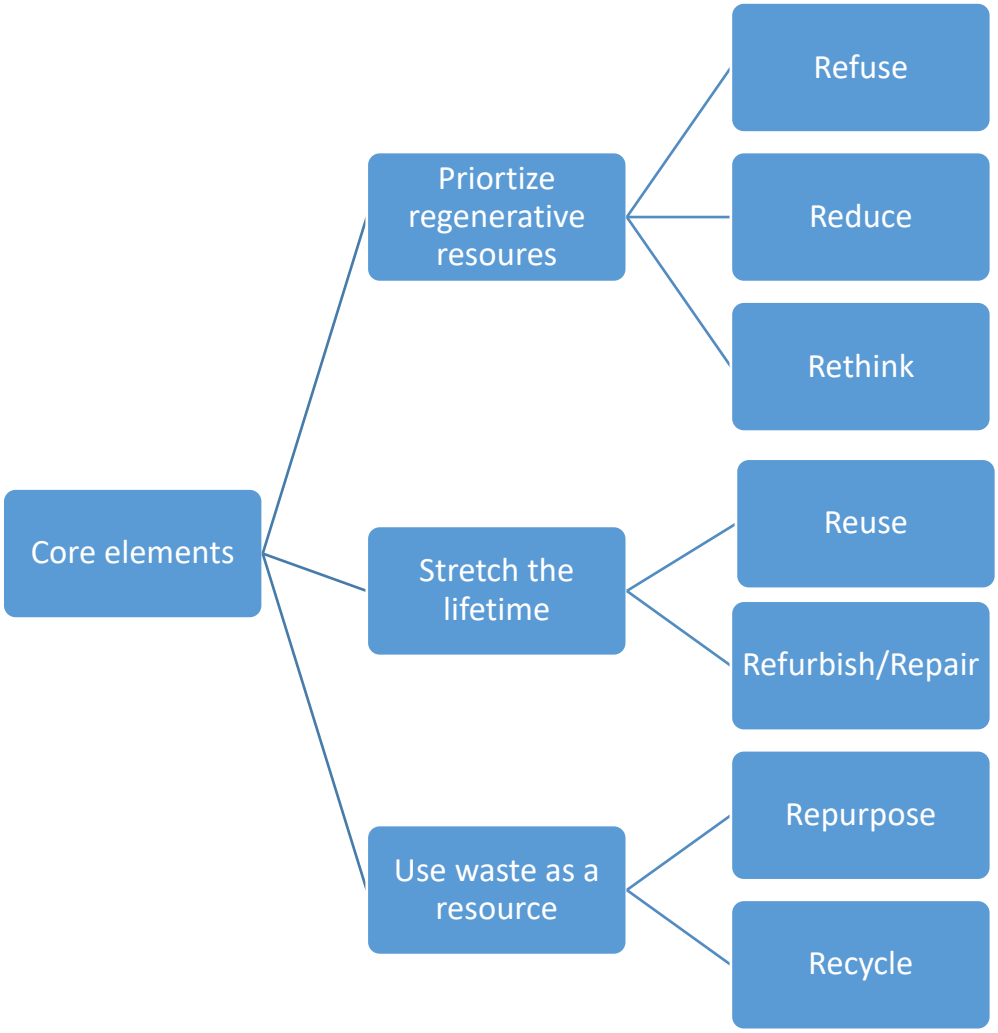

Figure 9. Core elements of CE

i) Prioritize regenerative resources

A combination of renewable, reusable, and non-toxic resources is used to replace non-regenerative resources in water, material, and energy cycles (Circle Economy 2021, 6).

Refuse: Tourism providers may stop using water from non-renewable sources to make water usage circular (UNECE 2021, 11). The accommodation service area can avoid using single-use plastics by using reusable containers such as bottles and glass.

Restaurants can stop using plastic straws in favor of alternatives like bamboo and glass. (CEnTour 2020, 107.)

Reduce: Reducing the unnecessary transportation and packaging waste of food in hotels and restaurants can be done by collaborating with local suppliers. It is possible to reduce food waste by finding ways to prevent food from being thrown away due to its imminent expiry date, excess production, changes in packaging, or other reasons that would not reduce its edibility. (CircE 2020, 13.) Water use can be reduced by installing water-saving devices (CEnTour 2020, 106).

Rethink: A key aspect of the CE in tourism is using renewable energy instead of conventional energy. Tourism areas can utilize these renewable energies for travel, accommodation, catering, transport, shopping, and entertainment. (Rodriguez & al. 2020,10.) Certain tourism businesses can also identify opportunities to produce their renewable energy (Lindell et al). Few renewable energy solutions for SMEs are biomass, geothermal energy, and solar system (Kurtagic 2018, 18).

ii) Stretch the lifetime

To extend the lifetime and intensity of usage of resources and products, they are maintained, repaired, and upgraded (Circle Economy 2021, 9).

Reuse: The accommodation sector can implement a circular practice via reusing textiles, reusing containers, and reusing bottles and glasses (Flordio & al. 2019, 8). Tourism providers can close the material flow by committing to dispose of their secondhand equipment in reuse centers and to purchase equipment from the reuse centers. (CircE 2020, 13). Tourist facilities can utilize rainwater collected from roofs and parking areas and recycled into water supply systems for sanitary purposes or gardening (Kurtagic 2021, 17 20).

Refurbish/ Repair: Old buildings which already served as a purpose of a hotel or other buildings can be refurbished to make a new hotel facility. Because a structure already exists and requires fewer materials, refurbishing has a much smaller carbon footprint than rebuilding or constructing from scratch. (Rmjm 2021.) Hotel businesses may consider repairing scratches, worn, and holes in wooden furniture and cushions (Manniche & al. 2018, 70).

iii) Use waste as resources

If there is no option for regenerative resources or lifetime extension, waste streams should be recovered and processed to be used as inputs into production processes (Circle Economy 2021, 11).

Repurpose: Disused buildings and desolated spaces could be brought back to life and transformed for tourism, which is essentially using the building to repurpose (Nedyalkova 2019, 2).

Recycle: Tourism can practice waste prevention and recycling and transform waste into valuable resources (Nedyalkova 2019, 2). Hotels can use procurement of materials that can be easily returned into the recovery process. Food waste from hotels and restaurants that is not for human consumption can be composted, converted into fuel, or biogas. Such waste can be treated on-site or by partnering with companies that recycle food waste. (Kurtagic 2021, 17 -20.)

2.5.2 Enabling elements

While efforts are being made to implement the CE's core elements, there remain persistent obstacles. Enabling elements remove some of these barriers to adopt circularity. (Circle Economy 2021, 14.)

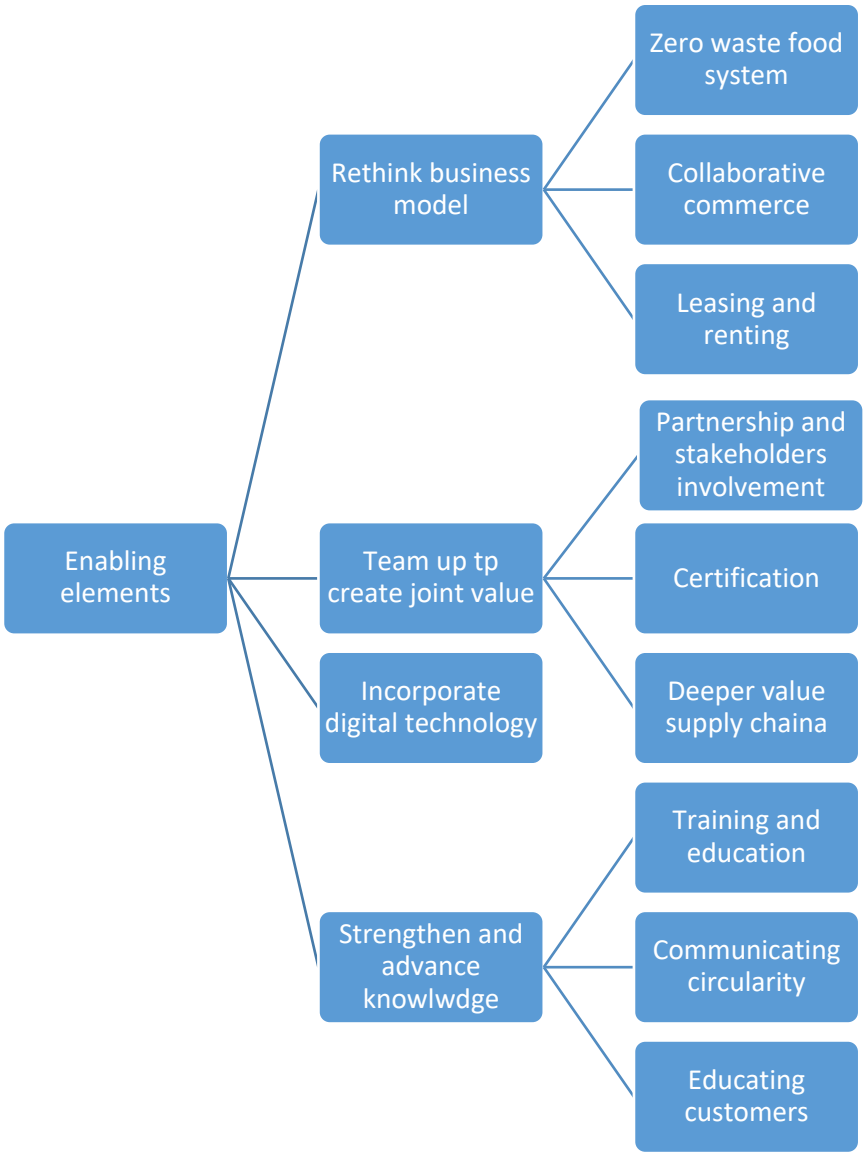

Figure 10. Enabling elements of CE

i) Rethink business model

Change incentives and adjust business models to price products over the entire lifecycle and capitalize on cooperation and long-term relationships. (Circle economy 2021, 17).

Zero waste food system: Zero waste platforms support incorporating waste management systems in the tourism sector. By definition, zero waste means means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them" (Nedyalkova 2019, 6). By choosing "Zero waste" as a guiding star, a company will assess its supply and production efficiency, along with its consumer leftovers, from a whole new perspective. Changing perspectives makes it possible to develop new revenue streams and business partnerships. (Lindell & al. 2019, 78.)

Collaborative commerce: Collaborative tourism through platforms that allow users to share homemade food, reduce food waste, and even stay in the homes of locals. Development of online platforms for lending goods to the local population that tourists are unable to take with them to their destination, for instance, bicycles, canoes, and hair dryers. (Florido & al. 2019, 9.)

Leasing and renting: The development of hotel industry models such as renting beds rather than buying them and buying lighting services rather than bulbs and lights can be applied. (CircE 2020, 13). Hotels can lease rather than purchase equipment, such as coffee machines and equipment for seminars, restaurants, and bars. All linen services, including sheets, towels, tablecloths, napkins, and tablecloth covers, can be rented and have them serviced by an eco-labeled laundry. (Kurtagic 2021, 23.) Sporting equipment and gear can be rented or bought second-hand during the sports event. During other events, all furniture and fixtures can be rented from rental companies. (SITRA 2021.)

ii) Team up to create joint value

To implement core CE strategies systemically, actors must collaborate structurally. Pooling resources can help overcome barriers such as a lack of capital, knowledge, and tools for efficient operations and developing new or emerging markets and sectors. (Circle economy 2021, 21.)

