

A SUMMARY OF “CURRICULAR INTEGRATION OF HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT”

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Abstract

The integration of Higher Education for Sustainable Development (HESD) into curricula is essential for equipping students with the knowledge and skills needed to address global sustainability challenges. This paper explores HESD through four key areas: defining core components, establishing an orientation framework, emphasizing its importance, and implementing competency-based approaches. A critical aspect of HESD is embedding sustainability principles within subject matter, aligning with the UN Sustainable Development Goals (SDGs) to enhance learning opportunities. Additionally, effective didactic strategies are crucial for fostering sustainability competencies. This includes five fundamental pedagogical approaches, diverse learning dimensions, and methodologies tailored for HESD. The spiral-curricular integration model ensures progressive learning, while module descriptions serve as frameworks for action. By embedding HESD into curriculum planning, higher education institutions can play a transformative role in advancing sustainable development.

Keywords: *higher education, sustainable development, SDGs, circular integration, competencies*

Note: The paper is based on: Molitor, H.; Krah, J.; Reimann, J.; Bellina, L.; Bruns, A. (2022): Designing future-oriented curricula – a practical guide for the curricular integration of higher education for sustainable development. Working group “Sustainability at Brandenburg Universities” (Eds.), Eberswalde. <https://doi.org/10.57741/opus4-811>

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1. HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT (HSDE)

1.1. An Introduction

What do we define as (higher) education for sustainable development (HESD)?

“Education for sustainable development (ESD) enables people to think and act in a future-oriented way, i.e. to understand the impact of their own actions on the local surrounding and on people in other parts of the world, to be able to imagine the impact on future generations, and to make responsible decisions based on this. ESD prepares people to actively deal with the problems that threaten the sustainable development of our planet and to find solutions to these problems together. Thus, ESD means the empowerment to participate as a change agent in the transformation towards more socially just and ecologically inclusive societies.” (Bellina et al. 2020, p.24, translated by Molitor et al. 2022)

Education for sustainable development is an all-encompassing educational approach designed to systematically integrate (university) teaching that empowers students to drive transformation toward sustainable development. The core learning objective of "change agent competency" (Bellina et al. 2020, p. 29) can be broken down into four key areas (see Fig. 1).

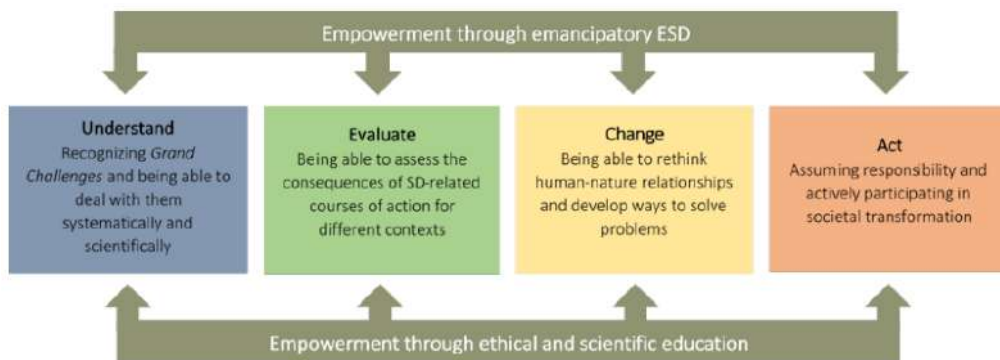


Figure 1 Aims of higher education for sustainable development (Source: Adapted from Bellina et al. 2020, p. 33, and translated by Molitor et al. 2024)

Sustainable development is an intricate issue that often involves conflicting goals, as exemplified by the Sustainable Development Goals (SDGs), the aim of Education for Sustainable Development (ESD) should be to foster the development of dilemma sensitivity or ambiguity tolerance (Müller-Christ & Weßling 2007), enabling individuals to recognize, accept, and effectively address these contradictions and trade-offs.

