

# CSR4 TOURISM

**Practices and technical skills for  
green CSR impact**

# 1. SUMMARY

Achieving sustainable development of the tourism industry which is one of the most significant economic sectors in EU will require development of green skills among tourism professionals. Tourism professionals need to understand environmental impacts and challenges and have to develop skills that will enable more sustainable resource management. This includes skills related to management of energy, GHG emissions, water and waste as well as responsibility regarding other resources used in business operations. This module will equip tourism professionals with relevant environmental skills for responsible tourism operations

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## 2. INTRODUCTION

Tourism is a complex industry covering a variety of sectors and connecting multiple value chains. In 2018, tourism was contributing to 10.3% of EU's GDP and 11.7% of total employment (European Parliament, 2023) bringing a range of positive socio-economic impacts to nations and local communities through employment, revenue and infrastructure development. However, with over 745 million tourists visiting EU in 2019, tourism also resulted with multiple negative environmental and social impacts. This large influx of people presents a burden on ecosystems and can lead to imbalances. Namely, the tourism industry is a significant consumer of water and electricity and generator of waste. Especially is this true for hospitality and large hotels where consumption of water and electricity per guest can be several times higher than resource consumption of local residents. Water and electricity are used for normal functioning of the building (heating/cooling, lighting, security system, electronic devices etc), for food operations, laundry services, additional recreational services like SPA, for maintenance of green areas etc. Consumption of single-use products and surplus food from restaurants contributes to large amount of waste generated with tourism activity.

For centuries now, our economies have strived for endless economic growth where GDP is the ultimate measure of wealth. All tourist destinations always strive for more tourists, more arrivals, more over-night stay and increased consumption. Is that sustainable? As problems of climate change, loss of biodiversity and environmental pollution started to rise, scientists have started to argue that there are limits to growth, and these limits are determined by carrying capacity. Scientists from Stockholm resilience center have determined 9 quantitative planetary boundaries “within which humanity can continue to develop and thrive for generations to come. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes” (Stocholm resilience center, 2009). Sustainable tourism development means making profit and satisfying tourists needs, while delivering positive impact to local communities and staying within the biocapacity.

In order to achieve sustainable tourism development and maintain competitiveness of the EU as a tourism destination, tourism specialists need to learn how to manage natural resources more sustainably and how to design environmentally friendly services. This module will help stakeholders identify, understand and manage the environmental impact of the tourism industry. Trainees will gain skills in energy, water and waste management.

Learn more about planetary boundaries here:  
<https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>



## 3. ENERGY MANAGEMENT

### 3.1. Sources of energy

There are two main categories of energy sources: **renewable and non-renewable**. Non-renewable sources include coal, oil and natural gas, also called fossil fuels. Fossil fuels are found in the Earth's crust and contain carbon and hydrogen, which can be burned for energy. Fossil fuels have been used as main source of energy for centuries now as they are easily transported and have high conversion rate making them useful for transport and industry. However, abundant consumption of fossil fuels have caused significant environmental problems such as climate change and air pollution (Martins et al., 2019). In fact, fossil fuels are responsible for almost 75% of the CO<sub>2</sub>e emissions from human activities in the last two decades (National Geographic, 2022). Besides environmental issues, scarcity and uneven distribution of fossil fuels drives geopolitical conflicts and causes instability of prices and markets negatively impacting economic and social sustainability (Martins et al., 2019). Out of the three most prominent fossil fuels, coal has the most negative environmental impact, while gas is the most favorable option. Natural gas emits 50% less carbon dioxide into the atmosphere than coal (National Geographic, 2022) which is why it is described as transition fuel to a decarbonized economy.

Renewable energy sources include wind power, water power, solar energy, geothermal energy and biomass. All these sources are inexhaustible as their quantities are only temporarily depleted and they can always be compensated or renewed (Maradin, 2021). These natural resources are used for production of electricity, which is a form of energy that can be more easily used for many purposes. Advantages of renewable energy include: no direct CO<sub>2</sub>e emissions and air pollution, easier accessibility for larger number of countries and diversification of energy mix increasing energy security.

There are some alternative sources of energy like nuclear energy and hydrogen. Nuclear energy is highly efficient and very clean during production, but comes at high health and safety risks and environmental impacts once the fuel is disposed of. Hydrogen is still in the research and development phase and very costly for wide use but promising for the future. At the moment, renewable energy from wind, sun and water is the most clean and efficient source which is encouraged by both experts and policy makers.

The tourism sector consumes significant levels of energy based on both transport-related activities, such as travel to, from and at the destination, and destination-related aspects, such as accommodation, food and recreation activities. Regardless of environmental consequences, fossil fuels prices are on the rise and supply chains are more and more unstable. With the aim of successfully navigating the changing environment and in order to successfully manage energy, for tourism businesses it is important to map where the energy is consumed and what are the sources of consumed energy. Finally, tourism businesses should increase energy efficiency and switch to renewable energy where that is possible.

