



CIRCULAR  
ECONOMY  
IN TOURISM  
SOUTH EAST EUROPE

# Circular Economy in Tourism in South East Europe

## Paper

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# Introduction

# Introduction

Considering that the traditional “take-make-dispose” economic model endangers the achievement of the globally agreed Sustainable Development Goals (SDGs) and that moving towards the circular economy will be critical for addressing climate change and resource overuse, the United Nations Industrial Development Organization (UNIDO) and the Ministry of Economic Development and Technology of Slovenia in partnership with the European Commission are organizing the Conference on Circular Economy in Tourism in South East Europe, in Ljubljana on May 08th, 2018.

We are addressing circular economy and tourism as it represents a growing industry in South East Europe (SEE) and may have impact in the overall service sector. The paper presents circular business opportunities that might be applied in the tourism sector along the value chain and gives a review of some good practices. Topics covered include supply chain management in tourism, circular practices in tourism as a contributor to sustainable cities, sustainable waste management, challenges and opportunities for circular economy in tourism and technology trends of the future of travel.

# Chapter 1

# Chapter 1: The concept of circular economy

The circular economy is gaining increasing attention worldwide as a means to reduce dependency on primary materials and energy, while at the same time becoming an economically viable alternative to the linear economy. Currently, many of the resources are lost to the economy through being landfilled. According to Eurostat, nearly half (47.4 %) of the waste treated in the EU-28 in 2014 was disposed in landfills. A further 36.2 % of the waste treated in the EU-28 in 2014 was sent to recovery operations other than energy recovery and backfilling. Just over one tenth (10.2 %) of the waste treated in the EU-28 was backfilled, while the remainder was sent for incineration, either with energy recovery (4.7%) or without (1.5 %). For Europe, a loss of resources is a major concern as its economy is structurally dependent on imports. According to the European Environment Agency (EEA), the average annual use of material resources is nearly 15 tons per person. Europe's economy is heavily dependent on imported raw materials: in 2011 approximately 3.2 tons per person of raw materials were imported. Fuels accounted for most of this amount.<sup>1</sup> Over the last four decades, the global use of materials almost tripled, from 26.7 billion tones in 1970, to 84.4 billion tons in 2015. Forecasts show that expected material use is likely to increase to between 170 and 184 billion tons in 2050<sup>2,3</sup> (Figure 1).

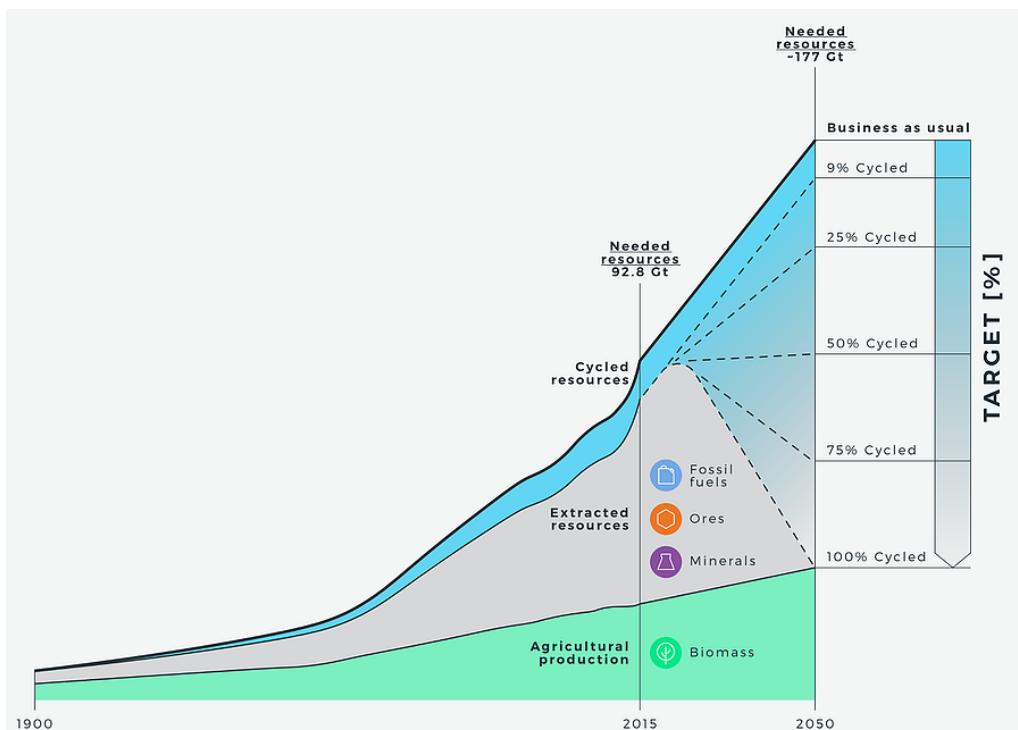


Figure 1 A forecasted trend of steep increased extraction<sup>4</sup>

<sup>1</sup><https://www.eea.europa.eu/highlights/europe2019s-demand-for-resources-reaching>

<sup>2</sup>IRP (2017). Assessing global resource use: A systems approach to resource efficiency and pollution reduction. Bringezu, S., et al., a Report of the International Resource Panel. United Nations Environment Programme. Nairobi, Kenya.

<sup>3</sup>Circle Economy (2018). The Circular Gap report: An analysis of the circular state of the global economy

<sup>4</sup>Ibid

Figure 2 A linear economy concept<sup>5</sup>

This is a side effect of the linear economy concept in which waste, as a side result of the production process, is discarded into the environment. The concept is based on the principle: "take, make, consume, discard" and it assumes boundlessness and easy availability of material resources (Figure 2). As a response to this challenge, the European Commission adopted a Circular Economy Package in December 2015, i.e. a set of laws and actions designed to guarantee a more resource-efficient future for Europe. The package introduces a number of actions such as:

- Actions to reduce food waste in an effort to meet the global Sustainable Development Goal to halve food waste by 2030;
- Development of quality standards for secondary raw materials to increase the confidence of operators in the single market;
- Measures to promote reparability, durability and recyclability of products, in addition to energy efficiency;
- A strategy on plastics in the circular economy, addressing issues of recyclability, biodegradability, the presence of hazardous substances in plastics, and the Sustainable Development Goals target for significantly reducing marine litter;
- A series of actions on water reuse including a legislative proposal on minimum requirements for the reuse of wastewater;
- A new regulation on fertilizing products, to encourage nutrient recycling while ensuring the protection of human health and the environment.

Figure 3 The circular economy concept<sup>6</sup>

<sup>5</sup> <http://www.ncps-care.eu/?p=1638>

<sup>6</sup> <http://www.europarl.europa.eu/news/en/headlines/economy/20150701STO72956/circular-economy-the-importance-of-re-using-products-and-materials>

The package includes revised proposals for the Directives on Waste, Packaging Waste, Landfill and Electronic Waste, which suggest that the EU should aim for targets of 65% of municipal waste and 75% of packaging waste to be recycled, and that a binding target be introduced to reduce landfilling to a maximum of 10% of all waste by 2030. The technological elements or “backbone” of circular economy can be clearly defined by seven principles (Table 1). Utilization of these elements in the application of circular economy can lead to the ultimate end goal of sustainable value creation in the economy, society, and the environment.

Table 1 Principles of circular economy<sup>7</sup>

Prioritize regenerative resources	Ensure renewable, reusable, non-toxic resources are utilized as materials and energy in an efficient way.
Preserve and extend what is already available	While resources are in-use, maintain, repair and upgrade them to maximize their lifetime and give them a second life through take back strategies when applicable.
Use waste as resource	Utilize waste streams as a source of secondary resources and recover waste for reuse and recycling.
Design for the future	Consider opportunities to create greater value and align incentives through business models that build on the interaction between products and services.
Collaborate to create joint value	Account for the systems perspective during the design process, to use the right materials, to design for appropriate lifetime and to design for extended future use.
Rethink the business model	Track and optimize resource use and strengthen connections between supply chain actors through digital, online platforms and technologies that provide insights.
Incorporate the digital technology	Work together throughout the supply chain, internally within organizations and with the public sector to increase transparency and create joint value.

According to the EU communication ‘Towards Circular Economy’, successful implementation of the Circular Economy Package can create more than 180,000 direct jobs in the EU by 2030, in addition to the estimated 400,000 jobs that will be created by the implementation of the waste legislation in force. It will lead to satisfying between 10% and 40% of the raw material demand in the EU, while contributing to achieving the 2030 EU target to reduce greenhouse gas emissions by 40%.<sup>8</sup> Using innovative technologies and resource efficiency improvements along all value chains could reduce material inputs in the EU by up to 24% by 2030. Switching to a circular economy in the food, mobility and built environment sectors is estimated to generate a prospective reduction in greenhouse gas emissions of 48% by 2030 and 83% by 2050, compared with 2012 levels.

<sup>8</sup> COM/2014/0398 final/2 : Towards a circular economy: A zero waste program for Europe  
<sup>7</sup> <https://www.circle-economy.com/the-7-key-elements-of-the-circular-economy>

The annual net benefits for EU-27 businesses from implementing resource-efficiency/circular economy measures such as waste prevention, the recovery of materials, changing procurement practices and the re-design of products are estimated to range from EUR 245 billion to EUR 604 billion, representing an average of 3–8% of annual turnover.<sup>9</sup> The ‘Closing the loop - an EU Action Plan for the Circular Economy’<sup>10</sup> builds a bridge between the Circular Economy package and the UN Sustainable Development Goals (SDGs). The targets of SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land)<sup>11</sup> are most relevant for the concept of circular economy.