Partnership and stakeholder involvement: A successful transition to a more sustainable, inclusive, and resilient tourism model will rely heavily on public-private collaborations and partnerships. There is a need to enhance the collaborative and social dialogue between the government, employers, labor unions, and other key stakeholders in the tourism value chain. (UNWTO 2021, 20.) In addition, tourism service providers can work with local and sustainability-certified businesses (Centour 2020, 110).

Certification: New international standards for circular tourism should be created, promoted, and advertised by an established organization, like the International Standard Organisation (ISO). A standard should be efficient and straightforward to use for any type or size of tourism organization in any geographical area that wants to transition from a linear to a CE model. (Zorpas & al. 2021, 2.) SMEs and destinations can benefit from pioneering sustainable efforts through tourism certification, illustrating how leading-edge sustainability can ultimately be a competitive advantage (Manniche & al. 2017, 138).

Deeper value supply chain: The collaboration of value chain actors and value creation are essential elements of a successful value chain. Establish stronger cooperation between the supply chain and local hospitality to create value. Utilize supply chain mapping to identify opportunities and deployment pathways for circular value creation. (Sorin & al. 2021, 33-34.) The transition needs a fundamental value change for tourism stakeholders (Shelodon 2021, 7).

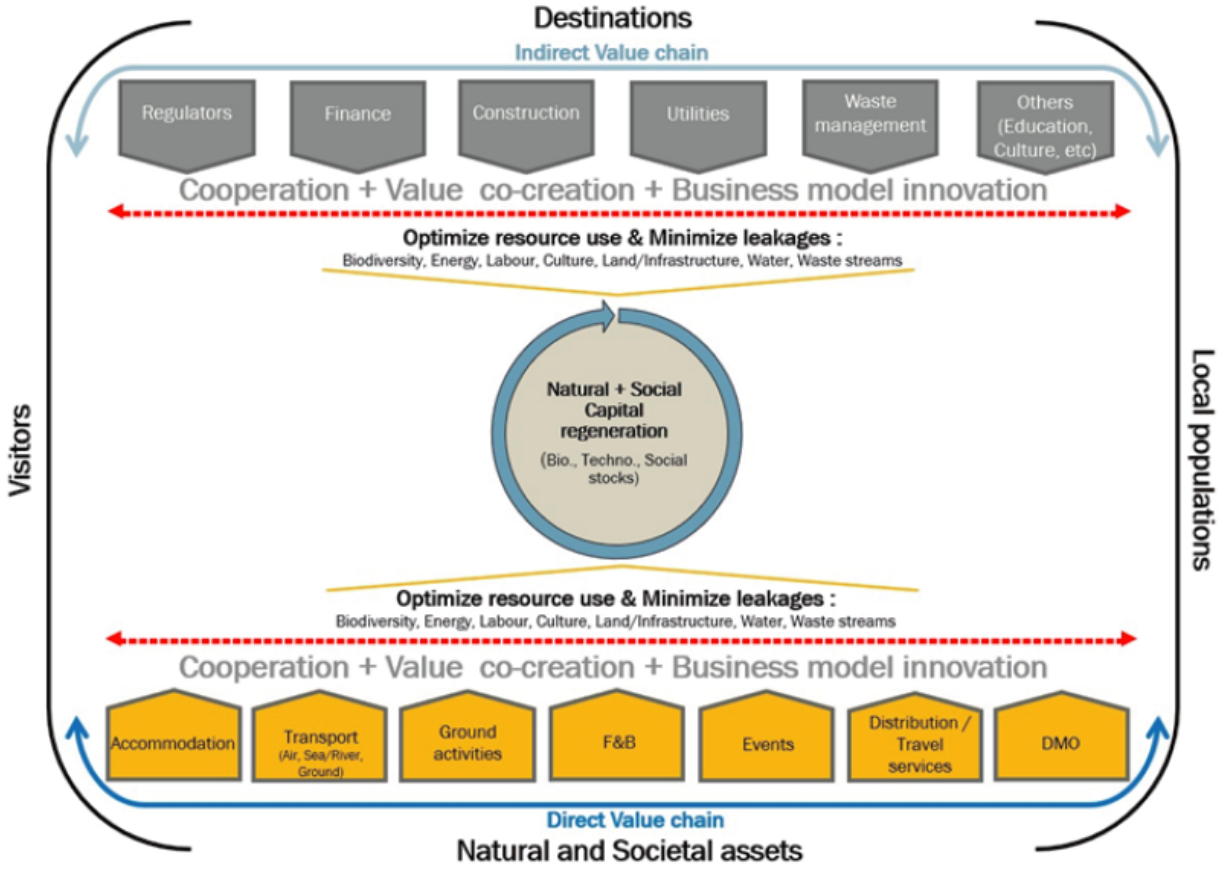

Figure 11. CE tourism eco-system (Sorin et al. 2021, 33)

Fig. 2 illustrates the overall ecosystem associated with CE travel and tourism. Indirect and direct value chains are highlighted as part of the ecosystem's regenerative goal. The ecosystem actors can achieve a deeper value chain through long-term cooperation, value co-creation, and business model innovation. Within the indirect value chain, stakeholders such as regulators, financial institutions, construction companies, utilities, waste management companies, and educators are vital for the sustainability and resilience of the ecosystem in the long run. This value chain relationship aims to optimize the whole ecosystem to regenerate natural and human capital.

iii) Incorporate digital technology

It is highly relevant to consider circular models for the building and construction sector within the tourism sector. It is doubtful that many SMEs could afford to build new hotels.

Despite that, there are interesting new buildings as hotels that incorporate circular technologies and existing buildings that have been refurbished. (Manniche & al. 2017, 67.) Intelligent technologies in cooking practices by using intelligent fridges and food monitoring technologies, and new packaging technologies to reduce packaging waste are promising initiatives to adopt a CE (Ellen Macarthur 2014, 42). Water-saving technologies that save water in the shower and the laundry can also be applied. (Manniche & al. 2017, 127). Connect with technology-advanced digital tools and ensure that deliveries are made efficiently, in terms of quantity and delivery time, and that surplus food can be disposed of properly (CircE 2020, 11).

iv) Strengthen and advance knowledge

CE implementation requires a broad understanding of a wide range of contexts and industries and the various actors within the value chain (Circle Economy 2021, 23).

Training and education: Tourism businesses can utilize the resource efficiency expertise of third-party CE specialists to provide staff with an understanding of CE opportunities and practices without diverting existing labor resources (Sorin & al. 2021, 30). The tourism industry can develop its skills from circular experts in marketing, energy, and design thinking. A training session can address decision-makers and representatives responsible for a range of issues, such as the energy efficiency of a building, supplies of materials, and kitchen operation. (Lindell 2019, 154.) Furthermore, the CE can be integrated into the education system (Kutagic 2018, 23).

Communicate circularity: To demonstrate the importance of the circular transition to organizations and stakeholders, we need to communicate its value. Marketing instruments could be used to change tourist consumption patterns, focusing on values rather than the consumption itself (Nedyalkova 2019, 1). Integrating the brand message and CE strategy focuses on marketing communications and positioning, and applying the UN's Sustainable Development Goal (SDG) framework to marketing and communications will be helpful (Sorin & al. 2021, 30).

Customers must also be educated since that is the weakest link in the tourism value chain (Nedyalkova 2019, 1). It is necessary to promote sustainable behavior among guests. Guests can be reminded and encouraged to act sustainably with simple signs and logos (CEnTour 2020, 110). Tourist practices should go beyond the traditional customer role to achieve CE developments, such as demarketing to discourage guests from purchasing certain items reducing negative impacts. For example, hotels might charge for single-use

items such as straws, or they might limit the variety of food on buffet menus to cut down on waste (Zorpas & al. 2021, 2.). A positive impact on lowering water demand can be achieved by informing tourists about their water usage (Garay, Font & Corrons 2019, 631).

2.6 Case Lahti

Lahti lies in the county of Päijät-Häme in Southern Finland and occupies 154,8 km2 of land (Autio 27, 2015). Lahti was a small village connected to the prosperous agricultural municipality of Hollola for a long time. For the city, the last 50 years have been a period of remarkable growth. Lahti grew faster than any other Finnish city after the Second World War. Finland's industrialization and urbanization in the 1960s and 1970s led to an increase in jobs, new industries, and a flourishing economy in Lahti City. (Green Lahti 2020, 2-3.)

Image 1. Location of Lahti (Google maps 2022)

According to Finland’s statistical database, the population of Lahti in 2021 was 120,150 (Tilastokeskus 2022). It is located 100 Kilometres northeast of Helsinki (Lahti region Ltd 2022). Lahti's travel distance is less than an hour from Helsinki and 2.5 hours from St. Petersburg by train. Lahti's central location makes it easy to access southern Finland and Russia (European Commission 2021, 19.)

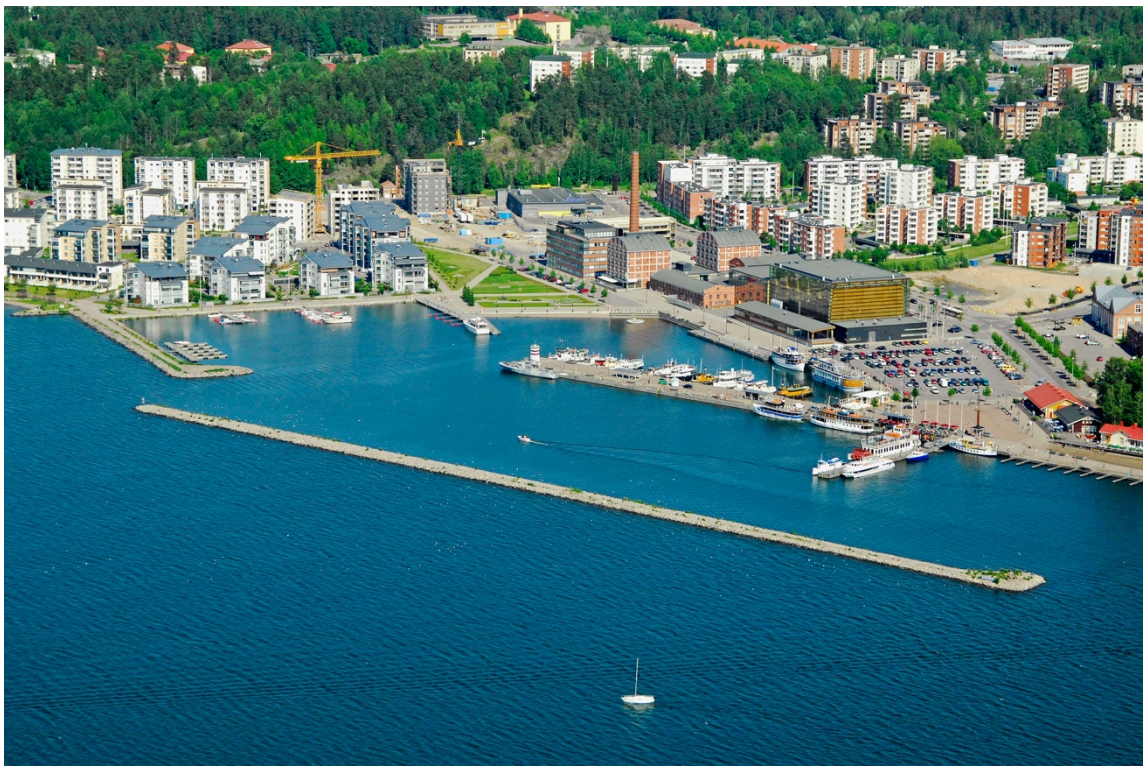

Image 2. Vesijärvi, Lahti (marinas.com 2021)

Travelers can enjoy a wide range of activities in Lahti. Lahti has beautiful nature, water around and excellent sports facilities. Lahti is one of the best tourist destinations for sports tourism in Finland. Lahti has excellent skiing facilities and is the only city to have hosted the FIS Nordic World Ski Championships 6 times. Sports of all kinds, nature activities, skiing tracks, forests, and lakes provide a wide range of choices throughout the year. The city of Lahti hosts numerous international cultural events annually, including the Lahti Sibelius Festival, the Lahti Organ Festival, concerts by the internationally recognized Lahti Symphony Orchestra, and many others (Discovering Finland 2022.) Lahti sports center is internationally famous for winter events and is the city’s most fascinating tourist attraction. In January 2022, CNN listed Lahti as the best destination for tourists (Lahti region Ltd 2022.)