### 3.2. Energy audit

CSR experts in the tourism sector should be able to identify what are the sources of energy consumption within their business and define what kind of energy is used (renewable/non-renewable). Possible sources of energy consumption include:

- Heating and cooling of the buildings
- Water heating



- Dishwasher
- Lighting
- Stoves, refrigerators and other kitchen appliances
- Water circulation in the pool and functioning of the saunas
- Electronic devices and IT system
- Vehicles for transport of people and goods
- Washing and drying sheets and towels
- Appliances in the rooms
- ...

Once all sources of energy consumption have been mapped, CSR experts should develop a system for data collection, monitoring and analysis. This can be done in a simple excel workbook by manually inserting the values each month, or can be digitized with IT softwares. If the company you are managing or working with doesn't have fancy energy management software or monitoring devices, an easy way to get to know the energy consumption is to look at the energy bill (whether it is the electricity bill, gas bill or gasoline bill for your vehicle) and take the number from the bill and put it in the data collection table. At the end of the month you will see your monthly energy consumption. You can monitor the consumption by different categories (for example different vehicles, different facilities...) that will allow you to identify patterns and opportunities for savings.

### 3.3. Energy management plan

Having an overview of energy consumption allows CSR experts to identify areas for improvement and to develop the measures to reduce consumption, improve energy efficiency and switch to renewable energy. Once you can monitor your energy use, you can identify areas of opportunity to turn certain systems off or decrease use at certain times of day. There are 3 measures you can combine to reduce negative impact: a) reducing energy consumption through saving practices, informing and educating stakeholders, b) improving energy efficiency through repairs or replacement of equipment and c) investing in renewable energy.

Energy labels are important source of information for energy management. They imply the energy efficiency level of the equipment that is being used and allow CSR experts to make more informed purchasing decisions. **Energy efficiency** means using less energy for the same or even increased output. Learn more about energy labels at: [https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/product-s-labelling-rules-and-requirements/energy-label-and-ecodesign/energy-efficient-products/fridges-and-freezers\\_en](https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/product-s-labelling-rules-and-requirements/energy-label-and-ecodesign/energy-efficient-products/fridges-and-freezers_en)

#### Energy from renewable sources

Some companies decide to invest in own renewable energy. Usually, they opt for the solar panels that are positioned on the roofs or walls of the buildings. Decision to invest into these systems depends on the cost-benefit study. Usually, energy from solar panels can cover 30% to 50% of the energy needs, however that depends on the location, energy consumption and other factors. When deciding about renewable energy you should consider consulting an expert that will calculate if the project is feasible. Terminology you should be familiar with is surface of the panales, installed power and annual production capacity. When you know the predicted annual capacity you can calculate the % of your energy needs you can satisfy with the production

#### Example: an overview of the investment in solar panels



Surface of panels	Installed power	Annual production capacity	Annual energy consumption	% of energy needs covered with solar energy
Eg. 250 m <sup>2</sup>	50 kW	80.000 kWh	240 000 kWh	33%

Some of the measures tourism business can take are:

- Installing energy efficient lighting (LEDs)
- Replacing outdated appliances (like fridges, stoves and washing machines...) with energy efficient ones
- Install thermostats, sensors and controllers (for example to automatically turn off heating or cooling in the room when window is opened)
- Install 'smart' meter to track energy use to help keep it as low as possible
- Use electric vehicles instead of vehicles with combustion engines
- ...

Learn more about successful energy management in tourism SMEs through a series of case studies: <https://www.e-unwto.org/doi/pdf/10.18111/9789284414987>

#### Explore: Energy management system

Many companies nowadays are using smart energy management systems that by the network of sensors and control devices allow the real time monitoring of energy consumption. Manager of the energy management system can see a complete picture of the energy usage across the establishment and identify the opportunities for energy consumption reduction. For example they can see if there is a machine that is left running when not being used and shut it down. Or they can see what appliances use the most energy and make a decision to replace them. They can also see when the energy consumption is the highest and see if there are possibilities to redistribute the consumption of energy during the day. Learn more about energy management system: <https://www.tourism-review.com/travel-tourism-magazine-energy-management-systems-hotels-save-more-energy-article2048>

### 3.4. Energy KPIs and targets

Finally, CSR experts should determine key performance indicators and targets for energy consumption in line with established standards.

Annually they should review energy data and make conclusions about the consumption. In the table they have an overview of annual consumption in liters or kWh and information about annual expenses on energy. This table also allows the calculation of energy consumption by square meters which is a common indicator in the hotel industry, but CSR expert can choose to calculate energy intensity per kilometer or kWh per tourist. Knowing the energy intensity allows the comparison with peers in the industry. It also allows setting targets for next years.