SDG interlinkages visualization tool: A tool enabling users to visualize the interlinkages between the Targets of Sustainable Development Goals, as well as exploring and downloading indicator-level data for selected targets and countries: <https://knowsdgs.jrc.ec.europa.eu/interlinkages/targets>

The framework for higher education for sustainable development (HESD) outlined in the HOCH-N guideline “Education for Sustainable Development in Higher Education” defines the core components of HESD (see Fig. 2).

The orientation framework demonstrates that ESD-specific elements are essential across all areas of curriculum planning—ranging from learning objectives and targeted competencies to learning content, didactics, and methodology. These elements can enhance and expand the goals, content, and methods of existing courses or serve as guidelines for creating new sustainability-focused courses. Additionally, the framework can be used to integrate ESD into study programs by analyzing individual modules through the lens of its core elements. This allows for the supplementation and alignment of content and methodology, ensuring that sustainability knowledge and competencies are acquired in a coherent, progressive manner throughout the study program.

ESD Didactics & Curriculum Design	Why & what for: Orientation	Justification	SD needs an educational concept: ESD
		Objectives	SD needs specific competencies
	What: Learning environments	Content	SD needs specific teaching content
		Ethics	SD needs ethical literacy
		Science	SD needs new methods
		Practice	SD needs sustainability professionals
		Participation	SD needs collaboration and participation
	How: Teaching and learning	Methodology	SD needs transformative teaching-learning environments
	Where: Further development	Evaluation	SD needs new forms of evaluation
		Capacity Building	SD needs specific teaching competencies
		Quality	SD needs quality management

Figure 2: Orientation framework for HESD (Source: Adapted from Bellina et al. 2020, p. 28, and translated by Molitor et al. 2022)

1.2. Importance of HESD

The global community is confronting immense challenges. To meet the 1.5-degree target, drastic measures are required to reduce greenhouse gas emissions. The ongoing impacts of global warming—such as extreme heat waves, heavy rainfall, and droughts—along with their consequences, are regularly analyzed and summarized in the IPCC Assessment Report.

Given these global challenges, competencies in Education for Sustainable Development (ESD) are essential as key skills across all professional fields. The UNESCO program *ESD for 2030* provides a roadmap for integrating ESD into the education sector, calling on all member states to implement it at the national level. For universities, this means embedding ESD into key *institutional frameworks to ensure sustainability is integrated into teaching*.

A crucial step for universities is embedding sustainability into study and examination regulations, as well as integrating it into module descriptions across study programs.

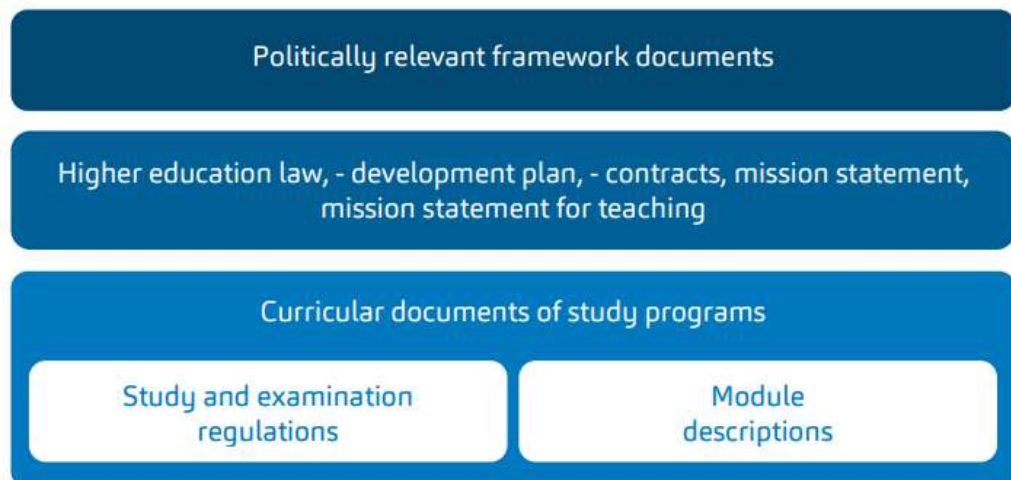


Figure 3 Overview of documents relevant to higher education for the curricular, Source: Molitor et. al 2024

Educational institutions have been called upon to address sustainable development since the 1992 Rio Summit with Agenda 21 (UNCED 1992). This mandate continues at the federal level through the National Action Plan (NAP) for implementing the UNESCO *World Action Program on Education for Sustainable Development* (2015–2019) and the UNESCO *ESD for 2030* program, which guides efforts from 2020 to 2030 (German Commission for UNESCO [DUK] 2022; National Action Plan on Education for Sustainable Development [NAP] 2017).