2.6.1 Lahti's green transformation

Lahti won the 2021 European green capital award for pioneering environmental actions by setting an example for other cities and developing innovative solutions to environmental challenges. The content of Lahti's European green capital was structured on four themes, 1) Carbon-neutral life, 2) CE, 3) Nature and water, and 4) Citizen participation. (Green Lahti 2021.)

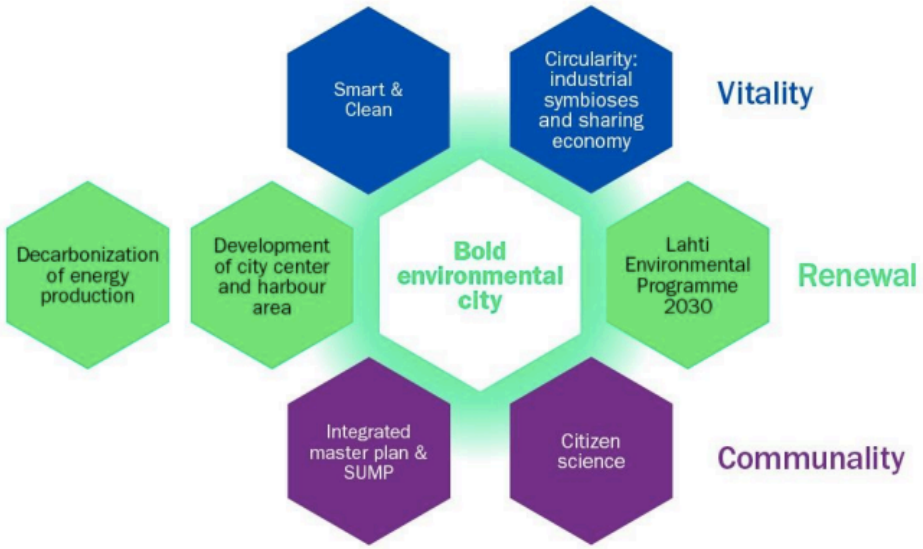

Figure 11: Lahti city strategy for 2030. (Lahden Kaupunki 2021, 107)

Figure 11 above shows Lahti's environmental strategy for 2030. The strategy consists of three transformation programs: community, renewable, and validity.

Lahti aims to improve citizens' living environments, protect nature and manage its resources. Lahti aims to become carbon neutral by 2025 and has cut greenhouse gas emissions by 80% compared with 1990. Lahti has a bold ambition to become a zero-waste CE city by 2050. Lahti aims to conserve nature and valuable surface and groundwater resources and promote sustainable means of transportation, such as walking, cycling, public transportation, or even skiing. (Green Lahti 2021.) Lahti aims to become carbon neutral by 2025, which is ten years ahead of Finland's national target of 2035 (European commission 2021). Around €160 million has been invested in renewable energy by Lahti and its consortium companies in recent years. The city spends €20 million annually on energy efficiency projects to mitigate climate change and conserve water. (European Union 2020, 19.)

2.6.2 Circularity in Lahti

Circular cities encourage the transition from linear to circular economies across the city, integrating city functions and departments, and partnering with residents, businesses, and researchers. Essentially, this means switching away from the linear economy's "take, make, waste" model to one in which infrastructure, products, components, materials, and nutrients are preserved for as long as possible. Closing the material loops in a circular city ensures that existing materials are not disposed of as waste, and resource extraction is minimized. (Circulars 2021.)

The Päijät-Häme regional CE roadmap was for the first time published in 2017. The measures in the roadmap towards a CE are closed material loops, energy, CE, new consumption models, and innovative solutions. (Päijät-Häme 2021, 1.) The CE road map for Lahti city is under development (Virtanen 2021, 15). Lahti is the first city in Finland to abandon coal. Finland's most environmentally friendly biomass-fired plant, Kymijärvi III, was commissioned on April 1, 2020, in place of coal. The nearby forests supply the fuel for the process, and the ashes are used to cycle nutrients back into the forest. (Lahti region Ltd 2022.) According to smart Lahti, 96 percent of the local municipal waste in Lahti is utilized, 50 percent of all waste is recycled, and 46 percent is used for energy production (Smart Lahti 2022). Lahti has created an innovative solution on water restoration by using low Impact development to build comprehensive stormwater management systems. The local food circle of Lahti is one of the largest in Finland; Lahti has nine allotment gardens. The use of red meat in kindergarten and school menus has been reduced by 42 percent since 2018. Energy measurement devices were installed in Lahti schools and kindergartens in 2011 to improve energy efficiency. Between 2011 and 2015, all larger buildings were audited to calculate how much energy could be saved. (European Union 2020, 25-37.)

In collaboration with municipalities, national authorities, private companies, and university stakeholders, Lahti has launched a Net-Zero Building Development Centre. Its primary purpose is to research net-zero building codes and develop ambitious piloting programs. The city of Lahti plans to increase the share of sustainable transportation to more than 50% by 2030. The city has defined and planned a quality cycling network that will be completed by 2030. Lahti has developed a mobile application for reducing mobility emissions and a model for carbon trading. Mobile application innovation aims to create a sustainable mobility incentive system. The city of Lahti invites its citizens to come up with new environmental ideas. Together with universities, companies, and residents, the city has developed solutions to environmental challenges. (European Union 2020, 38-49.)

3 Methodology

This chapter presents the methods and analysis tools for the research work. Criteria for a qualitative case study is described, data collection methods are presented and finally, validity and reliability of the research are explained.

3.1 Research design and method

A research design outlines how a researcher intends to answer the research question. Methodological choices to conduct research are quantitative, qualitative, or mixed methods (Saun-ders, Lewis, and Thornhill 2019, 174.) Generally, qualitative research tends to collect much information about a limited number of cases or subjects. In contrast, quantitative research tends to collect limited information about many cases or subjects (Veal 2018, 178). Some researchers consider qualitative data to be more interesting than numerical data; qualitative methods are chosen for reasons that are less aesthetically oriented and more analytical (Silverman 12, 2013). The differences between methods are not necessarily good or bad but appropriate for the research work (Veal 2018, 283).

According to Keegan (2009, 11), qualitative research focuses on meaning rather than measuring and asks what, why, and how, rather than how many and how much. The qualitative method is a better fit for the type of research question that the writer urges to find the answer to and needs in-depth analysis to fulfill the research aim. In this research, the author tries to find "what" is the state of circularity in tourism in Lahti, "what" are the challenges, and "what" are the plans?

3.2 Research strategy

Among the qualitative research, strategies are action research, case study research, ethnography, grounded theory, and narrative inquiry (Saun-ders, Lewis & Thornhill 180, 2019). When a case study is conducted, an example or case of the phenomenon being investigated is examined to understand the phenomenon through specific examples. These cases can range from individual communities or organizations to whole countries (Veal 2018, 183.)

Case studies are relevant if the questions require an in-depth and extensive description of some social phenomenon. No matter the area of interest, case studies are fundamental to understanding complex social phenomena. A case study method enables researchers to investigate in depth the details of a case while maintaining a holistic and real-world perspective - such as individual life cycles, the behaviour of small groups, organizational behaviour, and managerial processes, as well as neighbourhood changes, school

performance, international relations, and the development of industries. (Yin 2018, 5). Thus, a case study method has been chosen to aim an in-depth analysis.

3.3 Data collection

A qualitative data set consists of spoken words, typed or printed text, and still or moving visual images (Saun-ders & al. 2019, 653). The case study uses a variety of methods for collecting data, such as historical/documentary research, secondary data, interviews, and questionnaires or qualitative surveys for the communities studied (Veal 2018, 183).

Students are increasingly asked to consider conducting further analyses of data initially collected for some other purpose to answer their research question(s) or reach their objectives. This type of data is secondary data and includes both raw data and published summaries. (Saun-ders & al. 2019, 653.) Secondary documents like books, journal articles, web pages, and reports were used to build up the research work literature. Search terms used to find relevant literature and findings in the google search database are “circular economy in tourism”, “circular tourism”, “circular economy innovation in hospitality”, “Circular tourism in Lahti”. Secondary data from newspapers, guidelines, company websites, and webpage of Lahti tourism were used for document analysis.

A research interview is a general term for several different types of interviews. The nature of any interview should be consistent with the research questions, objectives, and research strategy. The researcher can conduct semi-structured and in-depth interviews in several ways: face-to-face, by phone, or online. Semi-structured interviews start with a predetermined list of themes and possibly some critical questions related to these themes to guide the conduct of each interview. The use of the predetermined themes will vary depending on the philosophical assumptions. The goal of semi-structured interviews is to explore each theme systematically with every participant, using a more structured and consistent approach. In this way, the researcher will compare participants' responses to each theme to determine the underlying reality that was hoped to reveal. Semi-structured and in-depth interviews can also be used to 'probe' a response, where you ask for an explanation or a build-on of previous answers (Saun-ders, Lewis & Thornhill 2019, 653.) An audio recording provides a better representation of an interview than taking notes and is a matter of personal preference. However, the recording device should not be used if the interviewee refuses permission or appears uncomfortable.

Finding the right person and getting the opportunity to interview that person was one of the main challenges of the thesis work. It took much time to find the right persons, the process of finding the right person went through visiting different tourism organizations'

webpages. Thirty-five possible candidates were found, and interview requests were sent out, among which seven people were interviewed using a semi-structured interview. One interview was done on the phone, one was supplemented through email, and five were done online. It was surprising that few people were interested in this kind of research while the city of Lahti has a big agenda for circularity. It might also be because the interview request was sent in English, and people were unwilling to participate.

The interviewees were tourism professionals from hotels, restaurants, sustainability experts, event venues, and sports tourism experts. New insights from the interview also lead to document analysis to further help in answering the research questions. It was also disappointing that the author could not interview any tourism service provider related to cultural attractions; for example, museums were contacted but could not get the chance to interview. Interview questions were sent in advance a few days before the interview. All the interviews were recorded after getting the approval of the interviewees. There was no problem with the internet connection; therefore, audio quality was good. All the respondents will remain anonymous and are coded as R1 – R8, which is mentioned in table 7 below.

Table 7. Interview coding

Code	**Organization, title**	**Date**	**Medium**	**Length**
R1	Restaurant, Representative	15.02.2022	Phone	23 mins
R2	Accommodation, Representative	15.02.2022	Online	27 mins
R3	Event management company, Representative	16.02.2022	Online	25 mins
R4	Lahti region Ltd, Representative	17.02.2022	Online	31 mins
R5	Lahti region Ltd, Representative	22.02.2022	Online	29 mins
R6	Accommodation, Representative	21.02.2022	Emali	
R7	Accommodation, Representative	22.02.2022	Online	33 mins

3.4 Thematic analysis

Thematic analysis is considered a general approach to analyzing qualitative data. It is generally used to search for themes in data sets such as interviews, observations, documents, diaries, or websites. Analyzing qualitative data is systematic since it provides a logical and orderly process. (Saun-ders, Lewis, & Thornhill 2019, 651.)
Using thematic analysis helps the researcher to

1. analyze large amounts of qualitative data
2. integrate related information from different transcripts and notes
3. identify key themes or patterns in a data set for further study
4. produce a thematic description of data
5. examine apparent thematic patterns or relationships to develop explanations and theories
6. draw and verify conclusions (Saun-ders & al. 2019, 651.)