Energy type	Units	Conversion factor	Consumption in kWh	kwh/m <sup>2</sup>	Annual cost (eur)	Annual cost/m <sup>2</sup>
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Electricity	300 000	1	300000	300	19920	19,9
Petrol	5000	9.6	48050	48,05	8500	8,5
Diesel oil	3000	10.9	32880	32,88	6000	6

Source of conversion rates:

[http://www.eauc.org.uk/file\\_uploads/ucccfs\\_unit\\_converter\\_v1\\_3\\_1.xlsx](http://www.eauc.org.uk/file_uploads/ucccfs_unit_converter_v1_3_1.xlsx)

Once CSR expert has decided to monitor a certain KPI (for example kWh/m<sup>2</sup>) they can set targets for the next year. For example to reduce consumption by 5% or to achieve \_ kWh/m<sup>2</sup>. Indicators can be benchmarked in two ways: over time for the individual establishment or by using comparative data from certification systems. CSR experts can compare a company's performance to a national benchmark, benchmark from a certain certification scheme or its own benchmark. Tracking the performance over years allows and setting targets based on the progress allows companies to improve continuously.

#### Tool: Energy management in hospitality SMEs

The easy-to-use and free of charge e-toolkit developed within Hotel Energy Solutions (HES) project initiated by UNWTO in collaboration with a team of United Nations and EU leading agencies in Tourism and Energy. HES Toolkit provides hoteliers with a report assessing their current energy use and recommends appropriate renewable energy and energy efficiency technologies. It further suggests what savings on operating expenses hotels can expect from green investments through a Return on Investments Calculator.

Access the toolkit here: [http://www.hes-unwto.org/hes\\_root\\_asp/index.asp?LangID=1](http://www.hes-unwto.org/hes_root_asp/index.asp?LangID=1)

## 3. CLIMATE CHANGE MITIGATION AND ADAPTATION

Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, but since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels (UN, 2022). Climate change is in focus as the main global challenge of 21<sup>st</sup> century.

“Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, the European Green Deal will transform the EU into a modern, resource-efficient and competitive economy.” (EC, 2019, presentation of EU Green Deal).

Due to significant environmental challenges and climate change, the EU decided to base its future development on the vision to become the first carbon neutral continent by 2050. In order to achieve this ambitious goal EU needs to reduce CO<sub>2</sub>e emissions by at least 55% compared to 1990 and decouple economic growth from resource use. All industries are covered by this plan and in order to achieve the targets, all stakeholders need to take responsibility for reducing their own environmental impacts.

Tourism is both highly vulnerable to climate change while at the same time contributing to it. UNWTO lists diverse threats to the sector, including direct and indirect impacts such as more extreme weather events, pollution, water shortages, biodiversity loss and damage to assets and attractions at destinations, among others. Tourism industry at the same time contributes to the climate change and is under the impacts of climate change consequences. It is of interest of all tourism stakeholders to take action towards climate change mitigation (reducing GHG emissions) and climate change adaptation (increasing resilience to climate change risks).

### 3.1. Understanding climate change

Greenhouse gasses include carbon dioxide, methane, water vapor, ozone and nitrous oxide. Greenhouse gasses are naturally present in the atmosphere and by acting like a glass of the greenhouse they trap the sun's heat and stop it from leaking back into space increasing the temperature on the Planet. This allows human life on the planet to flourish because due to the greenhouse effect they keep Earth at the temperature that is favorable for agriculture, quality life and in general human activity. However, due to the excess amount of greenhouse gasses in the atmosphere, the greenhouse effect is stronger, making Earth warmer. Climate change means an increase in average temperatures and higher unpredictability of weather patterns.

Consequences of climate change include: natural consequences (high temperatures, droughts and wildfires, availability of fresh water, floods, loss of biodiversity, desertification and erosion, ocean acidification), social threats (risk of accidents and impacts on wider well-being from extreme weather events, impact on mortality and morbidity due to changes in weather patterns, change in distribution of allergies and diseases, losses in productivity) and threats to businesses (vulnerability of buildings and infrastructure to climate change because of their design or location, more intense and frequent heatwaves will shift energy supply and demand patterns, agricultural production losses and changes in location where different crops can be grown...).

Learn more about the consequences of climate change here:  
[https://climate.ec.europa.eu/climate-change/consequences-climate-change\\_en#threats-to-business](https://climate.ec.europa.eu/climate-change/consequences-climate-change_en#threats-to-business)

Climate change will affect tourism through impact on business operations, property damage, disruption to supply chains and infrastructure, leading to increased costs of maintenance and materials, and higher prices. It is expected that the suitability of southern Europe for tourism will decline during the key summer months but improve in other seasons, Central Europe is projected to increase its tourism appeal throughout the year, while projected reductions in snow cover will negatively affect the winter sports industry in many regions.

To avoid the worst effects of climate change, we need to significantly reduce global carbon emissions which is referred to as climate change mitigation. But we must also prepare for the significant and unavoidable consequences of the climate change such as increasing temperatures, shifting precipitation patterns, ocean acidification, sea level rise and the increasing intensity and frequency of



extreme weather events, which is referred to as climate change adaptation. There are several things tourism businesses can do to fight climate change.