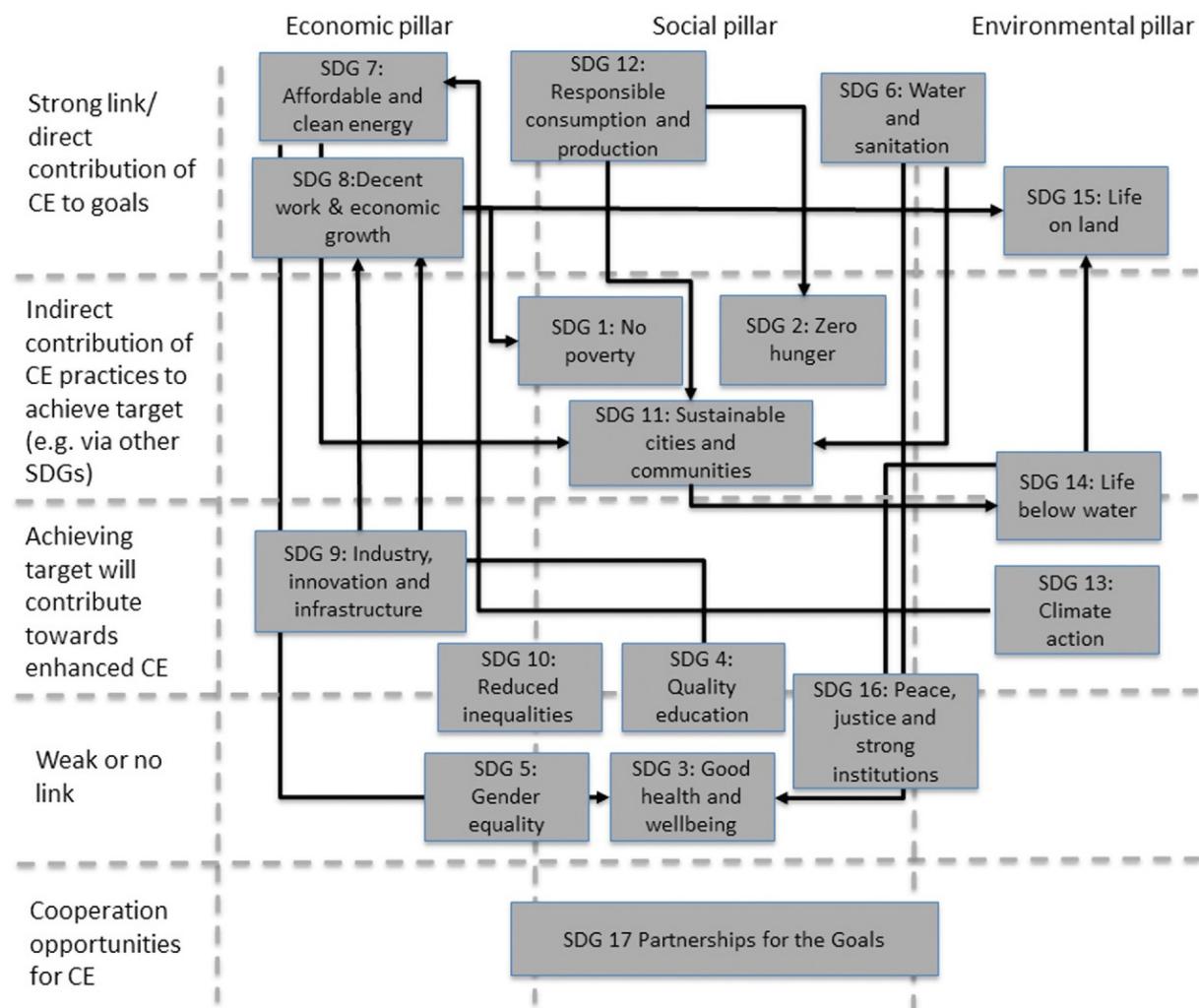


Figure 4 Relationships between Sustainable Development Goals (SDGs) in the context of circular economy (CE) practices.<sup>12</sup>

The ‘EU Action Plan for the Circular Economy’ includes broad areas such as production and consumption and creating markets for secondary raw materials. It focuses on the promotion of the design of resource-efficient goods and services, reparability, durability and possibilities for upgrading and recycling of products.

<sup>9</sup> Circular Economy in Europe, EEA 2016

<sup>10</sup> COM(2015) 614 final, Closing the loop - An EU action plan for the Circular Economy

<sup>11</sup> P. Schroeder K. Anggraeni U. Weber (2018): The Relevance of Circular Economy Practices to the Sustainable Development Goals, Journal of Industrial Ecology, <https://doi.org/10.1111/jiec.12732>

<sup>12</sup> Schroeder P. (2018) The Relevance of Circular Economy Practices to the Sustainable Development Goals, Journal of Industrial Ecology, DOI: 10.1111/jiec.12732

Multi-dimensional supply chains with new flows and formats, service networks, recovery loops for products and materials are needed. Their value needs to be protected, to design them to make them ready for resale, repair, remanufacturing or recycling. The circular economy calls for procurement processes focused on outcomes, rather than on products. In a circular economy, products are designed for durability, reuse and recyclability, and materials for new products come from old products. As much as possible, everything is reused, remanufactured, recycled back into a raw material, used as a source of energy, or as a last resort, disposed of.

According to the first Circularity Gap Report<sup>13</sup>, our world economy is only 9.1% circular, leaving a massive circularity gap. Among 7 social needs, the construction and maintenance sectors have the largest resource footprint, with 42.4 billion tons, especially in the developing world. There is a growing need for material, water and energy because of both population growth and increased demand by infrastructure, industry and consumers in developing countries. Circular economy activities have the potential to address a significant share of this need—dampening or, possibly, reversing the raise in resource use by developing countries, and in turn reducing resource depletion, climate change and the pollution of natural areas.<sup>14</sup>

<sup>13</sup> De Wit, M, et al (2018), Circularity Gap Report, Circle Economy

<sup>14</sup> [https://www.unido.org/sites/default/files/2017-07/Circular\\_Economy\\_UNIDO\\_0.pdf](https://www.unido.org/sites/default/files/2017-07/Circular_Economy_UNIDO_0.pdf)

# Chapter 2

# Chapter 2: The circular economy and tourism

## **Why the tourism sector?**

According to the United Nations World Tourism Organization (UNWTO), over the past six decades, tourism has experienced continued expansion to become one of the largest and fastest-growing economic sectors in the world. Many new destinations have emerged in addition to the traditional favorites of Europe and North America. International tourist arrivals have increased from 25 million globally in 1950 to 278 million in 1980, 674 million in 2000, and 1,235 million in 2016. Likewise, international tourism receipts earned by destinations worldwide have surged from EUR 1.6 billion in 1950 to EUR 993 billion in 2016. International tourist arrivals worldwide are expected to increase by 3.3% a year between 2010 and 2030 to reach 1.8 billion by 2030, according to UNWTO's long-term forecast report *Tourism Towards 2030*. The market share of emerging economies increased from 30% in 1980 to 45% in 2016, and is expected to reach 57% by 2030, equivalent to over 1 billion international tourist arrivals. Europe welcomed 616 million international tourists in 2016, equivalent to half the world total, an increase of 13 million from 2015. International tourism receipts in Europe grew 1% in real terms to EUR 404 billion, which represents 37% of receipts worldwide.

In Central and Eastern Europe arrivals increased by 4% in 2016. Many destinations enjoyed strong results, including Georgia (+19%), Slovakia (+17%), Bulgaria (+16%), Romania and Lithuania (both +11%). Hungary and Ukraine both recorded a 7% growth in arrivals, while Poland and the Czech Republic both reported an increase of 4%. Growth in Southern and Mediterranean Europe (+1%) was modest, despite sound results in most countries, driven by Portugal (+13%), top destination Spain (+10%) and Croatia (+9%). Serbia (+13%), Slovenia (+12%) and Albania (+8%) also enjoyed robust growth, as did island destinations Cyprus (+20%) and Malta (+10%). Greece reported a 5% increase in arrivals and Italy 3%.

Eurostat reports that 2.3 million enterprises operate in the tourism industry with the number of employees estimated to 12.3 million persons. The tourism industries in Europe account for 3.7% of the total turnover and 5.6% of the value added of the non-financial business economy (Eurostat, 2017).

Tourism has the potential to contribute towards employment and economic growth, which has been recognized by the SDGs:

- Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all. This goal includes a target (8.9) on tourism: “By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products”;
- Goal 12: Ensure sustainable consumption and production patterns. This goal includes a target (12b) on tourism: “Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products”;

- **Goal 14: Conserve and sustainably use the oceans, seas and marine resources.** This goal also includes a target (14.7) on tourism: “By 2030, increase the economic benefits to Small Island Developing States and Least Developed Countries (LDCs) from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism”.

The quality of the environment is essential to tourism. However, tourism involves many activities in the consumption/use phase (Figure 5) that can have adverse environmental effects. Tourism activities result, among others, in increased waste and waste water generation, as well as noise and air pollution. The UN Environment estimates that 4.8 million tones, i.e. 14 % of all solid waste globally is produced each year solely by tourists.

Hotels, restaurants and other facilities use large numbers of products, very often delivered and packed in single use plastic packaging. By 2050, the oceans will contain more plastic than fish by weight. According to research carried out by Eunomia Research & Consulting, over 80 per cent of the 12.2 million tons of plastic entering the marine environment every year comes from land-based sources, while 5% origins from beaches. Microplastics, which measure less than five millimeters in length, are found in plankton, fish, shellfish, seabirds, and other marine life. Consummation of microplastic can cause them to die of starvation. Chemicals leached by plastics are in the blood and tissue of nearly all of us. Exposure to them is linked to cancers, birth defects, impaired immunity, endocrine disruption and other ailments<sup>16</sup>.

Tourism can create pressure on local resources like energy, food, and other raw materials. During peak season, high demand is placed upon these resources in order to meet visitors' expectations (thermal comfort, hot water, etc.). Direct water use in tourism varies from 80 to 2000 liter per tourist per day, with a tendency for larger, resort-style hotels to use significantly more water than smaller, less luxurious establishments. The main water-consuming factors are irrigated gardens, swimming pools, spa and wellness facilities, as well as golf courses. A typical golf course requires 1.500 m<sup>3</sup> to 15.000 m<sup>3</sup> of water per week in summer to maintain healthy vegetation.<sup>17</sup> Indirect water use is responsible for a greater contribution to the overall amount of water used. Food and fuel production have been shown to have comparably large water footprints. Transport to the destination alone can more than double direct water use.<sup>18</sup>

Energy consumption of global tourism is estimated to 14.8 PJ<sup>19</sup>, of which 94% refers to the transportation sector, 3.5% to the accommodation sector and the rest to the activities sector. According to UN Environment and UNWTO, tourism is responsible of about 5% of global CO<sub>2</sub> emissions. The transport sector, including air, car and rail, generates the largest proportion, with 75% of all emissions. Air travel is considered the main tourism contributor to global warming: it's responsible for 40% of the total carbon emissions caused by this sector.<sup>20</sup> The accommodation sector accounts for approximately 20% of emissions from tourism; activities such as museums, theme parks, events or shopping also contribute to approximately 3.5% of emissions.<sup>21</sup>

<sup>16</sup>The Facts, [www.plasticpollutioncoalition.org](http://www.plasticpollutioncoalition.org)

<sup>17</sup>[http://www.allianceforwaterefficiency.org/golf\\_course.aspx](http://www.allianceforwaterefficiency.org/golf_course.aspx)

<sup>18</sup>Gössling S, et all (2012) Tourism and Water Use: Supply, Demand and Security – An International Review, *Tourism Management* 33(1):1-15, DOI10.1016/j.tourman.2011.03.015

<sup>19</sup>Petajoule. The petajoule (PJ) is equal to one quadrillion (1015) joules.