The German Rectors' Conference supports this mission through recommendations for fostering a culture of sustainability. Universities, in particular, play a crucial role as key learning environments where ecological, social, and economic dimensions are considered holistically, innovative solutions for present and future challenges are developed, and future decision-makers are trained across various fields (HRK 2018).

1.3. Implementation of Competency-Based HESD

The goal of HESD is to empower students and teachers to (co-)create sustainable development and critically reflect on their own actions and values. To achieve this, merely reproducing knowledge is not enough. It is crucial, therefore, to foster the development of competencies for sustainable development. Over the past 25 years, various competency models for sustainable development have been proposed, sharing common elements but emphasizing different aspects (Krah et al. 2021; Molitor et al. 2022; UNESCO 2017; Wiek et al. 2016).

The framework of key competencies in sustainability, outlined by Brundiers et al. (2021), focuses on the essential competencies needed to effectively contribute to sustainable development.

The key competencies are:

- Implementation Competency
- Strategic-thinking Competency
- Values-thinking Competency
- Futures-thinking Competency
- Systems-thinking Competency

These key competencies are completed by “enabling” competencies:

- Integrated Problem-Solving Competency
- Interpersonal Competency
- Intrapersonal Competency

This competency framework is especially relevant in this context because it was specifically designed for higher education. It connects key competencies in sustainability with the foundational academic skills developed throughout higher education, as well as the specialized knowledge from various disciplines (see Fig. 4).

For applying the key competencies in sustainability (from Brundiers et al., 2021), their operationalization based on Wiek et al. (2016) is particularly useful. Wiek et al. (2016) also outline learning objectives, teaching content (concepts), and implementation methods for different levels of mastery (novice/intermediate/advanced). These levels of mastery highlight that competency development is envisioned as an ongoing, progressive learning process.

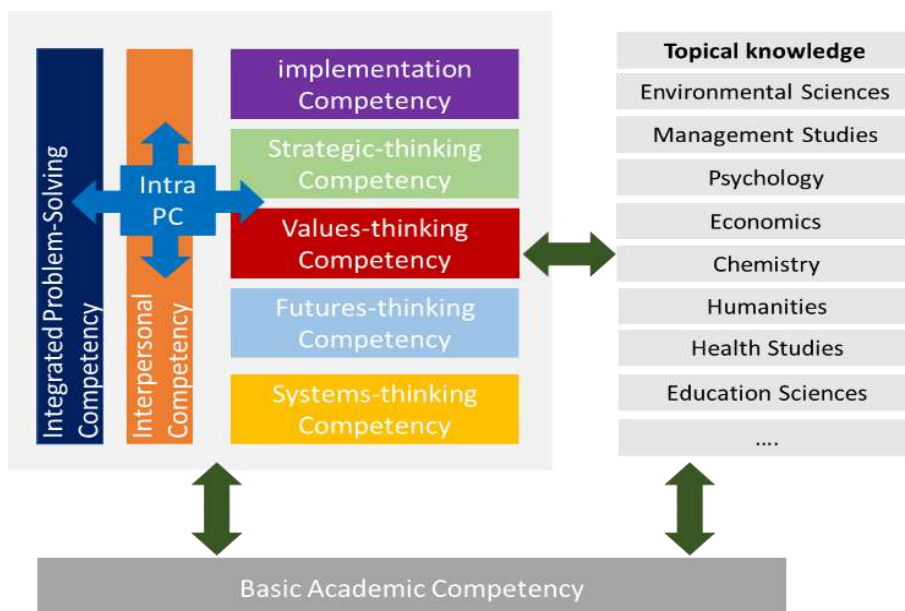


Figure 4 Key competencies in sustainability linked to discipline-specific knowledge and basic academic competencies (Source: own elaboration, based on Brundiers et al. 2021)

In accordance with the requirements for study program accreditation and competency-oriented teaching, the competencies to be acquired must be clearly outlined in each module description. To ensure nationwide comparability, these competencies are structured according to the German Qualifications Framework (DQR) or the Higher Education Quality Framework (HQR).