## 3.2. Managing GHG emissions

Climate change mitigation primarily concerns reducing CO<sub>2</sub>e emissions that cause climate change. In order to reduce emissions it is important to understand sources of emissions and to measure them.

First step for tourism businesses is to identify the sources of the greenhouse gases within own operations and in the value chain. Here it is important to be familiar with the scope 1, scope 2 and scope 3 emissions. Scope 1 emissions are directly related to own operations, i.e. those operations that are under control of the management. Some common sources in the scope 1 include: transportation, heating of the buildings, kitchen operations etc. Scope 2 emissions relate to the emissions produced during the purchased energy production. Scope 2 emissions emerge from the use of electricity if the electricity is not produced at the site. Scope 1 and 2 emissions can be determined relatively easily using the organisation's utility bills and fuel expenses and emission factors. Scope 3 emissions are defined as all other indirect emissions, caused along an organization's value chain. Since the organisation is not emitting these emissions itself it can be difficult to obtain the necessary information from suppliers, partners, customers and other stakeholders. Scope 3 emissions usually make up the largest % of emissions. Learn more about scope 1,2 and 3 by visiting the official website of Greenhouse Gas Protocol which establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations: <https://ghgprotocol.org/>

### Example: hotel ski shuttle

It is common that hotels near ski resorts offer ski shuttle service. If the vans used for transport of tourist to and from the slopes are powered by diesel than emissions from this van fall under scope 1. If however the van is electric, then the emissions fall under scope 2 because we purchase electricity from our energy supplier who reports the emissions for electricity production as scope 1. All emissions that were emitted during the production of the van that we purchased fall under scope 3 as own emissions from the van supplier.

The second step is to measure GHG emissions. In order to measure GHG emissions one needs data about the source (eg. consumed energy) and GHG emission factor. For emission factors please refer to IPCC (International Panel for Climate Change) and their emission factor database: <https://www.ipcc-nggip.iges.or.jp/EFDB/main.php>.

How to calculate CO<sub>2</sub>e emissions?

source of emissions x emission factor = CO<sub>2</sub>e emissions

Example: Hotel ski shuttle consumed 100l of gasoline in January. The CO<sub>2</sub>e emission factor for gasoline is 2,30. CO<sub>2</sub> emissions in kg equal 100 x 2,3 = 230 kgCO<sub>2</sub>e. This means that every liter burnt creates 2,3 kg of CO<sub>2</sub> gas.

### Tool: calculating hotel's GHG emissions

Hotel Carbon Measurement Initiative (HCMI) is a methodology developed by Sustainable Hospitality Alliance (SHA) used as a free tool for hotels to calculate the carbon footprint.



Access the free GHG calculation tool here:  
<https://sustainablehospitalityalliance.org/resource/hotel-carbon-measurement-initiative/>

Final step is the design of mitigation measures. These are the measures that are created to reduce energy consumption from non-renewable sources, improve energy efficiency, reduce waste and eliminate other sources of GHG gasses.

### 3.3. Managing climate risks

Climate change adaptation is related to risk assessment and implementing measures to reduce the risk of climate change on the business.

There are 2 types of climate related risks:

- the physical risks of a changing climate, including more frequent or severe weather events like flooding, droughts and storms
- the transition risks from moving towards a carbon-neutral economy.

Example 1:

*Risk:* Winter tourism in Europe depends on low temperatures and stable period of snow coverage. Climate change could increase average temperatures in winter causing shortage of snow.

*Adaptation measure:* Snowmaking is proposed as adaptation measure, however it is limited by biophysical and financial constraints.

Example 2:

*Risk:* Rising sea levels and extreme weather could threaten coastal tourist infrastructure and erode and submerge beaches.

*Adaptation measures:* investing in infrastructure resilience and artificially strengthening beaches.

Example 3:

*Risk:* Heat waves and water shortages are affecting the desirability of some summer destinations. This could lead to less tourists and lower revenues.

*Adaptation measure:* shifting to 'shoulder' months of April, May, September and October

For implications of climate change on tourism industry please refer to this document prepared by University of Cambridge:

<https://www.cisl.cam.ac.uk/system/files/documents/ipcc-ar5-implications-for-tourism-briefing-prin.pdf>

Climate risk assessment consists of 5 main steps. Generally, the first step in the assessment is to determine the sensitivity to the climate hazards. This includes mapping of the different type of buildings and infrastructure and assessing the potential damage that a climate factor (eg. flooding, drought, wildfire...) could cause. Next step is to evaluate the exposure, i.e. to determine the likelihood of current and future extreme weather events or climate factors to occur. This is usually done by using climate scenarios and maps that show the climate risks. Third step is to assess vulnerability which is calculated as  $V = S \times E$  where V is vulnerability, S is sensitivity and E is exposure. This is done in form of the matrix. For those activities or buildings that are marked as highly vulnerable, risk assessment should be conducted. To determine risk, one has to assess the likelihood and severity of the impact. Based on the determined risks, businesses can determine ways of adaptation to climate change.