<sup>20</sup>Gössling, S. (2002). Global Environmental Consequences of Tourism, *Global Environmental Change*, 12, 283-302. [https://doi.org/10.1016/S0959-3780\(02\)00044-4](https://doi.org/10.1016/S0959-3780(02)00044-4)

<sup>21</sup>UNEP, UNWTO (2007) "Climate Change and Tourism: Responding to Global Challenges"

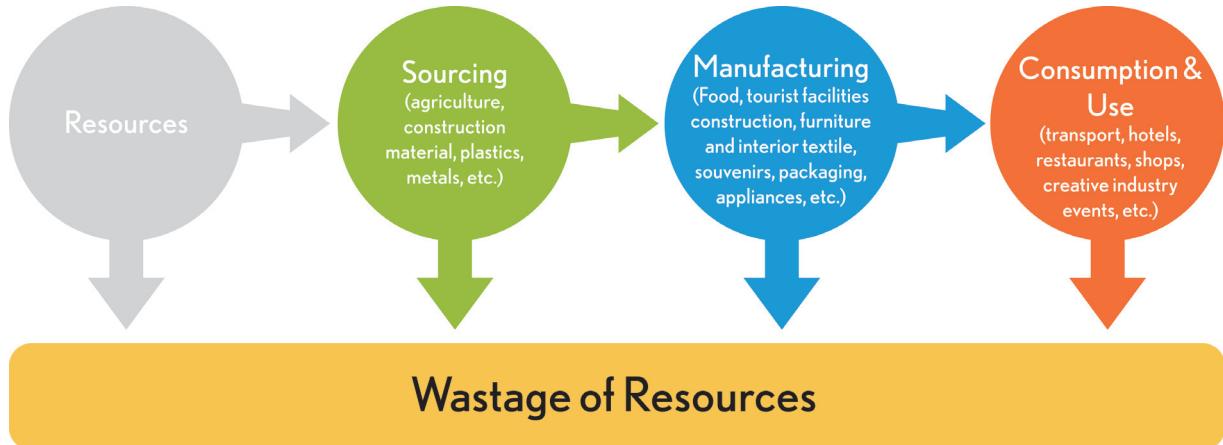


Figure 5 A value chain in the traditional linear tourism industry

However, the environmental impact of the tourism sector is much higher (Figure 5), from a life-cycle and overall value chain perspective, i.e. from resource extraction to consumption and use, as well as to the end-of-life of wasted resources and products. For example, when food is wasted, all of the resources that went into its production are lost – including precious natural resources such as water and fuel. Losses can occur in the agricultural field due to pests or pathogens or poor efficiency, during transport or storage due to loss of quality, during manufacturing at industrial scale due to resource inefficiency, during processing in restaurants and other food service facilities, and finally unused by end consumers. Many of these impacts are linked with the construction and reconstruction of general infrastructure such as roads and airports, and of tourism facilities. The amount of waste generated by the construction and demolition sectors is substantial. Surveys conducted in several countries found that it is as high as 20% to 30% of the total waste entering landfills throughout the world.

It is evident that the traditional tourism sector reflects the linear take-make-dispose model as it relies on large quantities of resources and, at the same time, producing significant emissions. Acknowledging that the resources are limited and that the linear economic model will further contribute to reduction of the availability of resources, the tourism industry needs to support the transitioning towards a more circular tourism economy.

### ***Circular economy in tourism***

Circular economy can be integrated into the tourism value chain at all stages of the value chain, through resource extraction, processing, manufacturing at industrial and service scale, storage and distribution and use. The concept is calling not only for more resource-efficient manufacturing but also for resource-efficiency after use in terms of extension of the product life-span through reuse and repair. Products of every industry linked to the tourism sector, such as the food industry, construction industry, textile industry or furniture industry have to be designed to allow repair, reuse and recycling. Designers, contractors and suppliers will need to consider longer term relationships (Figure 6).

Figure 6 The circular economy diagram<sup>22</sup>

There is significant potential for the circular economy to change the existing value chain around the design, construction, operation, renewal and repurposing of tourist facilities. For the circular economy in the construction of tourism facilities the following different types of circular business models are relevant:

- Circular design
- Circular recovery
- Circular use

<sup>22</sup> [https://blog.anthesisgroup.com/procurement\\_in\\_circular\\_economy](https://blog.anthesisgroup.com/procurement_in_circular_economy)

Table 2 Circular business model for construction of touristic facilities<sup>23</sup>

Circular business model	Phase	Opportunity
<b>Circular design</b>	Development and planning phase of a built asset	Products, systems and the entire built structures are designed to last longer with a higher residual value. They shall be easier to maintain, repair, upgrade, refurbish, remanufacture or recycle with respect to traditional ones.
<b>Circular use</b>	Operational phase of an asset	These models aim at keeping control over an asset and retaining its value. Product-to-service models allow a change from manufacturing a product to a number of new opportunities, such as providing leasing and sharing services. Additionally, they include extending the service life of products and components, providing services to facilitate the tracing, marketing and trade of secondary raw materials.
<b>Circular recovery</b>	End of the products service life	Revenue is generated by transforming existing products into new ones adding value, reducing costs, or reducing waste.

The tourism hotel and restaurant industry could make a real contribution to circular economy through the procurement of materials that can be easily returned into the recovery process, procurement focused on leasing services rather than on procurement of a product, through more circular waste management.<sup>24</sup> However, if the supplier of equipment is not associated with a recycling company for equipment that is no longer in use, it cannot be treated as a circular economy concept. The same need to guarantee the circularity may apply to the sharing economy in tourism. The sharing economy refers to the sharing of goods and services by multiple people. The sharing economy basically changes the ownership's characteristics of goods, while the circular economy refers to the life cycle of goods, aiming to make it more efficient.<sup>25</sup>

The potential for engineering, development and production services lie in cooling and heat utilization technologies that utilize waste energy. A circular economy in hotel energy management can be seen in any heat recovery option. Hotels that use energy for heating and that have a power generator as the main electricity source, have the potential to benefit from the application of heat recovery systems. This waste heat can turn into useful space heating or hot water using a recovery technology such as heat pump exchanger or recuperator. Hotels can benefit of the greywater heat recovery, including greywater from shower, kitchens, spa area, laundry, as it can save energy and increase the capacity of undersized water heaters. There are various commercial solutions available for greywater heat recovery that ranges from non-storage systems (shower only recovery) to centralize heat recovery, which connects more equipment and augment the possibilities for use of the recovered energy.<sup>26</sup>

There are 10 key decentralized energy systems based on renewable energy solutions that have been identified for application in Small and Medium Enterprises (SME) hotels (Table 3). The systems can be invested and operated by hotels or by a service provider like an Energy Service Company (ESCO).

<sup>23</sup> Carra G, Magdani, N.: Circular Business Models for the Built Environment

<sup>24</sup> Wolde A, Circular tourism, International Conference on Green and Accessible Tourism, Croatia, Split 2016

<sup>25</sup> Luigi Fusco Girard, Francesca Nocca, University of Firenze "From linear to circular tourism"

<sup>26</sup> User Guide for Hotels, IFC

An ESCO can reduce the hotel energy costs, by taking care of the investments involved of installing a renewable energy system and sharing the resulting future cost savings with a hotel. The renewable energy systems can be applied to any energy demanding facility associated to tourism such are: airports, shopping malls, sport centers, concert halls, etc.

Key renewable energy solutions for SME hotels	Main characteristics
<b>Biomass</b>	Installations are available from around 15kW upwards, there is no significant technological upper limit to installation size. Pellet boilers are available with either a built in hopper, filled manually from bags, or with a separate, bulk storage hopper. The latter allows pellets to be delivered by tanker, down a long pipe, typically just once a year, with the minimum of disruption.
<b>Combined Heating and Power (CHP)</b>	CHP systems are typically run as heating appliances, providing space heating and warm water in hotel buildings like conventional boilers. The use of CHP would allow a hotel to produce electricity onsite at a lower cost and benefit from the heat produced as a byproduct of the generation process. Space heating, water heating, laundry, restaurant, and pool heating loads can be met by an appropriately sized CHP system. CHP technologies utilize both electricity and heat generated from a single source. A CHP system makes better use of the fuel put on them, saving up to 40 percent of the energy in total. A CHP system can provide all the hot water and space heating required by a hotel and reduces dependence on electricity from the grid supply thereby proving more efficiency than conventional boiler systems.
<b>Geothermal Energy- Ground Source Heat Pumps</b>	Ground Source Heat Pumps are one of the most efficient systems available today, with heating efficiencies up to 70% higher than other heating systems and cooling efficiencies up to 40% higher than available air conditioners. The key elements of a ground source heat pump are the ground loop – this comprises lengths of pipe buried in the ground, either in a borehole or a horizontal trench and the heat pump – a heat pump works by using the evaporation and condensing of a refrigerant to move heat from one place to another. Heat pumps are a very familiar and widely used technology in freezers and air conditioning units.
<b>Solar photovoltaic electricity systems</b>	Photovoltaic materials have the ability to generate a current of electricity when exposed to light. Photons, which make up light, knock electrons of the photovoltaic material, creating an electrical current. Hotels can install PV panels to reduce or eliminate their monthly electricity bills and provide pollution-free electricity to their guests. The electricity produced can then be used to power a hotel, or be fed back into the grid.

Key renewable energy solutions for SME hotels	Main characteristics
<b>Solar thermal energy - Solar COMBI systems</b>	<p>Solar combi systems are solar heating installations providing space heating as well as domestic hot water in hotels. The primary energy sources are solar energy as well as an auxiliary source preferably such as biomass, either direct or with a heat pump. One of the biggest advantages of using solar energy as energy source for cooling is that the maximum energy is obtained when the cooling load is at its peak. An increasing demand for small capacity air-conditioning appliances is being observed throughout Europe. The surplus heat produced in the warm season can be used for heating the hotel swimming pool.</p>
<b>Solar thermal energy - Solar COMBI+ systems</b>	<p>Solar combi plus systems use heat from solar thermal collectors to provide heating in winter, cooling in summer and domestic hot water (DHW) all year round. The cold is produced by a thermally driven cooling machine, a sorption chiller, which is fed with heat (hot water 70-100°C). The main benefit of using the solar thermal energy to feed the chiller is that, in general, the demand for cooling is the highest when the levels of solar radiation are high. Solar thermal cooling systems have then a high potential to replace conventional cooling machines based on electricity. The surplus heat produced can be used by the swimming pool. Using the heat rejection at intermediate temperature (30-40°C), as any heat sink or cooling tower. This heat is generated when transforming the heat into cold in the cooling machine; it is then a waste, which can be valorized by heating the swimming pool.</p>
<b>Solar thermal energy - Domestic Hot Water Systems (DHWS)</b>	<p>Solar water heating systems use free heat from the sun to warm domestic hot water. An auxiliary heat, additional boiler or immersion heater, is then used to make the water hotter, or to provide hot water when solar radiation is not sufficient. The solar fraction is the percentage of a building's seasonal energy requirements that can be met by a solar energy device or system. This fraction will be optimized through the sizing of the system so as to reach 50% to 100% or even more to be used in other features like swimming pools. The Solar domestic hot water technology can also be combined with swimming-pool heating. The surplus heat produced in the warm season is sometimes used for heating the swimming pool.</p>
<b>Wind energy</b>	<p>Small wind energy systems are based on a rotor, a generator or alternator mounted on a frame, a tail (usually), a tower, wiring, and the electrical components: controllers, inverters, and/or batteries. There are two different ways of installing small-sized wind turbines: i) mast mounted: these are free standing and are erected in a suitably exposed position, often around 2.5kW to 10kW in size and ii) roof mounted: these are smaller than mast mounted systems and can be installed on the roof of a hotel where there is a suitable wind resource. Often these are around 1kW to 5kW in size.</p>

Key renewable energy solutions for SME hotels	Main characteristics
<b>Micro Hydro Power</b>	Micro hydropower is a term used for hydroelectric power installations that typically produce up to 100 kW of electricity. A micro hydropower system can produce enough electricity for a small hotel.
<b>Water Cooling</b>	Deep cold water from a lake or ocean is pumped through a heat exchange which facilitates the energy transfer between the deep lake/ocean water and the internal hotel building closed loop, providing chilled water for a hotel cooling system. The process is very similar to using chillers in conventional air conditioning systems. The main difference is that the cold temperature is not achieved by evaporation of a liquid into a gas.