The DQR aims to enhance transparency within the German education system by serving as an orientation framework. It classifies qualifications from various educational sectors into eight levels, each defined by learning outcomes that specify what learners should know, understand, and be able to apply upon completing the learning process. The DQR is aligned with the European Qualifications Framework (EQF), which facilitates the comparison of qualifications across EU member states (BMBF 2022).

2. INTEGRATION OF SUSTAINABILITY INTO THE SUBJECT MATTER

2.1. Sustainability and the SDGs

The 1987 Brundtland Report defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their needs” (WCED 1987). To achieve this form of development, sustainability strategies such as efficiency, sufficiency, and consistency play a crucial role (Grunwald & Kopfmüller 2012).

The efficiency strategy focuses on minimizing resource consumption in the production of goods. The sufficiency strategy promotes sustainability by encouraging a shift in consumption behavior and recognizing absolute limits to growth. Meanwhile, the consistency strategy seeks to replace environmentally harmful processes, technologies, and materials with sustainable alternatives, such as closed-loop economic systems and renewable resources (Ibisch et al. 2022).

The Sustainable Development Goals (SDGs) were established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. Consisting of 17 goals and 169 target, they serve as a framework for global transformation, aiming to balance social justice and economic progress while respecting the Earth's ecological boundaries (United Nations General Assembly 70/1 [UN] 2015).

The SDGs were developed through an inclusive process that involved not only political decision-makers but also civil society, incorporating diverse perspectives on global challenges. Rather than being ranked in a hierarchy, the goals form an interconnected network where synergies can enhance progress, but conflicts of interest and contradictions may also arise between certain objectives (Ibisch et al. 2022).

In the Stockholm Resilience Center's "SDGs Wedding Cake" model, the SDGs are organized so that economic and social dimensions are built upon an ecological foundation (see Fig. 5). This approach reflects the principles of strong sustainability, whereas weak sustainability tends to consider ecological, social, and economic aspects largely in isolation from one another (Ibisch et al. 2022).

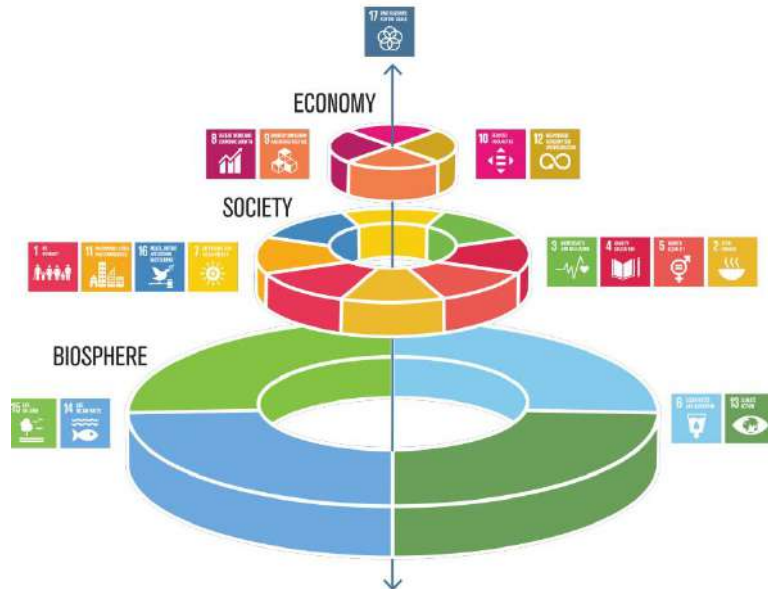


Figure 5 The SDGs Wedding Cake (Source: Jerker Lokrantz / Azote for Stockholm)

2.2. SDGs as a Learning Opportunity

The SDGs also offer new frameworks for Education for Sustainable Development (ESD). Notably, SDG 4—Quality Education—aims to provide lifelong, quality education for everyone and is crucial for all other SDGs since ESD fosters key competencies that support social, economic, and ecological objectives (see especially SDG 4.7).