The size and complexity of qualitative data sets mean coding is often used to group data with similar meanings. When looking at data without coding, one may not perceive all of the meanings attached to the data. Coding is, therefore, a crucial part of managing data to be rearranged and retrieved under relevant codes. Essentially, original data items will be fragmented, and data units with similar meanings will be grouped so they can be examined with one another. (Saun-ders & al. 2019, 653.)

Doing thematic analysis involves two approaches: deductive and inductive. Using a deductive approach, the themes the author wishes to explore would be linked to existing theory. In addition, the research question may be well-defined, and research objectives may allow deriving themes from data; this may lead to focusing on parts of the data set instead of analyzing it all without discrimination. When using an inductive approach, themes are derived from the data. Based on research interest, the researcher will find themes to explore but not impose a framework of themes based on existing theory to examine the data set. (Saun-ders & al. 2019, 653.)

Purely inductive or deductive approaches can be problematic. The author may need to spend a lot of time coding every data unit before deciding what research to pursue if utilizing a purely inductive approach. Based purely on deductive reasoning, the author may conclude that the list of prior codes is inadequate and needs to develop other codes to code data adequately to begin answering the research question and accomplish the study's objective. (Saun-ders & al. 2019, 653.) Thematic analysis lets researchers switch between these approaches (Saun-ders & al. 2019, 660).

3.5 Ethics in Research

The researcher will deny all the initial conditions if they use case study research to substantiate a preconceived position. This problem affects all researchers because they must understand the issues beforehand, regardless of their chosen method. Researchers may unintentionally be swayed toward supportive evidence and away from contrary evidence by such an understanding. Bias avoidance is just one aspect of a borderline set of values that fall under research ethics. As with any other social scientist, best case study researchers will adhere to the highest ethical standards while conducting research. Scholarship responsibilities include not plagiarizing and falsifying information, being honest and not deceiving, and taking responsibility for own work. (Yin 2018, 86-87.) As a researcher, one must report positive and negative findings. Do not attempt to smooth out the data or tamper with interview codes (Hennink, Hutter & Bailey 2011,77).

The author of the thesis works in the tourism sector and had climate anxiety, so the idea to do his thesis on this subject may have come from this. However, the research was conducted from a professional standpoint without being sensitive or biased in any way. Data collected is not falsified or changed, the participant for the interviews was chosen equitably, and no groups were unfairly included in collecting data.

3.6 Quality of research

Validity and reliability are two dimensions that are generally considered in determining the quality of research and the level of trustable to be placed in it. Validity refers to how closely the information presented in the research reflects the phenomena the researcher claims it represents. External validity refers to how generalizable the result is, i.e., how well can it be applied to a broader population than the sample in the study? The internal validity of a study depends upon how accurately it intends to represent the characteristics of the phenomenon under study by the variables and data used and the extent to which all relevant variables are identified and measured. Research reliability refers to how similar findings would be if the resources were repeated later or with a different group of subjects. (Veal 2018, 53-54.)

However, validity and reliability are not entirely appropriate criteria for determining the quality of research. In qualitative research, the concept of trustworthiness and authenticity has been introduced. Four components of trustworthiness are credibility, transferability, reliability, and objectivity. To justify and assure the study's trustworthiness, a detailed

report on the process and the outcome of qualitative data collection and analysis is essential. (Veal 108, 54.)

The thesis work has been carried out with the best intentions go being truthful, accurate, and systematic. The thesis process followed a clear methodological path of qualitative case study research. Data were collected through document analysis and semi-structured. The author remained neutral as possible and did not lead the interviews and his biases or change any information. Furthermore, research ethics maintained during the thesis work is explained in chapter 3.6. However, semi-structured interviews tend to be always subjective or interpretable, and 100 percent validity can never be identified. Credibility is applied by interviewing experts in the tourism area in Lahti. The interview was conducted with people from different kinds of tourism organizations. Reporting of the data in the result section has reflected the research objectives. To show that trustworthiness has been further maintained, the interviews were recorded in audio, and data analysis was done precisely and consistently.

4 Results

In this chapter, the results of document reviews and interviews and presented. This chapter aims to answer the research questions that were presented in chapter 1.

4.1 Document analysis

Document analyses were primarily done through web pages of tourism-related and other organizations to find out the current state of CE in the tourism industry, followed by interview questions for deeper insights.

4.1.1 Overview of CE practices

Several tourism-related web pages in Lahti were analyzed as a starting point for the study. Keywords on CE searched in the tourism service providers webpage are presented in the theoretical part of the thesis in chapter 2, sections 2.5.1 and 2.5.2. Internet pages of service providers that were used to study the elements of CE are enclosed as appendix 2.

Table 8. Elements of circularity on webpages

Service providers	**Elements of CE**	**Total**
Accommodation	4	11
Restaurants	8	30
Museums	0	3
Sports centres	2	3
Event organizer/ venue	0	1

Table 8 presents number total number of varied range tourism service providers in Lahti that were studied to see if they mentioned any elements of circularity on their web pages. Accommodation services such as city hotels, cottages, aparthotels, and hostels were studied.

4.1.2 Environment certification for service providers

Visit Finland has developed a Sustainable Travel Finland label that tourism companies and regions can achieve as part of the Sustainable Travel Finland program. Sustainable Travel Finland (STF) certification is strongly encouraged to visit Lathi. To receive regional Sustainable Travel Finland certification, 51 percent of international tourism companies in Lahti must acquire the STF company brand. (Lahti region Ltd 2022.) Visit Lahti is a DMO for the Lathi region and is responsible for the development work and tourism marketing in the Lahti region and coordinates the STF program.

The certificates obtained by the tourism companies are presented directly as a part of the STF brand. The certification is only obtained through a lot of serious and long-term commitment. Lahti's three accommodation services were found to obtain a Green Key certificate (Lahti region Ltd 2022). The green key certificate is an international eco-label certificate for the tourism industry. Obtaining the certificate includes 13 criteria in environmental management, staff involvement, customer communication, water, sanitation, waste, energy, foods, interior, green areas, social responsibility, recreational services, and procurement (Green key 2022.)

4.1.3 Sports events certificates and guides

Two sporting events guides were analyzed to see if the criteria and standards include the elements of the CE. It is essential to analyze these guides because one of the respondents from the interviews mentioned that sports events practice sustainability according to the environmental standards of each sports event.

The international ski federation's environmental guidelines include circularity elements for ski sports events. Some of the CE areas that are considered in the guidelines are infrastructure, energy and water, catering, and recycling (FIS 2013, 6-15.) The environmental accreditation program from FIA for motorsport events does not have any circularity elements included in their environmental-related recommendation to conduct a sustainable sports event (FIA 2022, 9-18).

4.1.4 Other remarkable circular approaches

The Lahti Pelicans ice hockey club is the first carbon-neutral team globally. This review encompasses the hockey team's share of Isku Arena's electricity, heat, and ice machines, as well as waste management. The team's travel to away games, players and staff's commutes, and spectators' travels to home games are also examined during this review. (Pelicians 2012.) In addition to no longer flying to away games, their bus runs on

biodiesel. The players drive cars powered by biogas that is made from household and industrial biodegradable waste, as well as community sewage sludge. Most of their fans arrive at their games by public transportation, bicycle, or foot. In the arena, food is served in non-plastic containers that are locally produced, packaged without plastic, and have plant-based options (IIHF 2021.)

Lahti Symphony Orchestra strives to become the first carbon-neutral symphony orchestra globally. The orchestra has thoughtfully managed its energy, water, waste, and travel. Audiences and staff of the orchestra are asked to consider the emissions caused by traveling to concerts, as transportation accounts for most of the orchestra's emissions. For example, when the orchestra performs in St Petersburg, it travels by train. The orchestra's home, Sibelius Hall, closely monitors lighting, recycling, heating, and water usage in the toilets. Digital brochures are being developed, and environmentally friendly providers produce all printed materials. All recordings are packaged in eco-friendly sleeves instead of plastic sleeves (Green Lahti 2022.)

The Pelicans ice hockey team and the symphony orchestra are also using a carbon compensation program to become carbon neutral because there will be areas where complete carbon emission control might not be possible. The integration of CE approaches that they have done successfully in their organization is very influential. Their actions to achieve carbon neutrality include many CE elements.

4.2 Interview analysis

An interview with different types of tourism-related organizations was necessary to gather a wide range of information and gain a different perspective. Different sets of questions were asked based on the relevance and type of organization, but the common aim was to answer the research question. Interview questions are enclosed as appendix 1, and the interview coding was shown in chapter 3, section 2.2.2, table 7. Themes were identified according to the questions discussed in the interviews.

Table 9: Interview themes

Main Theme	Sub Themes
1. Understanding of CE	
2. Environment certification	- Sustainable Travel Finland certificate - Sports events certificate on sustainability
3. CE areas in practice	- Prioritizing the regenerative elements - Stretching the lifetime - Using waste as a resources - Rethinking business model - Teaming up to create joint value - Incorporating technology - Strengthen advance knowledge
4. Challenges	- Cost - Infrastructure - Communication - Covid 19
5. Plans to become more circular	

4.2.1 Understanding of CE

At the beginning of the interview, every interviewee was asked about their understanding of the CE in tourism. The interview questions sent before the interview included the Finnish term for a CE, "Kiertotalous," and Ellen Macarthur Foundation's definition of a CE. The term "Kiertotalous" was used with two respondents during the interview.

The R2 answer to the question did not provide sufficient evidence that the respondent understood the concept of a CE. Her response was not related to CE but only preserving nature. According to the respondent:

"the customers don't come here for our cottages, they come because of the lake and the pure nature… more and more customers are looking for pure nature..everything we do, we think about the nature and how to keep it clean." (R2 15.02.2022.)

Respondents also mentioned CE principles and circular elements. It was mentioned in the interview that nothing is wasted in circularity, materials are recycled, food waste is reduced, and the way we produce and use energy is optimized. The grounding theory of the thesis strongly supports the respondent's answers. Principles of CE and CE elements in tourism were explained in detail in chapter sections 2.2.2 and 2.5.1 while creating the theoretical background of this thesis work.

R4 presented his understating of circularity and sustainability and mentioned the difference between these two terms. It was interesting that the respondent asked if the researcher was aware of the similarities and differences between them. According to R4, circularity focuses on the ecological side, whereas sustainability also includes economic and social aspects. The theoretical section of the thesis in chapter 2, section 2.2.5 presents the definition of sustainability, and it seemed like the respondent had an understanding. R4 gave his answer as follows:

"we should be precise a little bit of the themes over here because circularity and sustainability.. do you understand these things the same way do you think they are synonyms? Circularity more or less covers the part of ecological sustainability, so sustainability as a whole except also covers the social sustainability and economic sustainability and aspects over there but if we are thinking about the ecological sustainability so I think that then we are talking about the circularity." (R4 17.02.2022.)

However, the literature review in sections 2.3.1 and 2.3.2 explains the social and economic benefits of the CE. In comparison with the theoretical framework, the respondent has not entirely understood the advantages of the CE.

Four respondents mentioned the term “sustainable” while answering this question on their understanding of the CE in tourism. Thus, respondents relate CE to sustainability. Respondents said that every business involved in the process should be sustainable, event organizers should use sustainability programs, and business operations should become more responsible and sustainable. The word sustainable is widely used during the entire conversation by all the respondents.

Besides one respondent, all of them understood at least the fundamental understating of CE in tourism understanding of circularity covers some areas of chapter 2. However, respondents' answers did not cover all the areas discussed in the theoretical framework on the CE.