Table 3 Renewable energy solutions for SME hotels<sup>27</sup>

Tourist facilities can also secure clean energy supply through a community renewable energy system. In community energy initiatives, citizens, social entrepreneurs and/or community organizations participate directly in the energy transition by investing in, producing, selling and distributing renewable energy or delivering energy services. Organizational structures of community energy initiatives may be in the form of partnerships, co-operatives, community trusts and foundations, limited liability companies, non-profit customer-owned enterprises and housing associations.<sup>28</sup>

In the context of hotels and other associated tourist facilities, condensate water recovery aims to reuse the water arising from the dehumidification of the air in heating, ventilation and cooling (HVAC) or refrigeration systems. It is essentially distilled water with low mineral content, but it might contain bacteria, such as Legionella. This water can potentially be used everywhere in the building if proper treatment to address biological contaminants is considered. Potential use of condensate water includes:

- Irrigation: Generally safe to use without treatment, if use as surface irrigation;
- Cooling towers: Safe to use without treatment;
- Water for decorative ponds or fountains – treatment is needed;
- Toilet and urinal flushing – treatment is needed;
- Rainwater recycle system: condensate can be a source to feed the system;
- Laundry and washing: biocide treatment required; and
- Swimming pool: biocide treatment required.<sup>29</sup>

Tourist facilities can benefit from rainwater collection from roofs and parking places that can be recycled into water supply system for sanitary purposes or gardening. In case of use rainwater for sanitary purposes a two-pipe system is required. Food wastes from tourism industry, which is not for human use, can be composted, refined into fuel, processed to produce biogas, etc (Figure 7). The tourism service companies can apply on-site treatment of such waste or associate with companies providing food waste recycling services. In order to collect the quantities for sustainable treatment, food waste from the service sector is often treated together with bio-waste from cities or industry.

<sup>27</sup> Hotel Energy Solutions (2011), Key Renewable Energy (RE) Solutions for SME Hotels, Hotel Energy Solutions project publications, First edition: 2010 Revised version, July 2011

<sup>28</sup> Renewables 2016 Global Status Report, <http://www.ren21.net/gsr-2016/chapter07.php>

<sup>29</sup> Ibid

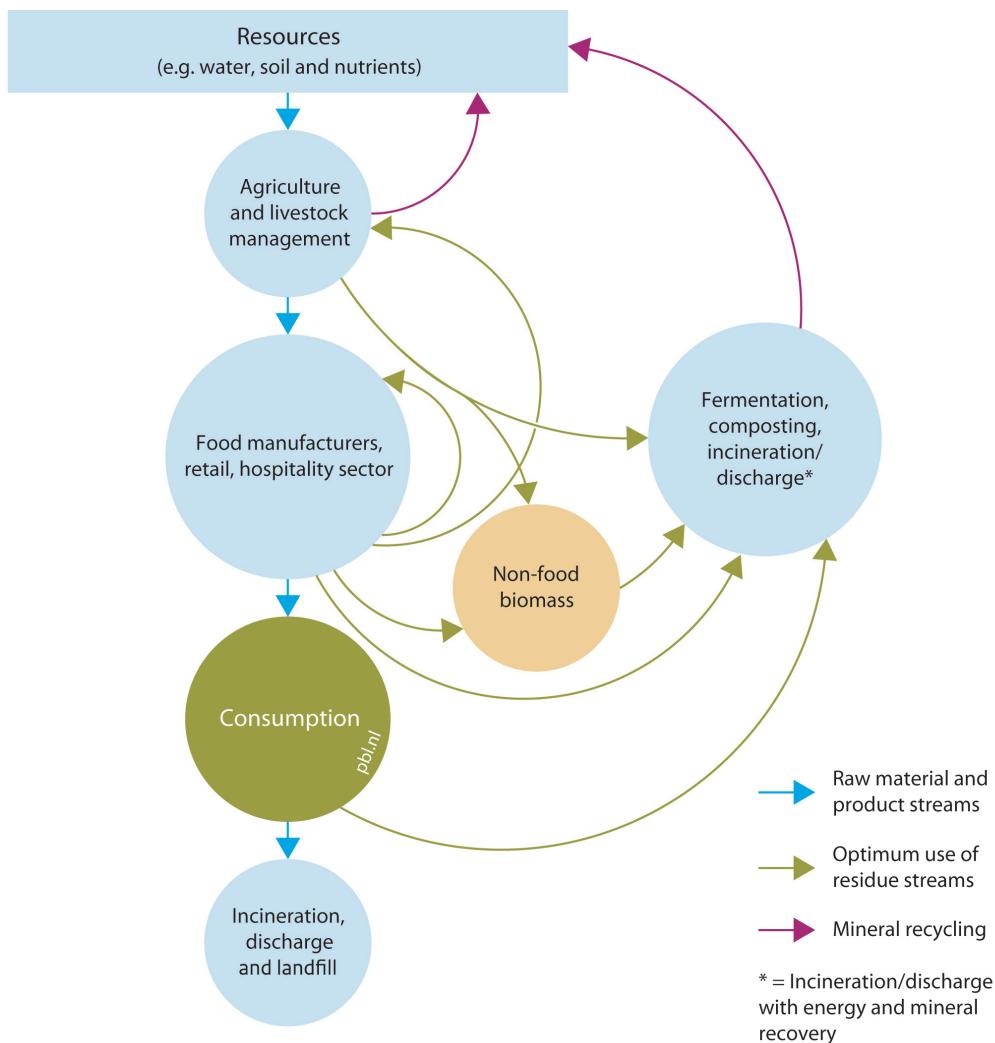


Figure 7 The circular economy of the food production system<sup>30</sup>

Transport is a major segment in which tourism can become more circular. Transport is important for passengers, but also for logistics to the tourist industry. Transport companies can become part of the value chain through the use of fuel produced from used restaurant oils or biogas. Car sharing companies can also contribute to circularity in tourism transport. However, it is essential to ensure dismantling end-of-life means of transport, re-using spare parts and recycling the materials used to make the vehicles.

### ***Circular tourism and job creation***

It is evident that the circular economy in tourism can stimulate the development of a number of companies that are necessary to achieve the circularity of providing tourist services. The need to close the value chain requires a range of services that are now partially accessible to tourism industry, such as companies that provide waste recovery and recycling services, renewable energy supply, manufacturing products designed for circularity, manufacturing new products from wastes, circular construction and demolition etc (Figure 8).

<sup>30</sup> Rood T, et al: Food for the Circular Economy, Policy Brief

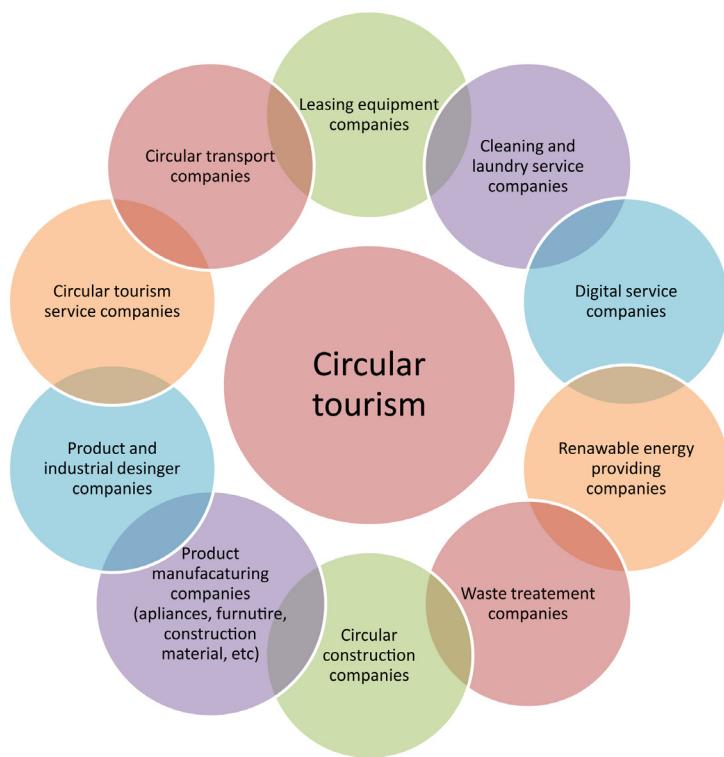


Figure 8 Example of companies necessary to achieve the circularity of providing tourist services

Circular tourism will stimulate entrepreneurship development and job creation. In terms of the type of jobs, we can expect an increase primarily in the recycling sector. The jobs can range from physical labour, such as sorting and separating materials to be recovered, to high-skilled jobs in consulting, design and operating waste treatment plants. A study of the Île-de-France region suggests that every ton<sup>31</sup> of domestic waste that is sorted and recycled generates ten times more jobs than if it were incinerated, and thirty times more than if it were deposited on a landfill. High skilled engineers are needed in almost all segments of circularity, from waste and greywater recycling, construction of touristic facilities and refurbishment, through circular heating ventilation and cooling, renewable energy applications and applications of digital technologies. Leasing managers are needed to coordinate external service partners distributed across market segments. They contribute to the circular economy through the 'rethinking the business model' strategy. Circular tourism can also create opportunities for consultants to advise tourism entrepreneurs how to shift from linear to circular tourism.

Circular economy in tourism will evidently require existing companies to shift from linear to circular business models, but can also boost the creation of start-up companies delivering new services that are required to close the value chain.

### **Stakeholder involvement needed for the development of circular tourism**

In order to ensure a comprehensive approach in implementing circular economy in the tourism sector, it is important to engage all relevant stakeholders and most importantly the industry. Henceforth, the following stakeholders should be engaged at each level (Table 4):

<sup>31</sup>"Mieux gérer les déchets : une chance pour l'emploi ?" Observatoire Régional des Déchets d'Île-de-France, April 2013.

Table 4 Stakeholder involvement in circular economy application

Level	Stakeholder	Action
<b>Macro</b>	Government	Adequate policy and financial instruments
<b>Meso</b>	Institutions and private sector associations	Collective action: promote CE, capacity building for CE, establish standards, integrate CE into education system
<b>Micro</b>	Industry/SMEs	Implement CE concept, associate to close CE value chain, invest into CE business models

### Examples of circular economy in tourism

Some industries are now trying new packaging materials to substitute plastics and start to use more environment-friendly options in order to stop the plastic dumping. There are many examples of companies that are trying to substitute the plastic they used in favor of biodegradable materials.<sup>32</sup> The intention is to produce compostable packaging or cutlery from biodegradable waste (paper, agricultural waste, or similar).