**Tool: climate risks assessment**

EU developed a guideline for project managers on how to assess vulnerability of the investment to the climate change. This methodology can be applied for the assessment of climate change impacts on the tourism buildings and infrastructure as well as tourism activities.

Detailed methodology can be accessed via this link:  
<https://climate-adapt.eea.europa.eu/en/metadata/guidances/non-paper-guidelines-for-project-managers-making-vulnerable-investments-climate-resilient/guidelines-for-project-managers.pdf>

## 4. WATER MANAGEMENT

### 4.1. Water-related sustainability issues

Water is essential for any type of normal human activity. The same is true for the tourism industry which could not function without clean water for food preparation, cleaning and hygiene, guest comfort and recreation. In the EU, water is coming under increasing pressure from the continuous growth in demand for sufficient quantities of good-quality water for a whole range of uses. Not everyone is fortunate enough to have adequate clean water, and climate change is beginning to have a profound impact on water distribution in many regions. Additionally, Water stocks are vulnerable to various forms of contamination coming from human activity. Which is why it is necessary to develop water management skills among tourism professionals.

Some of Earth's groundwater is fossil water, created when Earth's climate was far different. Today such water is as finite as petroleum. Other aquifers are renewable, but people are pumping many of them out faster than precipitation is recharging them, which is why it is necessary to bring withdrawals into balance with recharge (National Geographic, 2023).

Lack of water directly and indirectly affects tourism businesses. For example, if agriculture faces extreme droughts or floods there will be disruptions in the food supply chain which will negatively affect offerings in restaurants and hotels. If a region is facing short term water scarcity it is possible that authorities will introduce restriction measures and prevent tourism businesses from washing their vehicles, running their spa facilities and maintaining green areas. Contamination in water bodies (rivers, lakes, sea...) can divert tourists from coming into these areas. Moreover, it can cause harmful effects on health. To conclude, responsible water management in terms of rational consumption and preventing pollution is crucial for a sustainable tourism value chain.

Before starting developing a water management plan, CSR experts should check with their local environmental agency to ensure that they are aware of all legislation and standards applicable to their business operations.

### 4.2. Water audit

The first step in sustainable water management is to conduct a water consumption audit and in general an assessment of current water management practices. Good way to start is to make an assessment of annual water consumption. You will find needed information on water bills if you are using water from the water supply system. If you are using water from other sources you should calculate the consumption yourself.

Second step is to conduct a water audit, i.e. make an inventory of all water uses in your facility and identify ways to increase water use efficiency. Water can be used in guest rooms for hygiene purposes, for washing towels and linens, in the kitchen for food preparation, in the spa area to enable different activities to guests, in the irrigation system, for toilets, for cleaning, for drinking... These inventory can be categorized based on the different business departments (eg. kitchen, accommodation, recreational activities etc.)

On the other hand, businesses should have in mind where used water is disposed of. As a CSR expert you should check and know if your business is a) connected to sewage and wastewater treatment facilities, b) has its own wastewater facilities, c) pumps wastewater into local ditches or the sea.

### 4.3. Water management

In order to improve water management there are different technologies, additional equipment and innovative practices on your disposal.

#### a. Reducing water consumption practices

You can try to identify areas where you can reduce water consumption without investments in new equipment. Here is some advice.

- Use dishwashing machines on full load
- Reduce the number of times towels get changed and washed
- Collect water from glasses and bottles into container and use it for watering the garden or plants
- Turn off the irrigation system when its raining
- Educate your staff to use water responsibly when washing equipment or vehicles
- Schedule gardening to prevent water loss (e.g. gardening either early in the morning or late in the evening to prevent water loss due to evaporation.)
- Increasing awareness among guests to use water responsibly while on vacation

#### b. Installing water saving solutions

Another step in improving water consumption is investment in water saving and water efficiency technology and solutions. We provide you with a couple of examples.

- Low-flow or dual flush toilets
- Flow/pressure regulators or aerators on shower heads or taps
- Sensors or timers to control faucets
- Water saving washing machines
- Soil moisture, rain sensors or micro-irrigation/drip systems to improve water conservation in green areas
- Use pool covers to minimize evaporation
- Carry out regular inspections to detect leaks and carry out routine maintenance to prevent malfunctions

#### c. Recycling water

Some businesses go a step further and try to reuse or recycle water. In places where water is scarce, these practices are necessary to ensure sufficient water supply. There are couple of solutions you can look into:

- Greywater reuse system



- Rainwater harvesting system
- Sewage treatment plant

**Tool: Water management in hospitality “Castwater”**

This online tool can help SMEs identify ways to assess and improve water management issues in their enterprise. Through series of questions you will evaluate your current status and identify areas of improvement, based on which the tool will provide recommendations.