4.2.2 Environment certification

The topic of certification was a main theme of the research work as four respondents brought it up during the interview. Document analysis of these certifications regarding their standards and circular elements has been done in chapter 4, section 4.1.1. This theme is further divided into two themes for clear explanation according to the kind of certification discussed in the interview. These sub-themes and presented below:

Sustainable Travel Finland certificate

R4 strongly emphasized certification throughout the interview. He mentioned that the tourism service providers in Lahti are participating in the Sustainable Travel Finland program, and more tourism businesses are encouraged to participate in the program. He further explained that the entire work of sustainability is by this program that covers ecological sustainability and social sustainability, and economic sustainability.

One respondent mentioned that her organization had received green key certification, and many environmental criteria need to be fulfilled before acquiring the certification. Sustainability is practiced in business according to the standards that are mentioned in the certificate.

R7's hotel does not acquire a certification because they do not fulfil the standards. Nevertheless, they will meet all the criteria for achieving the eco level once they have completed a renovation of their property. R7 said:

"Almost all the hotels of our chain have eco label we unfortunately do not I do not have it yet but we are waiting for a renovation for maybe next year or 2024 and then of course we will make the renovations so that we will be able to reach all the standards for the eco level." (R7 22.02.2022.)

The certification is not easy to obtain, and there are also some challenges even after getting the certification. These respondents also mentioned a few challenges discussed in theme 4.2.4.

By analysing the discussion, it seemed that acquiring a certification is the primary enabling element that helps adopt circularity tourism in Lahti. It is not a certificate explicitly labelled with the term CE but includes the elements of circularity. Certification as an element to achieve CE has been discussed on the theoretical part of the thesis in section 2.5.2, and thus the data collected fits the grounding theory.

Sports events certificates and guides

Even though only one respondent mentioned the certification for sports events, it was necessary to include it as a different sub-theme because Lahti is a popular destination for various sports events.

R5 mentioned that the organizer has standards or certificates from the international sporting federations during the sports events. Some examples of the certification are described in document analysis section 4.1.3. Every event organization has a platform that they use when they start to plan the event and run the event itself. He further added

that maybe not all the events have the certification right now, but many events do. Lahti holds international events, and all the international events have certification. If some events do not have a particular certificate related to the event, they use the guidelines from Eko Kompassi.

However, as discussed in the document analysis section 4.1.3, all the guides related to sports events did not seem to have vital elements to circularity in their certification standards. Therefore, it will be false to conclude that all sports events held in Lathi are circular.

4.2.3 CE areas in practice

The respondents were asked how they practice CE principles in their business. Information on different practices of the CE were collected. To explain this theme as clearly as possible, it would be best if it were sub-themed according to the type of circular elements, as discussed in chapter 2, sections 2.51 and 2.5.2. Some themes have more content than others because the number of respondents for that particular theme were few.

Prioritize regenerative

This sub-theme will cover areas such as refuse, reduce, and rethink. Lahti tourism service providers have a significant advantage in that the entire city uses green energy. The use of coal to produce energy is refused. Lahti's green energy transformation has been described in detail in chapter 2 section 2.6.3.

All respondents have mentioned Lahti’s renewable energy source. R4 emphasized that Lahti has abandoned coal to produce electricity, and thus all the tourism facilities are heated in a greenway. He also added that the tourism service providers give more attention to reducing food waste.

R6 mentioned that the electricity they use is renewable, mainly from wind and water energy, and four percent bioenergy. R6 mentioned that the warmth produced by the facility’s sewage water is used to save energy. R6 was the only respondent who said they also use their solar panel to generate electricity. They installed energy-efficient windows in 2013 to reduce the use of energy and reduce the use of water by applying a standard pressurizing valve. Avoiding disposable items, reducing the number of printed materials, and reducing the use of plastic reduced the amount of waste.

R2 said that they have good electric agreements, use pure energy, and do not use a lot of water at their accommodation facility. R7 said they try not to use single-use products; utensils in the bathroom such as hair shampoo and shower gel are in refiled bottles. She also noted that water use is reduced with the help of a device that controls water pressure.

R3 mentioned that their problem is managing leftover food; several thousand people participate during big events, and there is enormous leftover food. Thus, food waste is a weak area for circularity in tourism in Lahti because Lahti holds many events.

Stretching the lifetime

This subtheme covers the areas of reuse, repair, and refurbish. Respondents from the accommodation facilities provided a few examples in these areas. R7 said that the broken bed or furniture are repaired before buying a new one. R2 presented an interesting example of repair and refurbishment. She mentioned that they are not building new cottages but fixing the old ones and using old woods and old materials as much as possible.

Using waste as resources

This subtheme presents recycling practices among tourism service providers. Lahti tourism businesses have a significant advantage of the city's efficient recycling system. The theoretical section of the thesis in chapter 2, section 2.6.3, explains that 90 percent of the Lahti city waste is being utilized again.

R7 said that it is not easy to recycle all kinds of waste produced from the accommodation facility. The respondent might have said that recycling is difficult due to the nature of the business. As discussed in the theoretical part of chapter 2, section 2.5 of the thesis work, there are differences in types and intensities of assets and material used in different businesses. She said:

"that's hard...I don' think that they fit together that good, it's not easy to recycle these items which we have here but other points of view like food waste and other kind of waste" (R7 22.02.2022.)

R6 mentioned that recycling is intensified, making sure the plastics are recycled. R2 said that trashes are appropriately disposed on the recycle bin.

Rethinking business model

This sub-theme consists of collaborative commerce and renting. R7 mentioned that they use ResQ to sell their leftover food at a very comfortable price to minimize food waste. She also said that all bed linens used in the accommodation facility are rented.

Teaming up to create a joint value

This sub-theme describes how all the partners and stakeholders create a joint value. R2 mentioned that their organization has enough support from the Lathi tourism office. Lahti tourism office is also their marketing partner and gets lots of information. She noted that many small companies in Lahti know each other and cooperate in many things. She said that if they need to buy wood for renovation, they buy it from a nearby supplier and buy food locally as much as possible. She also mentioned a challenge regarding purchasing local food, further explanation in section 4.2.4.

R3 said that their water and energy suppliers are doing very well on their part. Every four years, catering suppliers are selected through competitions. One of the criteria for choosing a winner is the amount of food that is sourced from local farms. He mentioned that most green is expensive, but even their partners will pay more if the events are held more sustainably. R5 also said that creating a sustainable event is difficult because their partners and suppliers also value sustainability.

R7 mentioned that they have enough support from the partners and shareholders. She gave an example that all the partners supported the idea when the hotel decided to use the siemens navigator to optimize the performance of the building. She also said that the organization has strict rules to buy materials for renovation and make sure suppliers are legal and sustainable. She added that they demand that the linen rental company use eco-level washing powder.

Four respondents have mentioned “Green city Lahti,” brand and two respondents said that being recognized as a winner of a green city brings values to their organizations. R5 and R6 mentioned that the brand creates visibility and motivation to be more sustainable. According to the interviews, most respondents collaborate with their partners and stakeholders to maintain circularity.

Technology

Two respondents mentioned technology as their circular element during the interviews. R7 said they use a siemens navigator that monitors water, electricity, food waste, and heating. R6 mentioned that the hotel has a “Green building” tab to regulate water flow.

4.2.4 Strengthening and advance knowledge

R4 said that it has been easier to communicate with tourism service providers since the Finnish tourism board has created a sustainable travel program and includes the standard for the whole country. R2 mentioned that they need to educate the clients to sort the waste in the recycle bin if they are not from Finland.

R7 mentioned that the organization has a training program related to sustainability for all the employees before they are hired. Furthermore, she modestly noted that sustainability is grown into people in Lahti, and most of the employees working in the company are from Lahti.

To conclude the main theme about CE practices in tourism organizations, it seemed the respondent has been actively embracing circularity elements in their organization. During the interviews, respondents covered the core elements and enabling elements of circular tourism discussed in chapters 2.5.1 and 2.5.2 of the thesis literature review. It also seemed that both direct and indirect tourism-related business in Lahti had created a deeper value chain.

4.2.5 Challenges

Identifying the challenges in the tourism service cycle in Lahti is one research question of the thesis work. To clearly describe challenges, they are further divided into sub-themes.

Table 10. Challenges in achieving circular tourism

Challenge type	**How many respondents mentioned it?**
Cost	6
Infrastructural	3
Communication	3
Covid 19	1

Cost

Two respondents mentioned that electricity and heating are expensive. R1 said that the restaurant is big in the area next to the lake, the electricity use is green but expensive. R3 mentioned that the event venues are significant and challenging to operate because energy is expensive.

R3 added that the biggest challenge to becoming more sustainable is cost because they are Ltd and must make profits. R2 had a similar point, and she said that she is an entrepreneur therefore also needs to think about the prices. She also mentioned that electricity is expensive and buying local food depends on the season because the prices are expensive in summer than winter.

R4 said that getting a certification is not cheap. R7 mentioned that getting the Sustainable travel Finland certification also comes with a high cost because the hotel needs to maintain a high standard apply. Similarly, R5 said that cost is the biggest challenge to maintaining the certification criteria because sustainably organizing an event is more expensive than traditional. R3 also mentioned that sustainable events are more expensive. It can be understood from the discussion of the interviews that cost is a significant challenge for tourism businesses in Lahti to achieve circularity.

Infrastructural challenge

R2 and R7 had one similar kind of infrastructural challenge related to recycling. R7 said that due to the hotel's location, they need to share a trash disposal area with a shopping center, making it difficult for them to monitor waste. They would receive such information from the recycling company if the trash disposal were only for their use. The hotel is unable to know how much trash it produces per guest. R2 mentioned that due to the lack of accessible recycling carts in the area, they could not separate the waste. Another infrastructural challenge for R2 was the lack of charging ports for electric cars. She said that many customers who drive to the place have electric vehicles, but the cottage does not have charging ports and is expensive to install.

Communication

This sub-theme is related to communication and educating the customers. According to the respondents from the interviews, it has been a challenge to communicate green values with their customers. The respondents have struggled to find an effective way to communicate their commitments to circularity and green values. R3 said:

“Overall, we are very good in sustainability, but we don’t know how to say it. We are doing many good things. This is not in our websites, social media or anything, We don’t tell it that we do great things here. It is the problem of very many companies in Finland also, they do not know how to marketing themselves. We have to communicate more. People do not know we are doing many good job already.” (R3 16.02.2022.)

R7 said:

“we might get feedback from the guests that quality isn’t good enough for in their opinion if used to recycled but, some of them we try to use it as many aspects as we can but it is hard because the when the guests or the customer comes to a hotel he or she then expects that all the amenities are first class“ (R7 22.02.2022.)

R7 also mentioned that she is not convinced if the customers understand the meaning of eco-label certificates, what certification includes, and the criteria to acquire them. R2 mentioned that they have information about sustainability at the doors of the rooms and in books, but she doubts if customers read them. The interviews showed that communication with customers is a weak area for achieving circularity in tourism in Lahti.

Covid 19

During the entire interview with all the respondents, only one respondent brought the issue of the Covid 19 crisis. Circularity is a developmental work and needs budget and other resources. Currently, companies do not have the budget to invest in environmental certification. R4 said:

“we are still struggling with corona… so paying attention now to ecological things and so I wouldn't say that that is for every company the major thing..major thing for many not go to bankruptcy and get enough clients.. especially if they need to obtain some kind of certificate because certificates also needs ecological work and money, they are not so cheap” (R4 17.02.2022.)