Through the decoration and furnishing of the hotel's interior, it is possible to significantly reduce the ecological footprint and apply the circular economy. Indeed, it is again matter of procurement policy and some hotels did by:

- Furnishing hotels from recycled materials<sup>33</sup>
- Furnishing hotels by environmentally friendly materials designed to be easily dismantled and recycled (carpets, ceiling, etc), and integrated into take-back collection and recycling scheme<sup>34</sup>

### Product design for circular economy and tourism

Circular product design goes much further than designing strategies for optimal recycling. 'You want to keep the components and materials that you're using in circulation as long as possible. That means trying to minimize the impact on the environment and retain the economic value as long as possible. So it's best to reuse a product, even if you have to adapt it or give it an upgrade.' If that's no longer possible, then you should at least repair it and give it a second life.'

Ruud Balkenende, professor of circular product design, TU Delft.

Today, there are number of opportunities to lease instead of purchase equipment for hotels, such as coffee machines in rooms, seminars, restaurants and bars. All linen (sheets, towels, tablecloths and napkins) can be rented, and serviced by an eco-labeled laundry.<sup>35</sup>

### Procurement for Circular Economy

Circular procurement is about making agreements to ensure that the products that you procure for your organization are produced in accordance with the principles of the circular economy and will be further processed after use. Such products are, for example, designed for durability, reparability and recycling and can at the end of their life cycle be broken down into components, materials or raw materials, which can then be used again in the production.

<http://mvonederland.nl/circular-procurement-guide>

<sup>32</sup> Clickat, PulpWorks, etc.

<sup>33</sup> Looming hostel in Tartu, Estonia

<sup>34</sup> DESSO Carpets, Armstrong Ceilings

<sup>35</sup> Martin's Hotels, Belgium

A company that applies membrane water filtration technology, which allows for the recovery of wastewater for reuse in their laundry operations, reported reduction of the water use by 20-25%, which in turn reduces energy use, as less water takes less energy to heat up. Additionally, the heat of the wastewater is retained, which further reduces energy needs. The company switched from cotton to polycotton in order to increase lifespan of the linen.<sup>36</sup>

### **A leasing for circular economy tourism**

*A leasing society model prompts manufacturers to design sustainable products not through force or regulations, but through economic incentives. When consumers lease instead of purchase, companies will need to consider not only what happens the moment a product is sold, but also what happens when it comes back in. The realization descends that, from now on, they have the economic interest to make their products more durable and more sustainable, because their expenses will be minimized when the product lasts for its entire leasing period. The replacement of a product will be entirely on the producer's account. Companies thus will benefit from investing in ways to extend their products' lifespans and be de-incentivized to launch – say – a new tablet computer every few months. Therefore a company could outpace its competitors primarily by developing a range of durable devices that could be exploited by receiving monthly fees during their whole leasing periods.*

*Judith Merkies and Eric Lowitt for the Guardian Professional Network<sup>37</sup>*

The climate in the hotel building can be controlled by an intelligent building automation system that is connected to the booking system so that room temperatures depend on their usage. Through such mechanisms, heating, cooling and air ventilation is at an absolute minimum when the room is not booked, lowering the energy consumption levels markedly.<sup>38</sup>

A golf hotel resort has installed a solar plant that uses a battery backup system to store energy, providing an uninterrupted ability to supply energy to the reverse osmosis filtration plant, which provides water to the residents of the resort area and irrigation for the golf course. The gensets are only for back-up use. The current 1MW solar plant is the 1st phase of the solar project. The resort intends in the very near future to proceed with full solar and thermal energy totaling 4MW at their 300 acres estate, to serve rooms, restaurants, etc.<sup>39</sup>

A hotel and spa resort in the Caribbean has completed the installation of 2,602 lightway solar panels for a total system capacity of 755 kilowatts. The completed solar system will produce approximately 1,223,000 Kilowatt hours per year. The system will avoid 1.9 million pounds of carbon dioxide emissions or the equivalent of CO<sub>2</sub> emissions from energy used by 43 homes annually, or 707 acres of forest preserved from deforestation by carbon sequestering.<sup>40</sup>

In 2004, UNIDO launched its Global Chemical Leasing Programme, to promote a business model that marks a paradigm shift from the selling of chemical goods to the delivery of chemical services, leading to a more efficient use of chemicals and closed-loop thinking. Instead of selling chemicals (in tons or liters), Chemical Leasing partners agree on a functional-based unit of payment such as USD per cleaned area in square meters or the weight of washed laundry. This brings economic benefits to the partners and results in significant chemicals as well as water and energy reduction.

<sup>37</sup> Judith Merkies MEP is a member of the European Parliament Committee on Industry, Research and Energy. Eric Lowitt is author of The Future of Value

<sup>38</sup> Crowne Plaza Copenhagen Towers, Sources: Manniche J, et al (2017), *ibid*

<sup>39</sup> CuisinArt Golf Resort & Spa, Rendezvous Bay, Source: [www.th-energy.net](http://www.th-energy.net)

<sup>40</sup> Westin Dawn Beach Resort & Spa, Source: [www.th-energy.net](http://www.th-energy.net)

The cost of hygiene maintenance in this hotel per occupied room is 2.0 R\$ while in the other hotels of this hotel chain, that buy chemicals in a traditional way, the cost is 4.16 R\$.<sup>41</sup>

There are some good examples of applied circularity on food waste management in the tourism sector:

- Used cooking oil from restaurants is poured into a large stockpot for easy storage and then recycled to fuel by a local oil refinery<sup>42</sup>
- Food composting at the site or in cooperation with city composting company<sup>43</sup>
- Production of energy from food leftovers at a pyrolysis plant. The pyrolysis process heats the waste, breaking it down to produce natural gas and char. A cyclone separates off the gas leaving biochar, which is valuable as an additive for the gardens. The gas is combusted and generates heat and electricity. Excess heat is stored onsite as hot water in a swimming pool, repurposed as a thermal energy storage system<sup>44</sup>

### **Food Waste the Elephant in the Room for the Hospitality Industry**

*How can we continue to ignore the food waste issues when small resorts have been found to waste up to 150 tons of edible food per year? Or that a staggering 36 percent of all food purchased ends up in the bin? That when taking into account energy and water used, labour cost, mis-allocation of financial resources and loss revenue for that food that could have been sold, the actual true cost paid by a hotel for food waste can reach a stunning \$800,000 for one large (300-room) resort? You might think no one who understands business and has a sense of responsibility could ignore this, but the truth is, hoteliers are still turning a blind eye on their food waste situation.*

*Benjamin Lephilibert, LightBlue Consulting<sup>45</sup>*

Digital collaborative platforms are well developed and implemented in some countries<sup>46</sup> aiming to sell surplus food from hotels and restaurants. Their mission is to reduce food waste worldwide and their vision is to create a world where 'food produced' means 'food consumed'. Through digital application restaurants and markets can offer unsold food, with lower price, to the customers.

### **Digitalization for circular economy and tourism**

*"Digitalization is breaking ground to reconcile business with nature. Smart lighting, energy use, reverse logistics, big data analysis. All aspects and flows of future circular companies are promises than can be kept by harnessing technology"*

*Anna Tarí, Founder of the Circular Economy Club (CEC)*

*"Concepts such as the collaborative platforms allow better use of existing resources, avoiding the production of more goods than necessary. In addition, digitalization also facilitates that many products that were previously bought and sold, are now marketed as a service."*

*Totti Könnölä, Fundación Ramón Areces*

<sup>41</sup>Vindors Atlantica Hotel, Brasil, UNIDO Case Study [http://chemicalleasing-toolkit.org/sites/default/files/chl\\_casestudy\\_BRAZIL.pdf](http://chemicalleasing-toolkit.org/sites/default/files/chl_casestudy_BRAZIL.pdf)

<sup>42</sup>Pennyhill Park Hotel in Bagshot (UK)

<sup>43</sup>Pennyhill Park Hotel in Bagshot (UK), Looming hostel in Tartu, Estonia

<sup>44</sup>Green Solution House, Denmark, Source: Manniche J, et al (2017): *Destination: A circular tourism economy a handbook for transitioning toward a circular economy within the tourism and hospital-ity sectors in the South Baltic Region*

<sup>45</sup><http://www.sustainablebrands.com>

<sup>46</sup>Too Good To Go, Thuisafgehaald

The world's cities are also some of the world's greatest tourism destinations. In 2015, Amsterdam commissioned an in-depth study on the potential of a circular economy. The project was the first large-scale research study in the world that uses the 'city circle scan' methodology. Amsterdam has identified two areas in which the most significant, tangible progress in realizing a circular economy can be achieved: the building and construction sector and the organic and biomass industry. It is estimated that implementation of material reuse strategies has the potential to create a value of €85 million per year within the construction sector and €150 million per year with more efficient organic residual streams. At the same time, Amsterdam is trying to adapt to a circular economy by forging new business models shifting from products to services and creating new legal and financial instruments.<sup>47</sup> In 2017, Amsterdam has won the World Smart City Award for circular economy in particular for development of policy for urban-level circular economics in several areas: local production of sustainable and seasonal food, local production of electricity, a reduction in fuel consumption, and the improvement of waste recycling.

A good example of community based renewable energy production that can produce energy needed for the local community and a surplus for other users, is the village Jühnde, Germany. The people of Jühnde own the bioenergy facility locally and collectively. Residents are able to buy shares in the co-operative company that owns the facility – at present, nearly 75% of Juühnde's inhabitants are members of this company. The system contains a 700kW CHP generator that runs on biogas to produce electricity that is supplied to the public grid. A 550kW woodchip boiler is used in the winter to supply heating which circulates around the local district network. The majority of crops for the plants are harvested locally, with a small shortfall of 25% purchased from regions around the village. The development has resulted in a 60% reduction in the villages CO<sub>2</sub> emissions because of a switch away from oil heating. During summer time, the excess heat of the CHP-plant is used for drying of wood-chips or log-wood for the heating boiler to use in wintertime. The original aim of the project was for the village to be self-sufficient in terms of energy consumption, and the plants now produce 70% of the villages heating demand and double its electricity demand. This model can be used to supply touristic facilities beside, the local needs. As a result of these achievements, the project was awarded the EuroSolar Prize in December 2005. The project is also catalyzing other projects in the neighboring region, and the Jühnde itself is investigating further sustainability initiatives, including electric cars and wind power.<sup>48</sup>

<sup>47</sup> Amsterdam Circular: Learning by doing, EUROCities2017

<sup>48</sup> Simcock N, all in association with Lancaster Environment Centre – Lancaster University (2016): *Cultures of Community Energy -International case studies*, British Academy



# Chapter 3

# Chapter 3: The tourism sector in South East Europe

Tourism is an increasingly important source of revenue and driver of growth in many countries in South East Europe (SEE). Receipts from international tourist arrivals account for more than 10 per cent of GDP in several countries in SEE, with a substantial upward trend in the past five years. In light of the security risks in other popular markets, SEE can expect to see further rises in tourism in the coming years, which would help consolidate the economic recovery under way in the region.<sup>49</sup>