The tool is free for use and you can access it here: <https://www.castwater-tool.ceid.upatras.gr/login>

### 3.4. Targets and monitoring

There are several monitoring methods. The easiest and cheapest is based on water bills. More costly include installing smart meters and sub-meters to measure specific users of water such as guest bathrooms. The most efficient and sophisticated is real time monitoring (software used to measure water consumption in real time) however it is often out of the budget for SMEs. You should measure your consumption on a monthly basis and keep records so you can track seasonal changes (if relevant) and improvement over time. Data about water consumption can help you set the targets.

There are several ways you can establish targets:

- A. You can compare business water consumption with tourism industry benchmarks or other businesses in the area.
- B. According to your own past performance and possibilities for improvements.

It is important to set realistic targets and to communicate them to employees as well as customers. You will probably need an awareness raising campaign.

## 4. WASTE MANAGEMENT

### 4.1. Introduction to circular economy

Currently, our economy works in a take-make-waste system. We take raw materials from the Earth, we make products from them, and eventually we throw them away as waste. Much of this waste ends up in landfills or incinerators and is lost. This system cannot work in the long term because the resources on our planet are finite. There are a couple of new economic models proposed to replace the linear model we currently have. A circular economy “decouples economic activity from the consumption of finite resources. It is a resilient system that is good for business, people and the environment” (Ellen MacArthur Foundation, 2022). Circular economy aims to eliminate waste and pollution and design products that will stay in the loop at their highest value for as long as possible, while transitioning to renewable energy and materials. The purpose of the circular economy is to reduce the amount of waste that goes into landfills and to reduce the amount of raw natural resources being extracted from Earth to support the growing needs of society.

Learn more about circular economy in design and management of the tourism value chain:  
<https://circulareconomy.europa.eu/platform/sites/default/files/circular-economy-in-travel-and-tourism.pdf>

All sectors are expected to improve waste management practices in order to minimize the amount of waste that ends up in the landfill as that is the least desirable outcome according to the waste hierarchy. It is important for tourism professionals to learn how to develop sustainable waste management plan and how to implement it in practice.



## 4.2. Waste audit

CSR experts should start waste management by calculating the amount of waste generated. You can find this information on your waste disposal bills, from your waste contractor, or you may need to calculate by yourself. One simple method to do so is by multiplying the volume of bin/can and number of times the bin gets emptied or collected by the service provider. For example, if a hotel with a restaurant has one 1000 l municipal waste bin which is collected twice a week and 1000 l plastic waste bin and 1000l paper waste bin which are collected once a week, then this business generates approximately 208000l of waste annually. To convert this in kilograms, an organization can use a conversion factor depending on the accommodation type. This however is just an estimation and for more precise data an organization should measure the weight of the generated waste.

Type of waste	Volume of bin (l)	Number of removals/year	Annual volume of waste	Conversion factor for hotel with restaurant	Total weight of waste (kg) per year
Municipal waste	1000	104	10400		
Plastic	1000	52	52000		
Paper	1000	52	52000		
			208000l	0,064	18,637

**SOURCE:** Waste counts: A handbook for accommodation operators. Department of hospitality, leisure & tourism management. Oxford Brookes University.

The next step is to compile a list of waste sources. Best way to do it is to do a screening of the operations and to determine where waste is generated and if there are possibilities for reductions. Also, CSR experts should determine what are the current disposal practices. Usually the Food and Beverage and Housekeeping departments produce the greatest percentage but waste is also generated in public areas, gardens and offices. CSR experts should identify what types of waste are generated and how these items can be treated.

Waste audit should also include analysis of current disposal practices. One should identify if the waste is being sorted. If plastics, paper, metal and other recyclable materials are being handed over to a contractor for a proper recycling. How food waste is treated and if perhaps is being composted. What happens to municipal waste?

### 4.3. Waste management plan

#### 3R Strategy

Setting up a waste management programme should be developed around the 3R strategy: **reduce, reuse and recycle**. Most of the manufactured items that are thrown away have involved the use of materials, energy and water during their production and caused pollution in that process. Reducing consumption prevents these impacts and cuts down on waste, as well as the time spent handling it. Secondly, not all waste is ready to end up in landfills. There are items that can be reused, sold or donated to organizations that can find them a new purpose. Third option is recycling. Often it is more resource-efficient to manufacture new products through recycling old ones, as in the case of aluminum cans or glass containers. Thus it is important to properly sort and dispose waste so it can be recycled.



#### Waste categories

In order to manage waste properly, one needs to be familiar with different types of waste. However, different countries have different rules for waste disposal and recycling. Please refer to the local waste management site for more information about waste categories and disposal instructions.

#### Different types of waste

- Plastic:** plastic bottles, plastic cups, shampoo bottles, shower caps, plastic bags...
- Paper:** newspapers and magazines, office paper, menus, notepads...
- Metal:** cans, aluminum foil...
- Glass:** bottles, jars, drinking glasses...
- Textile:** Towels, robes and linens, uniforms...
- Electronic:** computers, printers, monitors, TVs, telephones...
- Food waste:** tea bags, coffee grounds, eggshells, raw fruit and vegetable peelings, plate waste (i.e., food that has been served but not eaten)
- Hazardous waste:** cleaning chemicals, batteries, cooking oil, light bulbs...
- Municipal waste:** used tissues, hygiene products...