The challenges of CE in tourism mentioned in the theoretical part of thesis work in chapter 2, section 2.4.4 are similar to Lahti tourism. According to the literature review of the research work, the cost is a macro challenge. Likewise, infrastructure and communication is organizational challenge.

4.2.6 Plans to become more circular

When asked about plans to improve circularity, they would like to educate their customers to take only the amount of food they will eat during the breakfast buffet, not leave much on the plate, and use recycled toilet paper and other eco-friendly amenities. She mentioned that the infrastructure during the hotel's renovation would fulfill the eco-label standards. She noted that their green values are only mentioned on their website and not enough. It

would be more efficient if the customers knew it beforehand. One way is to automatically send the information about their green values to the guest from the hotel system when the booking is made. She added it is an excellent idea to have information about sustainability and recycling so that customers know what to expect. Likewise, the hotel will continue to reduce the total waste, do recycling more efficiently, and communicate sustainability with their customers.

R2 did not mention any plans, but if they need to do some renovation or construction work, they will buy ecological materials from a local supplier. R6 mentioned that they are a big company and will have a better chance to consider circularity but did not mention any plans. Likewise, R3 also said they have a higher number of venues and are the biggest company in Lahti, and if they can do it, every other business can do it. He mentioned that they would cut down food waste, apply efficient heating and water systems, use electricity-efficient LED lighting and water systems at their venues. R1 had plans to use less plastic and more paper bags in their restaurant, reduce water use, and apply efficient heating.

R4 and R5 mentioned environmental certification, R4 emphasized that participation in Sustainable Travel Finland program among hotels and restaurants will be encouraged. R5 noted that the sports events would continue to follow the international guidelines. The plans that respondents said during the interviews related to their tourism organizations fit the circular tourism framework described in chapter 2, sections 2.5.1 and 2.5.2.

4.3 Summary of interview

Figure 12. shows the summary of the interviews. The figure is a clear information of stages of circular tourism in Lahti and has been created by following the CE framework in tourism that was explained in theoretical part of the thesis in chapter 2, section 2.5.1 and 2.5.2.

Strong areas include circular elements that most respondents mentioned. Best practices include the elements mentioned by only the respondent but are still important areas in the CE. A single organization does not practice all these elements but rather a collective approach among organizations of all the interviewed respondents.

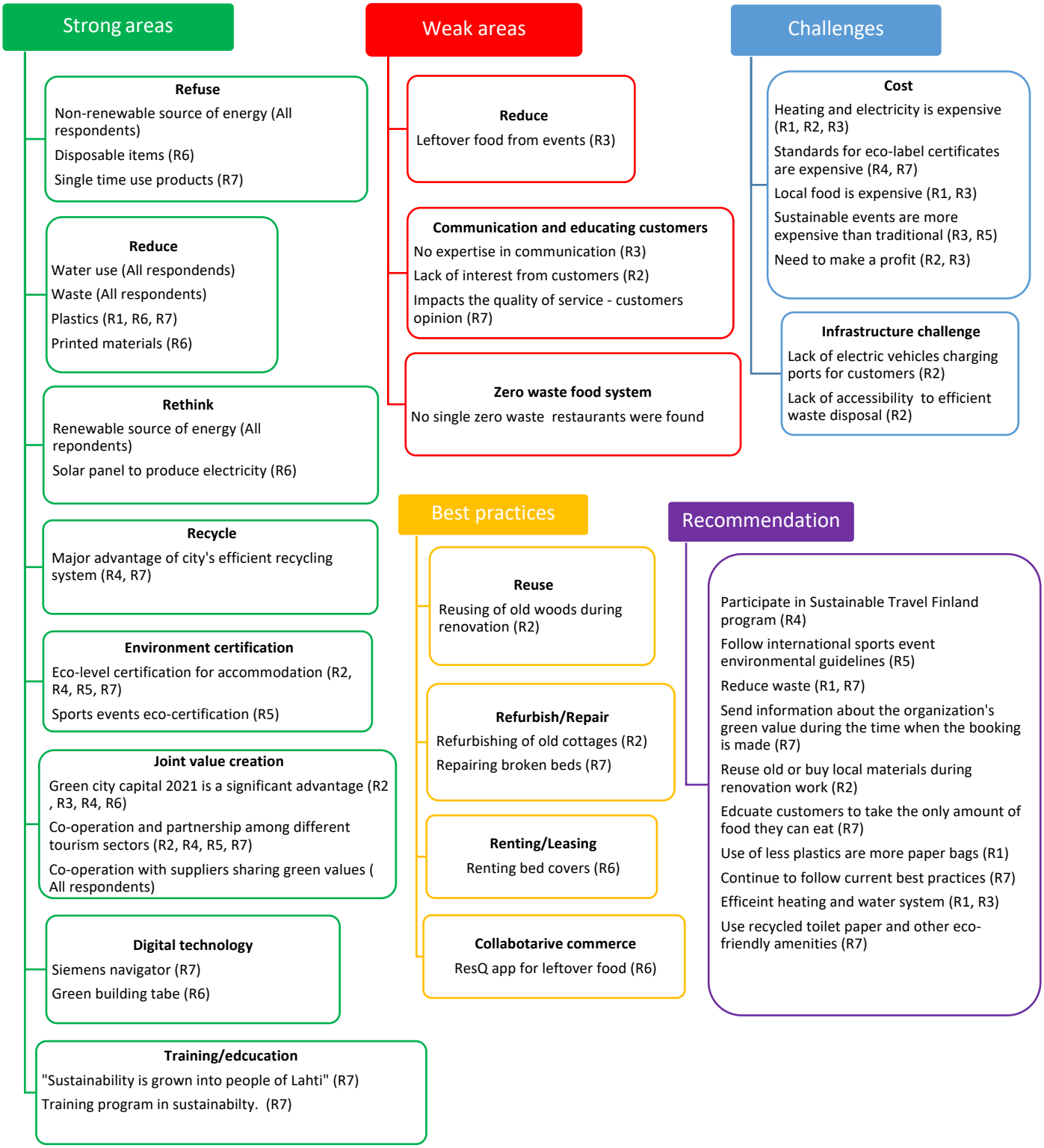

Fig 12. Interview summary

5 Conclusion

In conclusion, this chapter summarizes the key research findings of the research goals and research questions and their value and contribution. Additionally, it identifies future research directions.

The main aim of the thesis was to analyze and examine circularity in the tourism industry in Lahti. The research work has tried to fulfill its objective by studying the current state of circular tourism, finding out challenges and plans among different tourism organizations in embracing circularity. The theoretical section developed a CE framework for tourism, which served as a basis for interview questions.

The study found out that tourism organizations in Lahti apply circularity practices. Tourism service providers understand the concept of CE but do not communicate. Even though no single organization was strong value-driven to achieve complete circularity, the tourism companies had circular elements. Due to Lahti's green energy and efficient waste management, the tourism industry has a significant advantage in applying circular approaches. Educating customers and food waste from events were weak areas in circular tourism in Lahti.

Some of the major challenges identified in the study among tourism organizations are the high price of clean energy, the high cost of local food, and the high cost of achieving eco-label certificates requirements. Despite the ongoing pandemic, only one respondent said Covid 19 is a challenge, which shows that sustainability in tourism is a priority in Lahti.

The thesis contributes to the literature on CE in a few crucial ways. The paper adds to the literature on circular tourism when there is not enough literature in the field of CE in tourism. The CE elements and challenges identified in the literature and this study were correlated. There has been no research on circular tourism in Lahti before this research, so this research helps to start a new discussion within academia. Therefore, the paper fills a literature gap about the CE in the tourism industry.

This research work can derive several practical findings for the Lahti tourism sector. While the CE road map for Lathi city to achieve complete circularity by 2050 is on development, these research findings may assist policymakers in including the tourism industry in the initiative. The research work identified a few challenges for achieving circularity for tourism organizations. Those challenges may be addressed by making a communication plan to communicate circularity to customers and proposing to make the CE cost-efficient for

tourism organizations. The noted recommendations can be helpful for other tourism service providers who aim to apply circularity in their organization.

In this study, the amount of information on tourism organizations could not be collected as planned, perhaps because of a language barrier. For future researchers, it may be easier to collect more data if approached by somebody with a strong command of language skills or a native speaker. The tourism industry includes several sectors such as accommodation, food and beverages, transport, and events. The recommendation for future researchers would be to focus on just one area, which would help the researcher to gain a deeper understanding. Research on integrating CE in sports events could benefit Lahti tourism as it is a popular destination for international sporting events.

To conclude, the author would like to call an action to conduct more research on circularity in tourism. Similar studies can also be conducted at other tourism destinations. As a result of more research, there can be more discussion on the topic, which leads to the tourism industry paying more attention to the CE.

6 References

Accenture 2014. Circular Advantage. Innovative Business Model and Technologies to create values in a world without limits to growth. URL: https://www.accenture.com/t20150523t053139__w__/usen/_acnmedia/accenture/conversion-assets/dotcom/documents/global/pdf/strategy_6/accenture-circular-advantage-innovative-business-models-technologies-value-growth.pdf. Accessed: 17 October 2021.

Ateljevic, I. 2020. Transforming the tourism world for good and regenerating the potential to new normal. URL: https://www.tandfonline.com/doi/full/10.1080/14616688.2020.1759134. Accessed: 5 December 2021.

Autio, N. Sports tourism in Lahti and Lahti region. URL: https://www.theseus.fi/bitstream/handle/10024/89069/Autio_Niina.pdf?sequence=1&isAllowed=y. Accessed: 13 January 2021.

Brutland, G. 1989. Global change and our common future. URL: https://www.nap.edu/catalog/1411/global-change-and-our-common-future-papers-from-a-forum. Accessed: 2 December 2021.

Cabarera, J. 2020. The circular economy and its paradigm shift in the tourism industry: lesson from the mature touristic destination. URL: https://ic-sd.org/wp-content/uploads/2020/11/Julia-Cabrera.pdf. Accessed: 5 October 2021.

Cabrera, J & Lopez-del-Pino, F. 2021. The 10 most crucial circular economy challenge patterns in tourism and the effects of COVID-19. URL: https://www.mdpi.com/2071-1050/13/9/4940. Accessed: 9 December 2021.

Carbon Brief 2018. Tourism responsible for 8% of global greenhouse gases emissions. URL: https://www.carbonbrief.org/tourism-responsible-for-8-of-global-greenhouse-gas-emissions-study-finds. Accessed: 15 September 2021.

CEnTour 2020. Managing the transition to circular economy for tourism providers. URL: https://circulartourism.eu/wp-content/uploads/2021/02/CIRCULAR-ECONOMY-TRANSITION-FOR-TOURISM-PROVIDERS.pdf. Accessed: 10 December 2021.

CircE 2020. Slovenia action plan. URL: https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1581328309.pdf. Accessed: 7 December 2021.

Circulars 2021. Circular city action framework. URL: https://circulars.iclei.org/action-framework/#:~:text=What%20is%20a%20circular%20city,businesses%20and%20the%20research%20community. Accessed: 15 December 2021.

Circular Academy 2021. Circular economy: critics and challenges. URL: https://www.circular.academy/circular-economy-critics-and-challenges/. Accessed: 1 December 2021.

Circle Economy. 2018. Linear risk. URL: https://assets.website-files.com/5d26d80e8836af2d12ed1269/5de8eff3bbf4da023e254ea4_FINAL-linear-risk-20180613.pdf. Accessed: 20 October 2021.

Circle economy. 2021. The key elements of the circular economy. URL: https://assets.website-files.com/5d26d80e8836af2d12ed1269/601d3f846c512412fff633af_Key%20Elements%20-%20Draft%20Literature%20Review%20.pdf. Accessed: 15 December 2021.