The highest direct contribution of tourism and travel to GDP in 2017 are in Montenegro (10.9) and Albania (8.9). The direct contribution reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. The total contribution to GDP includes wider effects from investment, the supply chain and induced income impacts and was highest in Albania (26.2%) and Montenegro (23.7%). Bosnia and Herzegovina has a significantly higher total contribution to GDP (9.6 %) than direct contribution (2.6%). Although the tourism sector in Moldova contribution to direct and total GDP is less than 1%, this sector contributes directly to employment by 9.9% and by 34.7% in total. The total contribution to employment in Albania by the tourism sector is 24.1 % and in Croatia this is 23.5%. The contribution to direct and total employment is the lowest in Serbia (1.9% and 4.9% respectively).<sup>50</sup>

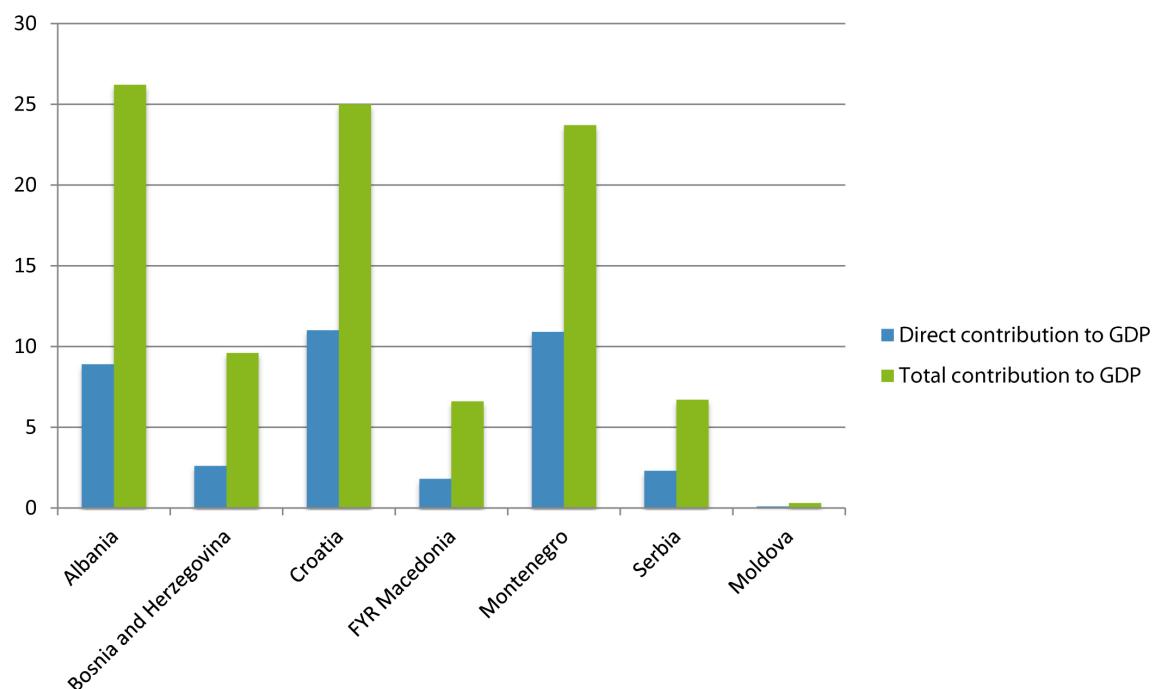


Figure 9 Contribution of tourism sector to GDP % (2017)

<sup>49</sup> Sanfey P, Milatovic J: Tourism in south-eastern Europe – driving the recovery?, EBRD

<sup>50</sup> "© World Travel & Tourism Council TRAVEL & TOURISM ECONOMIC IMPACT 2018. All rights reserved."

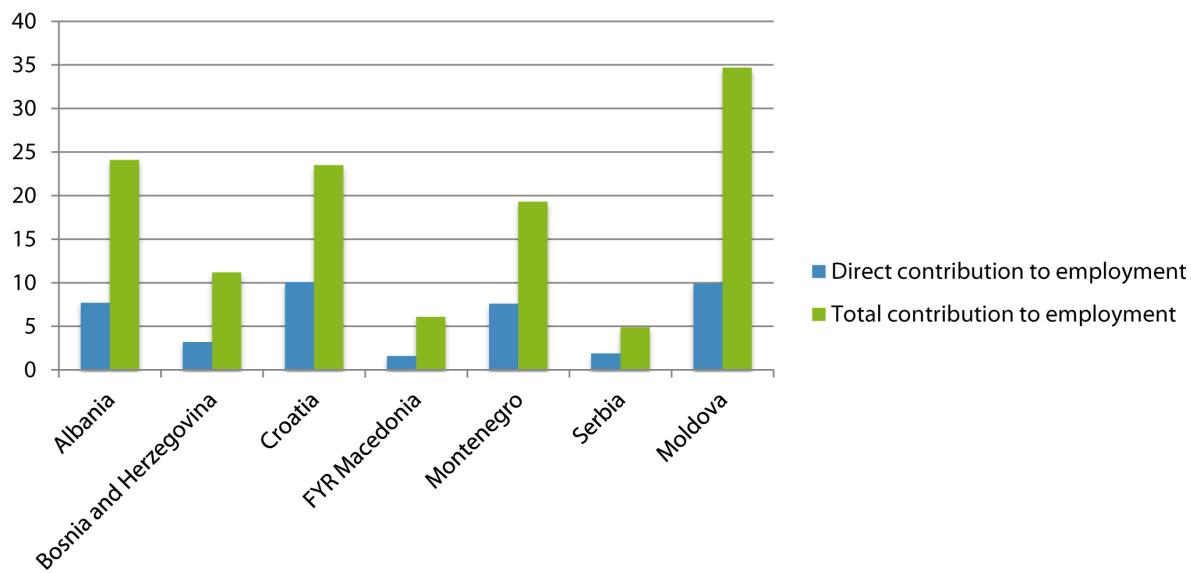


Figure 10 Contribution of travel and tourism sector to employment %

### Legal and policy frameworks for circular tourism in SEE

**Albania** through its National Strategy for Development and Integration 2014-2020 sets the goal to increase the direct contribution of the tourism sector in GDP to 8%.

Albania has a great deal to offer from magnificent World Heritage Sites to clear Mediterranean waters, mountain terrains and mountain lakes. However, the full potential of the sector over recent years has been constrained, by poor roads and public utilities as well as by unregulated waste disposal. Therefore, the strategy sets as one of the strategic goals, focusing public infrastructure provision (especially with regard to managing wastewater and solid waste disposal) in areas of current and potentially high tourist demand. According to the National Strategy “Plastic Waste Management and Recycling in Albania”<sup>51</sup>, Albania has made significant progress towards transposition of the Waste Framework Directive and Packaging Waste Directive, by adopting three important instruments like: a) the DCM on Packaging and Packaging Waste (March 2012), b) Law on Waste Management (2011) and c) DCM on separate collection of waste (June 2014). The strategy has been developed within the Joint UNIDO-UN Environment Programme Resource Efficient and Cleaner Production (RECP). However, the implementation of these legal instruments seems at an early stage and objectives are far away from their achievements.

**Bosnia and Herzegovina** (BiH) might be an interesting tourist destination owing to its geographic location, exceptional natural beauties, cultural-historical inheritance and suitable climatic conditions. Tourism is designated by the BiH government as one of the drivers of the country's economic development. The World Tourism Organization (UNWTO) has ranked BiH among the group of countries with the highest anticipated annual growth, estimating annual growth rate at the level of 10.5. It is projected that BiH, in terms of the growth of tourism, will have the third highest growth degree in the world until the end of 2020<sup>52</sup>. According to the strategies for tourism development, BiH<sup>53</sup> has

<sup>51</sup> Joint UNIDO-UNEP Programme on Resource Efficient and Cleaner Production (RECP). March 2016, prepared by ECAT

<sup>52</sup> WTO, Annual growth projections 1995-2020 in FIPA BiH, 2005,

<sup>53</sup> Strategy for Tourism development of F BiH 2008-2018, Strategy for Tourism development of RS 2011-2020

the potential for development of winter tourism, cultural tourism, spa and wellness tourism, sport and adventure tourism, eco- and rural tourism. The federal strategy sets as one of the objectives to provide long-term protection of natural, cultural and historical resources in function of tourism. However, a lack of waste management and wastewater infrastructure is recognized as one of the obstacles for sustainable tourism development.

Recyclables separated from the mixed municipal waste amount to less than 5 % of the total municipal waste mass (estimate), while at least 95 % of the collected mixed municipal waste is disposed of mostly on non-sanitary disposal sites. The main waste legislation consists of the Law on Waste Management of the Federation of Bosnia and Herzegovina (Official Gazette FBiH 33/2003) and the Law on Waste Management of Republic Sprska (Official Gazette RS 51/2002) which are almost identical. They are harmonized with EU Decision 94/904/EEC and EU Directive 91/689/EEC and cover the management of all kinds of waste following the underlying basic principles of EU environmental policies.<sup>54</sup> BiH entity governments recently adopted ordinances on packaging waste and electric and electronic waste.

Taking into account the existing limiting factors for the future of tourist development in the Republic of Croatia, as well as global tourism demand trends, the main goal for the development of Croatian tourism until 2020 was to increase its attractiveness and competitiveness, resulting in bringing Croatia into the 20 most competitive tourist destinations in the world.<sup>55</sup> Tourism is the main driver of economic activities in this area with constant annual growth in tourist numbers of approx. 3%, which results in great pressure during the tourist season, particularly on the coastal area. Therefore, the Croatian Strategy for Sustainable Development set as objective a tourism development in accordance with construction criteria, spatial plans and accommodation capacity and efficient adjustment to restrictions and opportunities offered by protected areas. The strategy also encourages the development of ecological food production and ensuring sufficient quantities of high-quality food, develop ecotourism and agro-tourism.

The Tourism Development Strategy of the Republic of Croatia until 2020 sets as one of its development principles an “environmentally sound development”. The principle calls for implementation of environmentally sound and technological solutions in construction and furnishing of tourism facilities (e.g. heat waste reduction, energy- efficient cooling and heating systems, use of renewable energy sources). In terms of waste management, the strategy sets as one of the priority product development activity for yachting and marinas promotion and improvement of waste management systems, including collecting waste from boats, yachts and cruisers.

Croatia's environmental and socio-economic issues indicate that Croatia is only beginning its transition from a linear to a circular economy. Six years period of economic recession, and a regulatory framework that remains only partially adjusted to EU regulations all contribute to Croatia's lag in eco-innovation and in its transition towards a circular economy. The biggest and the most urgent challenge for the country lies in waste management, which requires radical changes – namely leaving behind old practices and focusing on separate waste collection.<sup>56</sup> The recycling rate of communal waste in 2014 was 16%, composting 2% and 80% of landfilling.<sup>57</sup> The current recycling rate of communal waste is far below 50%, as set for the year 2020 by the Strategy for Waste Management.