### Waste management plan

Waste management plan should contain an inventory of items that end up as waste and a description of current disposal practices. CSR Experts should identify opportunities for waste reductions and alternative waste management practices according to 3R strategy. One should propose an action plan for specific item and instruct employees on this new approach. **Here is an example of a waste management plan.**

Item	Current practice disposal	Alternative practice (3R)	Action plan
<b>GUEST ROOMS - WASTE INVENTORY</b>			
Single use shampoo bottle	Donation to the local NGO	Reduce	Install refill shampoo bottles
Paper cup	Municipal waste (disposed by the guest)	Reduce	Replace with mugs
Glass water bottle	Recycled in glass bin	Reduce	“take -back” contract with supplier
Plastic wrapping from slippers	Municipal waste (disposed by the guest)	Recycle	Install bin for plastic waste in the rooms and instruct guests to separate waste

Before developing a recycling program it is important to find out which material can be collected by local waste and recycling contractors. Then, CSR experts should establish a list of recyclable materials for each department and prepare bins for recycling with clear instructions on how to properly dispose of different types of waste. Recycling should start at the source, meaning that guest rooms should have small bins with compartments for paper, plastic and glass, as well as housekeeping trolleys. Similar bins should be installed in the lobby, kitchen, garden, offices and other places where waste could be generated. Make sure your recycling bins are clearly labeled with what can and cannot go in to avoid confusion among staff. If your business is too small to run a recycling programme on its own, you might consider forming a joint venture with neighbouring businesses.

### Communication with employees and customers

When developing a waste management plan you will need to discuss any proposed programme in advance with the employees who will be expected to participate (eg. housekeeping department, kitchen...). The more convenient the system is for them, the greater the level of success. You should write down a common vision of the waste management and present a waste management plan to the involved stakeholders in a clear and concise way. You should ensure that employees understand the reasons for the programme and are motivated to participate. Provide clear instructions for the staff throughout the company and ensure that they understand their responsibilities. You should be patient and ready for repeating yourself as proper waste sorting takes time to become part of the staff's routine. Regular and clear communication is thus essential to maintaining interest. You can try to incentivise staff by allocating the money you save through recycling to a special staff fund. Another suggestion is to create a game where departments compete to see who will achieve targets and who will come up with the best suggestion on how to reduce waste.

### Additional tips for waste management





- Avoid small packaging, if necessary use paper, cloth or biodegradable materials
- Purchase products in bulk in order to reduce the amount of packaging materials
- Use recycled or biodegradable materials for single-use products
- Sell or donate old furniture and textile
- Use biodegradable or recycled paper for marketing purposes
- Use double-sided printing option
- Don't print what could be kept in digital
- Offer digital-only brochures
- Avoid offering drinks in non-reusable plastic bottles

## 4.4. Monitoring, KPIs and targets

Your plan should also contain SMART (specific, measurable, attainable, realistic and time-bound) waste reduction goals as well as an efficient system for monitoring realization of the goals.

A base for setting goals should be the results obtained through the initial waste audit. You should acknowledge the current amount of waste and set the goals for reductions. Be realistic about the targets and connect the targets to specific actions so it is easier to track progress. Benchmarking is another way that can be helpful for setting goals. Benchmarks from your industry can help identify opportunities for savings and enable you to compare your performance against that of similar businesses.

### Example: identifying opportunities for savings through waste benchmarks for hotels

1. Calculate the volume (litres) or weight (kg) of waste sent to landfill over the last full calendar year. You can find this information on your waste disposal bills, from your waste contractor, or you may need to conduct your own research
2. Divide the total volume or weight by the number of guest nights spent at the hotel over the past calendar year.
3. Calculate your potential savings using the equation:  
your score - industry benchmark = potential for savings

You should monitor the results of both your one-off actions and ongoing efforts. You should identify what are the critical points for success of the action plan and determine how often you will check this point. You can decide to monitor daily or weekly at first, moving to monthly later on. For example, if you are trying to reduce kitchen waste then you might introduce daily checks to monitor how kitchen staff separates the waste that can be composted and that needs to be disposed of which will allow you to introduce corrective measures. It is up to CSR experts to determine what are the activities that need to be introduced in order to reach goals.

### Explore: Global Tourism Plastics Initiative by UNWTO

According to the UNWTO, each year, an additional eight million tonnes of plastic end up in the world's oceans where it is responsible for the deaths of sea birds, sea mammals, marine turtles and fish. With 80% of all tourism taking place in coastal areas, plastic from the sector can be a large contributor to this pollution. In fact, research has shown that during peak tourist season, marine litter in the Mediterranean



region increases by up to 40%. In-land and urban tourism can also contribute to marine plastic pollution, with huge amounts of plastic pollution ending up in rivers and getting carried into the oceans. Another problem with plastic is the way it is produced. More than 99% of plastics are derived from oil, gas and coal — all of which are dirty, non-renewable resources, and if current trends continue, plastic could account for 20% of the world's total oil consumption by 2050. The process of extracting, transporting and refining those fossil fuels, then manufacturing plastic, emits billions of tonnes of greenhouse gasses contributing to the climate change.