Circular Economy Earth 2021. How the Circular economy can help realise the sustainable development goals. URL: https://circulareconomy.earth/publications/the-circular-economy-and-the-sdgs. Accessed: 2 December 2021.

Circular city funding guide 2021. URL: https://www.circularcityfundingguide.eu/circular-sector/tourism/. Accessed: 15 December 2021.

Circularity Gap 2021. Circular gap report. URL: https://www.circularity-gap.world/2021. Accessed: 25 October 2021.

Council On Foreign Relation 2021. Global climate agreements: Successes and failures. URL: https://www.cfr.org/backgrounder/paris-global-climate-change-agreements. Accessed: 20 October 2021.

Discovering Finland 2021. Tourism Lahti and Lahti guide. URL: https://www.discoveringfinland.com/southern-finland-archipelago/lahti/. Accessed: 21 Deember 2021.

Elkington, J. 1999. Cannibals with Forks: The triple bottom line of the 21st century business. Capstone Publication Limited. Oxford.

Ellen MacArthur Foundation 2013. Toward the circular economy. Economic and business rationale for an accelerated transition. Url: https://emf.thirdlight.com/link/x8ay372a3r11-k6775n/@/preview/1?o. Accessed: 16 October 2021.

Ellen Macarthur Foundation 2014. Towards the circular economy. Accelerating the scale-up across global supply chains. URL: https://emf.thirdlight.com/link/t4gb0fs4knot-n8nz6f/@/preview/1?o. Accessed: 15 December 2021.

Ellen Macarthur Foundation 2019. Completing the picture how the circular economy tackles climate change. URL: https://emf.thirdlight.com/link/w750u7vysuy1-5a5i6n/@/preview/1?o. Accessed: 15 October 2021.

Ellen Macarthur Foundation 2021. Financing the circular economy. URL: https://emf.thirdlight.com/link/17z1dk7idbty-lrrp3s/@/preview/1?o. Accessed: 2 December 2021.

Ellen Macarthur Foundation 2021. The nature imperative. How the circular economy tackles biodiversity loss. URL: https://emf.thirdlight.com/link/bqgxl2mlprld-v7i2m6/@/preview/1?o. Accessed: 1 Nov 2021.

Ellen Macarthur Foundation 2021. Food and the circular economy. URL: https://archive.ellenmacarthurfoundation.org/explore/food-cities-the-circular-economy. Accessed: 20 September 2021.

Ellen Macarthur Foundation 2021. What is circular economy? URL: https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview. Accessed: 18 September 2021

European Commission 2018. Communication from the commission to the European parliament, council, the European economic and social committee and the committee of the regions on monitoring framework of the circular economy. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0029&from=EN. Accessed: 5 December 2021.

European Commission 2020. A new circular economy action plan for a cleaner and more competitive Europe. URL: https://eur-lex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b735-01aa75ed71a1.0017.02/DOC_1&format=PDF. Accessed: 2 December 2021.

European Commission 2021. Welcome to Lahti, the European green capital 2021. URL: https://ec.europa.eu/environment/europeangreencapital/news/Lahti_European_Green_Capital_2021.html. Accessed: 15 January 2022.

European Parliament 2021. Living in the EU: Circular economy. URL: https://www.europarl.europa.eu/RegData/etudes/ATAG/2021/659391/EPRS_ATA(2021)659391_EN.pdf. Accessed: 18 October 2021.

European Union 2020. LAHTI European green capital - 2021. URL: https://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2021/Lahti_GCA%20_021_Brochure.pdf. Accessed: 15 January 2021.

Falcone, P. 2019. Tourism based circular economy in Saleonto (South Italy): A SWOT-ANP analysis. URL: https://www.researchgate.net/publication/334480997_Tourism-based_circular_economy_in_Salento_South_Italy_A_SWOT-ANP_analysis. Accessed: 17 October 2021.

FAO 2019. The state of food and Agriculture. URL: http://www.fao.org/3/ca6030en/ca6030en.pdf. Accessed: 17 September 2021.

Filimonau, V & Coteau D. 2019. Food waste management in hospitality management. URL: https://www.sciencedirect.com/science/article/pii/S0261517718302449. Accessed: 19 September 2021.

FIA 2020. Environmental accreditation program. Guidelines. URL: https://www.fia.com/sites/default/files/fia_environmental_accreditation_guidelines_v1.pdf. Accessed: 26 February 2022.

FIS 2013. International Ski Federation. Green events. URL: https://assets.fis-ski.com/image/upload/v1537433712/fis-prod/assets/FIS_Green_Event_Manual_EN.pdf. Accessed: 26 February 2022.

Florido, C & Jacob, M & Payeras, M. 2019. How to Carry out the Transition towards a More Circular Tourist Activity in the Hotel Sector. URL: https://pdfs.semanticscholar.org/761d/6f34f8bc505635f087c6fe7f7742b9fac019.pdf. Accessed: 20 September 2021.

Geissdoerfer, M & Pieroni, M & Pigosso, D & Soufani, K 2019. Circular business models: A review. URL: https://www-sciencedirect-com.ezproxy.haaga-helia.fi/science/article/pii/S0959652620337860?via%3Dihub. Accessed: 19 October 2021.

Geissdoerfer, M & Savaget, P & Bocken, N & Hultink,E. 2016. The circular economy - A new sustainability paradigm. URL: https://www.sciencedirect.com/science/article/abs/pii/S0959652616321023. Accessed: 2 December 2021.

Girard, L & Nocca, F. 2018. From linera to circular tourism. URL: Accessed: 14 September 2021.

Green Key 2022. Green key criteria 2022-2025. URL: https://greenkey.fi/kriteeristo/. Accessed 15 February 2022.

Green Lahti 2020. Lahden Kaupunki. URL: https://greenlahti.fi/wp-content/uploads/2020/12/Lahti_EGCA2021_Application.pdf. Accessed: 19 January 2022.

Green Lahti 2021. The goals and benefits of Lahti's green capital year. URL: https://greenlahti.fi/en/facts. Accessed: 15 January 2022.

Garay, L & Font, X & Corrons, A. 2019. Sustainability-oriented innovation in tourism: An analysis based on the decomposed theory of planned behaviour. Journal of travel research, 630, pp 622-636.

Gössling, S. 2015. New performance indicators for water management in tourism. Tourism Management. 46, pp. 181-195. URL: https://www.sciencedirect.com/science/article/abs/pii/S0261517714001204. Accessed: 10 October 2021.

Helsinki University 2021. Introduction to circular economy. URL: https://mooc.helsinki.fi/mod/book/view.php?id=34413&chapterid=5896. Accessed: 1 December 2021.

Hennink, H & Hutter, I & Bailey, A. 2011. Qualitative research methods. SAGE. London.

Het Groene Brein 2021. What are the disadvantage of the current linear economy. URL: https://kenniskaarten.hetgroenebrein.nl/en/knowledge-map-circular-economy/ce-disadvantages-linear-economy/. Access. 1 November 2021.

IDB 2020. Fighting food waste in tourism sector. URL: https://idbinvest.org/en/publications/fighting-food-waste-tourism-sector-challenges-and-opportunities-latin-america. Accessed: 17 September 2021.

IIHF 2021. Carbon-neutral Pelicans. URL: https://www.iihf.com/en/news/24815/carbon-neutral_pelicans. Accessed: 16 February 2022.

Jesus, A & Menconca, S. 2018. Lost in translation? Drivers and barriers in the eco-innovation road to the circular economy. URL:

https://www.sciencedirect.com/science/article/abs/pii/S0921800916316597. Accessed: 2 December 2021.

Keegan, S. 2009. Qualitatve research. Qualitative research. Good decision making through understaning people, cultures and markets. Kokogan page. Lonodon.

Korhonen, J & Honkasalo, A & Seppälä, J. 2018. Circular economy: The concept and its limitations. URL: https://www.sciencedirect.com/science/article/abs/pii/S0921800916300325. Accessed: 1 December 2021.

Kurtagic, S. 2018. Circular Economy in Tourism in South East Europe, Conference on Circular Economy in Tourism in South East Europe. URL: http://circulartourism.eu/wp-content/uploads/2021/02/1-Destination-A-circular-tourism-economy.pdf. Accessed: 1 October 2021.

Lahden Kaupunki 2021. Application Lahti 2021.URL: https://greenlahti.fi/wp-content/uploads/2020/12/Lahti_EGCA2021_Application.pdf. Accessed: 15 January 2022.

Lathi region Ltd. 2022. URL: https://visitlahti.fi/en/. Accessed: 20 February 2022.

Lenzen, M &1, Sun, Y & Faturay, F & Ting, Y & Geschke, A & Malik, A. 2018. The carbon footprint of global tourism. https://www.nature.com/articles/s41558-018-0141-x. URL: Accessed: 17 September 2021.

Lindell, L & Sattari, S & Dziadkiewicz A &, Dmitrzak, M & Kordestani, A. 2019. Journey to the circular destination. A circular tourism economy. URL: https://cirtoinno.eu/wp-content/uploads/2019/12/Journey-to-the-destination-a-Circular-Tourism-Economy.pdf. Accessed: 2 December 2021.

Manniche, J & Larsen , K & Broegaard, R & Holland , E. 2017. Destination: A circular tourism economy. URL: https://circulareconomy.europa.eu/platform/sites/default/files/cirtoinno-handbook_eng-rev.-4.pdf. Accessed: 15 September 2021.

Marinas.com. Lahti Vesijärvi harbour. URL: https://marinas.com/view/marina/wgczlq_Lahti_Vesijarvi_Harbour_Lahti_Finland. Accessed: 15 December 2021.

Nedyalkova, S. 2019. Applying circular economy principles for sustainable tourism development. URL:

http://www.smartdestinationsworldconference.org/_files/_event/_19238/_editorFiles/file/24093_Nedyalkova_15_06%20Circular_tourism_Savina.pdf. Accessed: 15 December 2021.

One Planet Network. 2019. How to map tourism value chains and identify key chains. URL: https://www.oneplanetnetwork.org/sites/default/files/from-crm/tourism_value_chain_mapping_methodology_v0.8_-_17_april_2019_.pdf. Accessed: 10 December 2021.

PACE. Platform For Accelerating Circular Economy 2021. The circularity gap report. URL: https://drive.google.com/file/d/1MP7EhRU-N8n1S3zpzqlshNWxqFR2hznd/edit. Accessed: 17 October 2021.

Pan, S & Gao,M & Kim, H & Shah, K & Pei, S & Chiang, P. 2018. Advances and challenges in the sustainable tourism toward a green economy. URL: https://www.sciencedirect.com/science/article/pii/S004896971831194X. Accessed: 5 October 2021.

Pelicans 2021. Pelicans is the world's first carbon neutral ice hockey team. URL: https://pelicans.fi/fi-fi/article/uutinen/pelicans-is-the-worlds-first-carbon-neutral-ice-hockey-team/5072/#:~:text=The%20project%20that%20started%20in,Ville%20Uusitalo%20from%20LUT%20University. Accessed: 16 February 2022.

Päijät-Häme 2021. Road maps toward the circular economy. URL: https://paijat-hame.fi/wp-content/uploads/2021/03/Roadmap_CE_eng.pdf. Accessed: 15 January 2022.

Rheede, A. 2012. Circular economy as an accelerator for sustainable experiences in the hospitality and tourism industry. URL: https://www.academia.edu/17064315/Circular_Economy_as_an_Accelerator_for_Sustainable_Experiences_in_the_Hospitality_and_Tourism_Industry. Accessed: 15 October 2012

Rmjm 2021. 6 Reasons hotel refurbishment is the latest sustainable design trend. URL: https://rmjm.com/hotel-refurbishment-and-sustainability. Accessed: 13 December 2021.