<sup>54</sup> EEA Waste - State and impacts (Bosnia and Herzegovina)

<sup>55</sup> The Tourism Development Strategy of the Republic of Croatia until 2020

<sup>56</sup> ECO-INNOVATION at the heart of European policies, Country Profile Croatia,

<sup>57</sup> Revised Croatian Strategy for Waste Management 2015-2022

According to the Montenegro National Strategy for Sustainable Development (NSSD), tourism is one of key economic sectors and is relatively well regulated by strategic documents: the Master Plan passed in 2001, the Tourism Development Strategy until 2020 and Reform Agenda in the field of tourism from 2013. The Montenegro NSSD recognizes tourism as a sector with particularly significant possibilities of low-carbon development. Tourism in Montenegro is, aside from agriculture and energy, also an economic sector with the most significant possibilities in terms of greening the economy and increasing resource efficiency. The list of actions specified in Montenegro NSSD that are related to resource efficiency focuses on making tourism green and improving the resource green from the aspect of:

- energy consumption – in hotels and hospitality facilities there are great opportunities for investments into energy efficient forms of energy supply, SDG 7 (7.3);
- water consumption – improvement of water use efficiency and introduction of innovations aimed at water saving, SDG 6 (6.3);
- waste generation – reduction of waste from hospitality industry and improvement of the existing waste management, SDG 11(11.6), 12 (12.b), of vulnerable ecosystems, SDG 15;
- ensuring higher level of waste recycling, increasing the use of local foodstuffs in touristic offer, etc. SDG 12 (12.b).

In order to achieve the sustainable waste management goal, the Montenegro NSSD has defined its strategic goal “Improve waste management applying the circular economy-based approaches” by 2030. However, the current recycling rate of Montenegro is very low, i.e. 3% paper and cupboard, 0.2% glass, 2% plastics and 3% metals. Montenegro has no composting facilities. Most of the waste is disposed on local unsanitary landfills.

According to the National Strategy for Sustainable Development for the Former Yugoslav Republic of Macedonia 2008-2015, the tourism sector has high potential, but is in need of structured strategic work and planning. At the same time, it is diagnosed that water, wastewater and solid waste systems are in need of significant improvement. Moreover, in terms of industry, food production and crafts, tourism is recognized as a sector with potential for Small and Medium Enterprises (SMEs) development. Under the Law on Packaging and Packaging Waste Management, the national targets for packaging waste handling are that the following quantities of packaging and packaging waste should be collected on the territory of the Former Yugoslav Republic of Macedonia within the following deadlines:

- by the end of 2020, minimum 60% of the packaging waste weight generated on the territory of the Former Yugoslav Republic of Macedonia should be processed by recovery operations or by processing for energy operations;
- by the end of 2020, minimum 55%, and maximum 80% of the packaging waste weight generated on the territory of the Former Yugoslav Republic of Macedonia should be recycled;
- by the end of 2020, the following quantities of materials used in packaging production should be recycled:
  - 60% glass,
  - 60% paper and cardboard, – 50% metals,
  - 15% wood, and
- by the end of 2018, 22.5% plastics, considering only recyclable materials in plastics.

Based on the State of Environment report (EEA, 2015), the share of recycled packaging is 12% of the total packaging placed on the market.

According to the Association of Secondary Raw Materials Collectors and Recyclers, a total of some 25,000 tons of packaging waste was collected and recycled in the year 2016. The goal set by the Macedonian authorities of 60% of recycled waste packing means that recyclers in the country have to reach the level of more than 65,000 tons of paper, various types of plastic, glass, cans and wood in the next three years. Between 6,000 and 7,000 waste containers for recycling should be put up around the country in order to reach that goal. In 2013 level of recovery of organic waste was very low, below 0,1. According to the Macedonian information agency, the Former Yugoslav Republic of Macedonia throws away 5,000 tons of food annually - an amount that could provide 13,000 people with three meals a day. The Association for Clean Environment advocates for amendments to the law that will regulate food waste. It is expected to regulate instances in which food will be donated for charity, instead of being discarded.

As recognized by the Economic Growth and Poverty Reduction Strategy (EGPRS), tourism is viewed as one of the most dynamic economic activities in the Republic of Moldova, which can play a significant role in sustainable development, mainly at the local level, where the sector is underdeveloped. It provides a strategic opportunity to diversify the local economy, create employment, and generate income. Moldova possesses valuable socio-economic, environmental, and cultural resources, which can serve as a good basis for tourism development. As identified by the Sustainable Tourism Development Strategy, the cultural, wine, and rural tourism are sub-sectors with competitive potential for the international tourism industry that requires additional exploration and development throughout the country.

According to the long-term National Waste Management Strategy of the Republic of Moldova (2013-2027), most of the recycling and useful materials are stored together with the non-recyclable waste, therefore a great part of their useful potential is lost (paper, glass, metals, plastic materials); being mixed and contaminated from chemical and biological point of view their recovery is troublesome. The strategy sets the objectives to increase in the degree of reuse and recycling of packages by 20% by 2027 and to develop schemes of material and energy recovery from package waste which cannot be recycled („inappropriate” for material recovery). It also aims to encourage recovery by aerobic and anaerobic processes and waste composting and fermenting capacity building by at least 1 per district and to support for energy recovery where material recovery is not technically and economically feasible, in safety conditions for the health of population and environment protection.

The National Sustainable Development Strategy of the Republic of Serbia - NSSD widely recognizes tourism as a sector that has the potential for sustainable development. The current negative environmental impacts of tourism activities are caused by weak implementation of planning and construction regulations, lack of infrastructure for waste water treatment and uncontrolled waste disposal, and inefficient management of protected natural values. The Serbian NSSD calls for additional tourism supply with cost-effective operation and potential for local development (trade, gastronomy, hospitality services, travel agencies, etc.), generating new employment accompanied by maximum preservation of cultural heritage and natural diversity. As one of the objectives for sustainable tourism development, the Serbian NSSD sets to identify and remove current and potential conflicts between tourism and other activities related to use of resources. According to ASWA (Association of Serbian Waste

Utility Companies), Serbia is currently recycling between 5 and 8 percent of municipal solid waste. This is much lower than a target set by National strategy for Waste management 2010-2019 in which the target for 2019 was to achieve 25%. The cities most active in recycling are Novi Sad and Čačak (around 10 percent), but the biggest problem is that numerous towns and municipalities do not recycle waste at all. Serbia is seeking EU membership and is currently working to align its legislation with that of the EU. Modernization of waste management by joining the transition towards a circular economy is a declared political objective. By 2030 Serbia plans to achieve the recycling target of 50 percent of total municipal solid waste.<sup>59</sup>

Adopting programs and deadlines to increase energy efficiency and the use of locally available renewable energy sources in all tourism facilities and destinations and implementing measures for sustainable waste and waste water management are among other key features for the tourism policy mission sets in Tourism Development Strategy of the Republic of Serbia (2016 – 2025).

<sup>59</sup> Solid Waste Sector In Serbia – Overview, Economic and Trade Office Embassy of Belgium Belgrade May 2017 Solid Waste Sector In Serbia – Overview, Economic and Trade Office Embassy of Belgium Belgrade May 2017



# Chapter 4

# Chapter 4: Harnessing the potential of tourism for circular economy in South East Europe

The benefits of a transition towards a circular economy in tourism in SEE could be considerable. It can reduce environmental pressures, create a more resource efficient economy and improve the trade balance. It is obvious that the circular economy in tourism requires new companies established on new business models, which could deliver net benefits in terms of job opportunities. Circular economy in the SEE tourism sector will further increase the rate of indirect employment. New jobs will indeed be created in certain sectors leading the transition, mostly in waste sorting and recycling, leasing services, but also in the development of alternative modes of transport construction, textile and furniture production designed to allow circularity in the tourism sector.

Through their sustainable development strategies, tourism development strategies and environmental protection strategies, the countries in the SEE region have opted for sustainable development in all sectors. In strategies of some countries, such as Montenegro, Serbia and Croatia, there is a commitment to achieving the SDGs through the application of the circular economy. Other countries see their way to achieving goals through resource efficiency, sustainable production and consumption. A strong commitment to circular economy in national strategies is needed if we expect to trigger its implementation. However, a comprehensive and inter-sectorial policy and regulatory framework together with economic instruments are important mechanisms that have to be widely accepted by all major stakeholders including industry and the overall business community. Today, sectoral strategies (sustainable development, economics, agriculture, environment, tourism, energy efficiency, transport, building renovation, etc.) do not define the goals and measures that would lead to the application of the circular economy in a synergetic way. The preparation of the Framework Program for Transition to a Green Economy adopted by the Government of the Republic of Slovenia in 2015 involved 7 core ministries, state secretaries and experts organized in the Government Intersectoral Group and enlarged with stakeholder group with more than 2.000 partners.<sup>60</sup>

Each of the SEE countries has very clear and ambitious targets for recovering resources from waste, mainly by recycling. However, there is a large discrepancy between specified targets and achievements in practice. Most of the countries have not yet developed a waste separation infrastructure, and recycling facilities have limited capacities and are mostly focused on paperboard, paper and plastics. Most of the waste is still disposed on mostly un-sanitary disposal sites. There are some private sector initiatives in SEE for refining used oils, use of tires and refused derived oil in cement industry; some countries have installed the capacity for composting and producing bio gas; and some have electronic waste recycling plants. They all can be considered as partners for the tourism sector in achieving circularity and further development in terms of number and capacities. The European Commission recommended a regional treatment infrastructure for electric and electronic waste as a solution for countries in SEE. The proposed model builds on the establishment of new local companies that will organize manual dismantling processes, with the (higher value) materials and components then

<sup>60</sup> Janja Kreitmayer McKenzie, Secretary, Deputy Head of the Partnership for Green Economy Ministry of the Environment and Spatial Planning, UN ECE TOS-ICP, 10th Session, Geneva