Urgent action is needed which is why The Global Tourism Plastics Initiative was founded. The initiative aims to stop plastic ending up as pollution while also reducing the amount of new plastic that needs to be produced. To realize this vision, tourism companies should eliminate the plastic items they don't need; innovate so all plastics they do need are designed to be safely reused, recycled, or composted; and circulate everything they use to keep it in the economy and out of the environment.

**Learn how to reduce plastic use in your business here:**  
<https://www.oneplanetnetwork.org/programmes/sustainable-tourism/global-tourism-plastics-initiative/tools-and-resources>

## 5. GREEN ACTION

### ***Case 1: Sustainable hospitality in Boutique hotel Stadthalle, Austria***

This lovely boutique hotel in Vienna has committed to give positive contribution to all 17 Sustainable development goals. They managed to achieve zero-energy balance - Boutiquehotel Stadthalle generates as much energy via its groundwater heat pump, photovoltaic technology and solar panels as it consumes. To reduce energy consumption they for example do not offer energy-guzzling minibars in the rooms and they offer green bonus to encourage guests to travel with reduced-CO2 means of transportation. They sort and recycle 100% of trash, use LED light bulbs and eco-shower heads. They offer 100% organic breakfast, mostly sourced locally and Fairtrade certified coffee delivered with sailboats. Their rooms are equipped with self-made upcycling furniture and when it comes to cleaning they only use biodegradable cleaning products in conjunction with washable microfiber towels.

To learn more about sustainable development goals please visit official UN website: <https://sdgs.un.org/goals> and for exploring how they integrated SDGs into daily operations please refer to Boutique hotel Stadthalle's website: <https://www.hotelstadthalle.at/en/boutiquehotel/sdgs.html>



### **Case 2: Zero waste dining – Nolla, Finland**

This Michelin green star restaurant in Helsinki was founded by three chefs from Spain, Portugal, and Serbia. Restaurant management is driven by the idea of serving great food without compromising sustainability. They aim to minimize the amount of waste they produce with everyday actions through waste-free ideology. They source all of ingredients from local farmers, fishermen and producers, with a strong focus on sustainability. They place a heavy emphasis on seasonality, which is how they can offer the best of local produce all year round. They have in-house composter which enables them to close the loop by offering their suppliers composted soil to take back to their fields. They have thought of every little detail, from food packaging, cutlery, clothing to energy consumption.

Learn more about Nolla restaurant here: <https://www.restaurantnolla.com/restaurant>, and to get familiar with the zero waste please visit: <https://zerowasteurope.eu/about/about-zero-waste/>

### **Case 3: Impact positive tour operator – Up Norway, Norway**

Travel agency that designs authentic and unique travel experiences in Norway away from popular tourist destinations. They have ready-made journeys and design custom-made experiences. All of their journey are designed to have a net positive impact on society and nature. When forming their offer they carefully choose transportation between destinations that emits less CO2 emissions, they encourage their travelers to spend more time at a destination and they choose quality assured partners that have documented sustainable practices, and they are offsetting CO2 emissions generated with the journeys they curate. They are Travelife and B Corp Certified.

Learn more about their impact here: <https://upnorway.com/impact>, and if you are interested in sustainable tour operations check Travelife standard which creates criteria of sustainable travel operations: [https://www.travelife.info/index\\_new.php?menu=home&lang=en](https://www.travelife.info/index_new.php?menu=home&lang=en).

## **6. CONCLUSIONS**

- Tourism experts need to improve their environmental results as natural resources are finite and ecosystems are increasingly under negative impacts leading to imbalances.
- Green skills include energy, water and waste management.
- This module covered skills such as how to audit energy and water consumption and waste generation, how to develop management plans for reducing negative environmental impacts and how to set targets and implement measures.
- Best practices of environmental management have been presented.



## 7. REFERENCES AND “IF YOU WANT TO LEARN MORE”

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If you want to learn more see:

- **Learn about sustainable development and doughnut economics here:**  
<https://www.kateraworth.com/doughnut/>
- **Learn more about planetary boundaries here:**  
<https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>
- **Get familiar with the implications of climate change on tourism industry here:**  
<https://www.cisl.cam.ac.uk/system/files/documents/ipcc-ar5-implications-for-tourism-briefing-prin.pdf>
- **Learn how to reduce food waste in tourism businesses here:**  
<https://www.oneplanetnetwork.org/programmes/sustainable-tourism/food-waste-reduction/tools-resources>
- **Learn how to reduce plastic use in your business here:**  
<https://www.oneplanetnetwork.org/programmes/sustainable-tourism/global-tourism-plastics-initiative/tools-and-resources>