Rodriguez, C & Florido, C & Jacob, M. 2020. Circular Economy Contributions to the Tourism Sector: A Critical Literature Review. URL: https://www.mdpi.com/2071-1050/12/11/4338/htm. Accessed: 10 October 2021.

Sanchez, A. 2018. The unavoidable disruption of the circular economy in tourism. URL: https://www.emerald.com/insight/content/doi/10.1108/WHATT-08-2018-0056/full/html. Accessed: 15 October 2021.

Saunders, Mark, Philip Lewis, and Adrian Thornhill. 2019. Research Methods for Business Students. Pearson Education Limited. Harlow.

Sciacca, A. 2020. Exploring the transition towards a circular economy in small Island destination. URL: https://www.proquest.com/openview/2724cd8ddb3a625eef4cbb3719fc458a/1?pq-origsite=gscholar&cbl=4451210. Accessed: 15 October 2020.

Seyedmousavi, S. 2020. Exploring Consumer engagement in the circular tourism economy in practice of liminality. URL: https://lup.lub.lu.se/student-papers/search/publication/9012341.

Sheldon, P. 2021. The coming of age of tourism: embracing new economic models. URL: https://www.emerald.com/insight/content/doi/10.1108/JTF-03-2021-0057/full/pdf?title=the-coming-of-age-of-tourism-embracing-new-economic-models. Accessed: 20 September 2021.

Silverman, D. 2013. Doing qualitative research. SAGE. London.

SITRA 2019. New business modesl play a key role in enterprises strategies. URL: https://www.sitra.fi/en/articles/new-business-models-play-key-role-enterprises-strategies/. Accessed: 15 December 2021.

SITRA 2021. The circular economy in sport. URL: https://www.sitra.fi/en/projects/circular-economy-sport/. Accessed: 18 October 2021.

SITRA 2017. Circular economy at the heart of WCEF 2017 event planning.

Smart Lahti 2022. Facts and figures. URL: https://www.smartlahti.fi/facts-figures-circ/. Accessed: 18 Kanuary 2022.

Sorensen, F & Jorgeb, O. 2020. Tourist practices in the circular economy. URL: https://www.sciencedirect.com/sdfe/reader/pii/S0160738320301717/pdf. Accessed: 12 September 2021.

Sorin, F & Stefan, E. 2021. Circular economy in travel and tourism. URL: https://circulareconomy.europa.eu/platform/sites/default/files/circular-economy-in-travel-and-tourism.pdf. Accessed: 15 September 2021.

Suarez-Eiroa, B & Fernandez, E & Martínez, G & Soto-Onate, D. 2019. Operational principles of circular economy for sustainable development: Linking theory and practice.

URL: https://www.sciencedirect.com/science/article/abs/pii/S0959652618340009. Accessed: 2 December 2021.

Tang, C & Zhong, L & P, Ng. 2017. Factors that influence the tourism industry's carbon emissions: a tourism are life cycle model perspective. URL: https://www.sciencedirect.com/science/article/pii/S0301421517304822. Accessed: 18 September 2022.

Tilastokeskus 2021. Preliminary population statistics. URL: https://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__vrm__vamuu/statfin_vamuu_pxt_11lj.px/table/tableViewLayout1/. Accessed: 13 January 2022.

Temmarry Recycling 2021. The circular diagram explained. URL: https://resource.temarry.com/blog/the-circular-economy-diagram-explained. Accessed: 1 November 2021.

UNECE 2021. Draft assessment of applying principles of circular economy to sustainable tourism in the pan European region. URL: https://unece.org/sites/default/files/2021-09/2112197E_0.pdf. Accessed: 6 December 2021.

UNEO 2021. Food waste index report. URL: https://www.unep.org/resources/report/unep-food-waste-index-report-2021. Accessed: 15 September 2021.

UNEP 2021. Definition of food waste and food loss. URL: https://www.unep.org/thinkeatsave/about/definition-food-loss-and-waste. Accessed: 20 September 2021

UNEP 2019. Global Resources Outlook 2019. Natural Resources for the future we want. URL: https://www.resourcepanel.org/reports/global-resources-outlook. Accessed: 20 October 2020.

UNWTO 2020. International tourism highlights. URL: https://www.e-unwto.org/doi/epdf/10.18111/9789284422456. Acccessed: 10 September 2021.

UNWTO. 2017. Tourism and sustainable development goals - tourney to 2030. URL: https://www.e-unwto.org/doi/epdf/10.18111/9789284419340. Accessed: 2 December 2021.

United Nations 2018. Sustainable production and consumption. URL: https://sustainabledevelopment.un.org/content/documents/19990EGMSDG12advanceuneditedoutcomeFORWEB9July2018.pdf. Accessed: 2 December 2021.

UNWTO 2020. Tourism and COVID-19 - unprecedented economic impact. URL: https://www.unwto.org/tourism-and-covid-19-unprecedented-economic-impacts. Accessed: 2 December 2021.

United Nations 2021. Sustainable Development goals. URL: https://www.un.org/sustainabledevelopment/sustainable-consumption-production/. Accessed: 19 October 2021.

University of Eastern Finland 2019. Food waste in tourism is a bigger issue than previously thought. URL: https://www.uef.fi/en/article/food-waste-in-tourism-is-a-bigger-issue-than-previously-thought. Accessed 17 September 2021.

UNWTO and UNEP. 2008. Climate Change and Tourism: Responding to Global Challenges. URL: https://www.e-unwto.org/doi/epdf/10.18111/9789284412341. Accessed: 20 November 2021.

UNWTO 2021. Recommendations for the transition to a green trail and tourism economy. URL: Accessed: 1 October 2021.

UNWTO 2021. Circular economy in travel and tourism – A conceptual framework for a sustainable, resilient and future proof industry transition. URL: https://www.unwto.org/covid-19-oneplanet-responsible-recovery-initiatives/circular-economy-in-travel-and-tourism-a-conceptual-framework-for-a-sustainable-resilient-and-future-proof-industry-transition. Accessed. 15 December 2021.

Vargas-Sanchez, A. The unavoidable disruption of the circular economy in tourism. URL: https://www.emerald.com/insight/content/doi/10.1108/WHATT-08-2018-0056/full/html. Accessed: 15 November 2021.

Veal, A. J. 2018. Research methods for leisure and tourism. 5th ed. Pearson education limited. Harlow.

Virtanen, S. 2021. Lahti puts circular economy into practice. URL: https://www.ubc-sustainable.net/sites/www.ubc-environment.net/files/events/files/presentations/2._lahti_presentation.pdf. Accessed: 15 January 2022.

WEF 2021. Circular economy and material value chain. URL: https://www.weforum.org/projects/circular-economy. Accessed: 25 October 2021

WEF 2014. Towards the circular economy: Accelerating the scale up across global supply chain. URL: https://www3.weforum.org/docs/WEF_ENV_TowardsCircularEconomy_Report_2014.pdf. Accessed: 25 October 2021.

Yin, Robert K. 2018. Case Study Research and Applications - Design and Methods. 6th ed. SAGE. London.

Zorpas, A & Pedreno, J & Panagiotakis, I & Dermatas, D. 2021. Steps towards to adapt a circular economy strategy by the tourism industry. URL: https://journals.sagepub.com/doi/pdf/10.1177/0734242X211029087. Accessed: 5 October 2021.

7 Appendices

7.1 Appendix 1. Interview questions

The research is a part of my thesis project in the circular economy (CE) (Kiertotalous) in the tourism industry. According to Ellen Mac Arthur Foundation, “a circular economy is restorative and regenerative by design, based on the principles of designing out waste and pollution, keeping products and materials in use, regenerating natural system.”

1. What is your understanding of circularity in tourism industry?

2. How would you describe the current situation of circularity in Lahti’s tourism sector?

3. Which area of your business operation specifically is embracing circularity? what kind of resource loop is applied to your business model?

4. What kind of support do you have from all your stakeholders and from the policy level (Lahti City for example)?

5. How do you include all the stakeholders of tourism in the journey to circularity? How easy or difficult it is to convince all tourism stakeholders towards circularity?

6. How does your organization help to achieve Lahti’s 2050 vision of a waste-free and complete CE? What are your plans to become more circular?

7. What role does the tourism industry play in Lahti’s 2050 vision of complete circularity?

8. What sort of things are planned to embrace/ improve circularity among tourist service providers regarding circularity?

9. What are the challenges for your organizations to achieve circularity?

7.2 Appendix 2. Webpages of tourism service providers in Lahti

Restaurant	Webpages
Ace Cafe	https://acecafelahti.fi/home_eng/
Amarillo Lahti	https://www.raflaamo.fi/en/lahti/amarillo-lahti
Bistro Popot	https://bistropopot.fi/#section-140-9
Cafe Charlotta	https://cafecharlotta.fi/
Coppa Eatery	https://www.raflaamo.fi/en/lahti/coppa-eatery
Eat Well	https://ravintolaeatwell.fi/index.php?#About
EL Toro	https://www.raflaamo.fi/en/lahti/el-toro
Harald	https://www.ravintolaharald.fi/lahti/
Jonel Thai	http://www.jonelthai.com/#about
Kommodori	https://myllysaari.fi/varaukset/
Lastu	https://www.ravintolalastu.fi/
Lokki	https://ravintolalokki.fi/
Madre	https://madre.vistaprintdigital.com
Malskin Bistro	https://malskinbistro.fi/yhteystiedot/
Meamanna Kirjasto	https://www.facebook.com/meamannakirjasto/
Naughty Burger	https://naughtybrgr.com
Naukkaava Käki	https://www.naukkaavakaki.fi/
Nosturi	https://www.ravintolanosturi.fi/

Pincho nation	https://www.pinchonation.fi/sustainability
Ravintola patras	https://www.ravintolapatras.net/page6.html
Ravintola. Ararat	http://www.ravintolaararat.fi/etusivu
Rax	https://www.rax.fi/en
Roux	https://roux.fi/ajankohtaista/
Sagun	https://sagun.fi
Santa Fe	https://www.santafelahti.fi/
Siipiravintola	https://siipiravintola.fi/lahti/
Taivaaranta	https://taivaanranta.com/
Teerenpeli	https://www.teerenpeli.com/fi/Yritys/Vastuullisuus
Trattoria	https://www.raflaamo.fi/en/lahti/trattoria-seurahuone-lahti
Vet's kitchen restaurnt	https://vietskitchen.fi/

Musuems	**Webpage**
Malava	https://www.malvamuseo.fi/
Lahti ski museum	https://www.hiihtomuseo.fi/en/
Motorcycle museum	https://www.moottoripyoramuseo.fi

Accomodation	Webpage
Forenom	https://www.forenom.com/aparthotels/lahti/
Green star hotel	https://www.greenstar.fi/en/hotels/lahti/
Hotel Scandic	https://www.scandichotels.fi/
Iso Naappila	https://naappila.fi/en/home-2/
Kauppahoteli	https://kauppahotelli.fi/en/
Lahti city home	http://lahti-city-home.majoitus-suomi.fi/
Maikkulan Kartano	https://www.maikkulankartano.fi/
Opiston Kunkku	https://www.opistonkunkku.com/
Partia hostel	http://www.patriahostel.fi/
Salpakangas	https://hotelli-salpakangas.fi/
Sokos Hotel	https://www.sokoshotels.fi/en/lahti/sokos-hotel-lahden-seurahuone

Even organizer/ venues	Webpage
Koko Lahti	https://www.kokolahti.fi/

Sports center	Webpages
Lahden Urhelu keskus	https://www.lahti.fi/vapaa-aika/liikunta-ja-ulkoilu/liikunta-ja-urheilualueet/lahden-urheilukeskus/
Pajulathi	https://pajulahti.com/