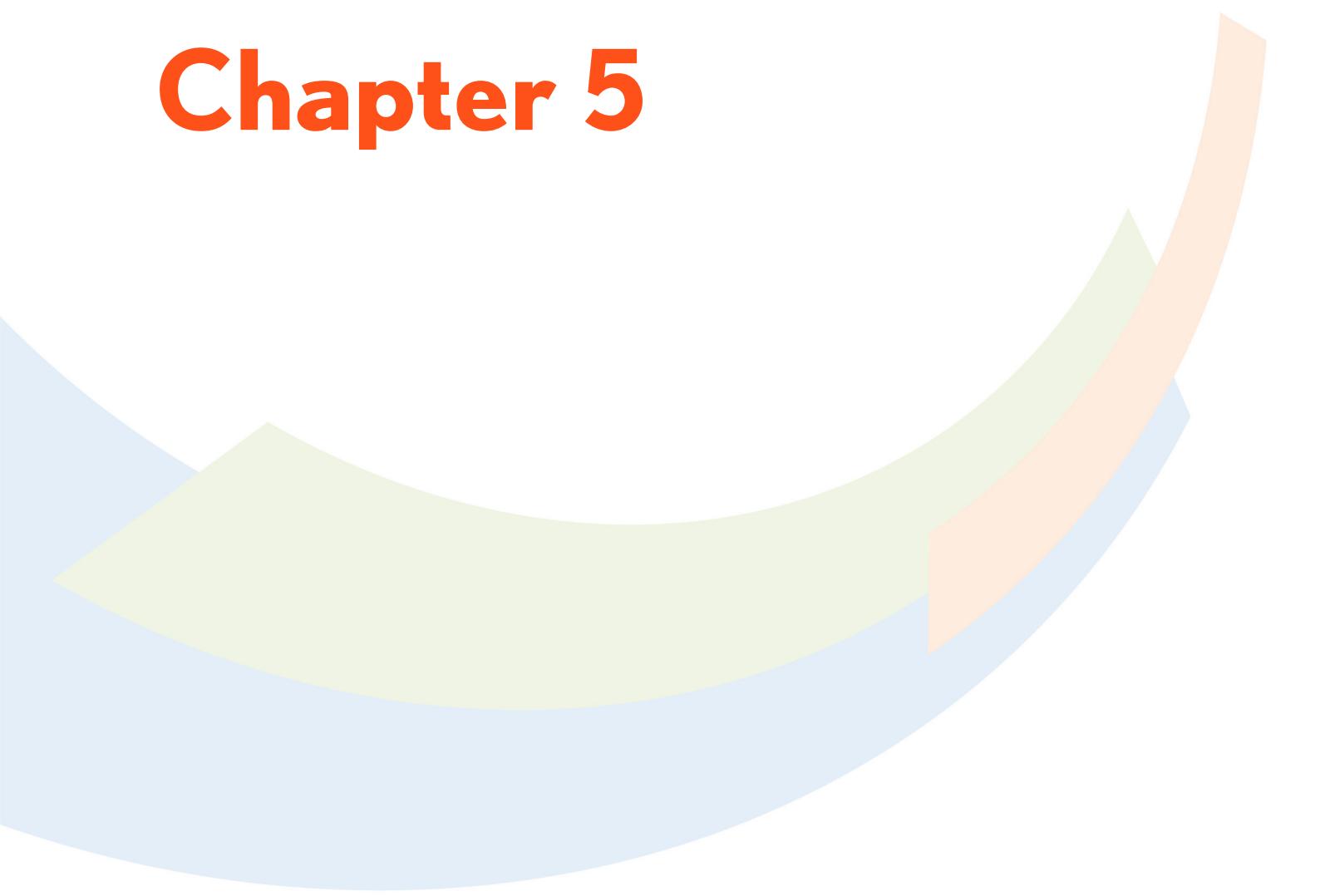
reprocessed or sent for regional facilities treatment accordingly.<sup>61</sup> Since the majority of construction and demolition waste in SEE countries is currently disposed at legal or illegal landfills, the same report advises to instigate a voluntary initiative working with major developers, including construction companies and producers of construction material for the establishment of new companies that will deal with construction and demolition waste recycling. Further to the importance for circularity of the construction and rehabilitation of tourism facilities this business sector should further grow in relation to the implementation of building renovation strategies in SEE countries. The SEE countries need to establish a permanent dialogue between government, the tourism sector and industry for cooperation for circular economy and to encourage public-private partnerships aiming to increase investments in waste utilization technologies in line with circular economy.

The sharing economy business model is not unknown in the SEE countries. There are car sharing, bike sharing, and accommodation sharing companies. There are also examples of leasing for photocopy machines and cafe machines, etc. However, these service providers do not guarantee circularity of their business, which without adequate waste recycling technologies or companies that will further use the waste produce is not even possible. The chemical leasing concept can be also applied both on large and SMEs tourist companies, but in order to take advantage of these circular opportunities, it is necessary to support the establishment of companies that offer such services within the concept of circular economy, which nowadays are rarely present on the SEE market. The potential of existence of service providers should be utilized but further improved through capacity building for circular economy, but also through investing in waste recycling facilities or encouraging entrepreneurship in waste recovery or reuse. It is important to state that circular economy jobs and circular business models require new skills and will therefore rely on relevant training programs being available through higher education or continuing vocational training. To accelerate the application of circular economy principles in existing businesses and development of new business models by the private sector, adequate financing instruments are needed to support investment and changes towards the circular economy.

A regional capacity building program might be useful to support organizations to develop new opportunities and realize their circular economy opportunities. It will be valuable to support networking for entrepreneurs, experts and financial institutions and to help advance understanding, share best practices, and develop collaboration activities.



# Chapter 5

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# Chapter 5: Recommendations

## Government:

- To develop comprehensive and inter-sectorial policies, regulatory frameworks and economic instruments to support circular economy
- To commit and build strategies for circular cities and municipalities addressing waste, energy and water cycle
- To build capacities of local communities and cities to apply separate waste collection schemes and provide technical and financial assistance for waste recovery technology solutions
- To support the development of entrepreneurship for associated services based on circular economy principles, such as leasing services, waste management services
- To encourage public-private partnerships aiming to increase investments in waste utilization technologies in line with circular economy
- To support collaboration between all actors in the value chain – from designers and manufacturers to consumers and recyclers
- To adopt a circular construction approach for new hotels and other tourist facilities through regulatory frameworks
- To address circular economy in the education sector
- To promote research, development and market development for circular solutions and technologies

## Non-Government Environmental and Tourism Organizations:

- To develop standards and establish certification for the hotels and creative industry towards circular economy model
- To promote circular economy and share best practices of circular tourism
- To improve innovation capacity of tourism SMEs, capacity building of managers
- To build capacities for start-up entrepreneurship in circular economy
- To encourage dialogue between government, tourism sector and industry for cooperation for circular economy
- To support regional cooperation and exchange of experiences in circular economy development

## Private sector:

- To adopt circular economy business models
- To develop cooperation with other companies in order to keep the resources in use as long as possible, maximize their value while in use, and then recover and regenerate products and materials at the end of each service life.
- To establish partnership with public institutions for investments in circular economy

## **International organizations and donors:**

- To support improvement of the business environment for circular economy investments through supporting policy dialogue, regulatory reform and capacity-building
- To promote circular economy principles among SEE countries and potential for application in tourism through pilot projects
- To provide technical assistance and capacity building for manufacturing companies and SMEs in the tourism sector to adopt circular economy practices
- To support networking and partnership for circular economy among the SEE countries
- To develop financing instruments to support and leverage private sector investment in circular economy
- To coordinate the development of effective measures to address key barriers to circular economy application in tourism sector, with technical cooperation and investment grants



## References

- Joint UNIDO-UNEP Programme on Resource Efficient and Cleaner Production (RECP). March 2016, prepared by ECAT
- WTO, Annual growth projections 1995-2020 in FIPA BiH, 2005,
- World Travel and Tourism Council: Travel & Tourism Economic Impact 2018 - March 2018. All rights reserved.
- Circular Economy in Europe, EEA 2016
- Schroeder P. (2018) The Relevance of Circular Economy Practices to the Sustainable Development Goals, Journal of Industrial Ecology, DOI: 10.1111/jiec.12732
- Manniche J, at all (2017): Destination: A circular tourism economy a handbook for transitioning toward a circular economy within the tourism and hospitality sectors in the South Baltic Region
- User Guide for Hotels, IFC Version 1.0
- Hotel Energy Solutions (2011), Key Renewable Energy (RE) Solutions for SME Hotels, Hotel Energy Solutions project publications , First edition: 2010 Revised version, July 2011
- Windsor Atlantica Hotel, Brasil, UNIDO Case Study on Chemical Leasing
- Luigi Fusco Girard, Francesca Nocca, University of Firenze "From linear to circular tourism"
- Carra G, Magdani, N. (2017) : Circular Business Models for the Built Environment , ARUP, BAM CE100
- Wolde A, Circular tourism, International Conference on Green and Accessible Tourism, Croatia, Split 2016
- Gössling S, at all (2012) Tourism and Water Use: Supply, Demand and Security – An International Review, Tourism Management 33(1):1-15, DOI10.1016/j.tourman.2011.03.015
- Gossling, S. (2002). Global Environmental Consequences of Tourism, Global Environmental Change, 12, 283–302. [https://doi.org/10.1016/S0959-3780\(02\)00044-4](https://doi.org/10.1016/S0959-3780(02)00044-4)
- UNEP, UNWTO (2007) "Climate Change and Tourism: Responding to Global Challenges"
- Tourism Highlights (2017), UNWTO, ISBN (print): 978-92-844-1901-2
- De Wit, M, at all (2018), Circularity Gap Report, Circle Economy
- UNIDO (2017) Circular Economy
- COM/2014/0398 final/2 : Towards a circular economy: A zero waste program for Europe
- COM(2015) 614 final, Closing the loop - An EU action plan for the Circular Economy
- P. Schroeder K. Anggraeni U. Weber (2018): The Relevance of Circular Economy Practices to the Sustainable Development Goals, Journal of Industrial Ecology, <https://doi.org/10.1111/jiec.12732>
- Rood T, at all: Food for the Circular Economy, Policy Brief
- Simcock N, at all in association with Lancaster Environment Centre – Lancaster University (2016): Cultures of Community Energy -International case studies, British Academy
- Mieux gérer les déchets : une chance pour l'emploi ?" Observatoire Régional des Déchets d'Ile-de-France, April 2013.
- A Comprehensive Assessment of the Current Waste Management Situation in South East Europe and Future Perspectives for the Sector Including Options for Regional Co-Operation in Recycling of Electric and Electronic Waste, EC, ISBN 978-92-79-67661-1 doi:10.2779/41
- Solid Waste Sector In Serbia – Overview, Economic and Trade Office Embassy of Belgium Belgrade May 2017
- Revised Croatian Strategy for Waste Management 2015-2022
- The Tourism Development Strategy of the Republic of Croatia until 2020
- Waste Management Plan 2014 – 2020 of Montenegro, Version February 2014
- Strategy for Tourism development of F BiH 2008-2018,
- Strategy for Tourism development of RS 2011-2020
- IRP (2017). Assessing global resource use: A systems approach to resource efficiency and

pollution reduction. Bringezu, S., et al., a Report of the International Resource Panel. United Nations Environment Programme. Nairobi, Kenya.

- Circle Economy (2018). The Circularity Gap report: An analysis of the circular state of the global economy

## **Internet references, accessed April 2018:**

- EEA Waste - State and impacts (Bosnia and Herzegovina)
- ECO-INNOVATION at the heart of European policies, Country Profile Croatia, [https://ec.europa.eu/environment/ecoap/croatia\\_en](https://ec.europa.eu/environment/ecoap/croatia_en)
- [www.hranazasite.mk](http://www.hranazasite.mk)
- <https://www.circle-economy.com/the-7-key-elements-of-the-circular-economy>
- [http://www.allianceforwaterefficiency.org/golf\\_course.aspx](http://www.allianceforwaterefficiency.org/golf_course.aspx)
- <http://www.ncps-care.eu/?p=1638>
- <https://www.eea.europa.eu/highlights/europe2019s-demand-for-resources-reaching>
- <http://www.europarl.europa.eu/news/en/headlines/economy/20150701STO72956/circular-economy-the-importance-of-re-using-products-and-materials>
- [https://blog.anthesisgroup.com/procurement\\_in\\_circular\\_economy](https://blog.anthesisgroup.com/procurement_in_circular_economy)
- <http://www.ren21.net/gsr-2016/chapter07.php>
- The Facts, [www.plasticpollutioncoalition.org](http://www.plasticpollutioncoalition.org)
- <http://www.sustainablebrands.com>
- [www.th-energy.net](http://www.th-energy.net)