To integrate the SDGs into their teaching, educators might start by asking themselves:

- Which SDGs are relevant to my professional field?
- How can these SDGs be incorporated into my curriculum?

The UNESCO publication [Education for Sustainable Development Goals – Learning Objectives](#) can be particularly helpful, as it lists specific learning objectives for each SDG and suggests topics and activities.

3. INTEGRATION OF HESD INTO DIDACTICS

3.1. Characteristics of HESD Didactics

The selection and design of teaching formats is a key component of integrating HESD, as appropriate teaching-learning methods are essential for developing the desired sustainability competencies.

In practice, higher education for sustainable development is characterized by five fundamental pedagogical approaches for ESD:

(1) ESD is competency-oriented

Teaching is designed to acquire and develop key competencies for sustainable development. Students know which competencies are intended as learning objectives and what they entail. They actively engage with the development of their own competencies during the course (or study program). Teachers design learning opportunities in which sustainability competencies can be developed.

(2) ESD is learner-centered

Students are independent learners, they actively develop their knowledge. Their own lives, particular contexts and prior knowledge are important points of reference and are actively included in the learning process. Meta-reflections of their own learning processes are part of this, as well as references to informal learning in the area of sustainability. Teachers are more of learning facilitators than knowledge mediators.

(3) ESD promotes active learning

Students make tangible, practical experiences with the topic of the course; they design transformation and specific implementations – for example through projects. They are guided to observe and reflect on this experience, to abstract and generalize, reflect on (the learning objectives) and then apply what they have learned in new situations. Teachers create action-oriented learning opportunities and guide the reflexive process.

(4) ESD enables transformative learning

Transformative learning enables learners to question, understand more deeply and, if necessary, change their worldviews, ways of thinking, values and behaviours. Students learn not only to discuss from their own perspective, but also to perceive different points of view and the values/assumptions behind them – and thus also to reflect on their own perspective. Teachers support students in questioning the status quo and in dealing with arising uncertainties in a constructive way.

(5) ESD includes inter- und transdisciplinarity

Problems arising from unsustainable ways of living and producing are complex. Therefore, solving them requires collaboration both between different disciplines (interdisciplinary) and between research and practice outside universities (transdisciplinary). Students develop an understanding of these dimensions and (where possible) gain practical experience with inter- and transdisciplinary approaches and forms of cooperation.

Teachers create learning opportunities for this – within the framework of the possibilities of their course. There are particularly suitable teaching formats for this kind of teaching and learning, including experiential learning, real-world learning (Brundiers et al. 2010), problem-based learning (Brundiers & Wiek 2013), research-based learning, project-based learning, service learning, and others. If such a teaching format is not applicable in a specific teaching situation, the characteristics of HESD can nevertheless be implemented on different “levels of ambition”.

3.2. Learning Dimensions of HESD

Through competency-oriented teaching, three dimensions of competency development are addressed:

Knowing: Cognitive learning objectives; various forms of knowledge acquisition	Acting: Behavioural learning objectives; applying knowledge and putting it into practice	Being: Social-emotional learning objectives; personal, reflexive learning in context
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The UNESCO publication *Education for Sustainable Development Goals – Learning Objectives* demonstrates how the SDGs can be applied across three learning domains and provides specific strategies for incorporating these domains into teaching. Consequently, ESD can be integrated into university instruction as "three-dimensional learning" by aligning course design and sustainability topics with these operational frameworks.

3.3. Methods for Dimensions of HESD

In HESD, various methods are used to enhance learning. Effective methods should align with the core principles of ESD and incorporate all three learning domains throughout the course.

Individual teaching methods that can be integrated into all forms of teaching:

- [Teaching Methods, Sustainicum Collection](#)
- Exemplary activities for ESD teaching (for educators): [A Rounder Sense of Purpose](#)
- Methods for agile und team-based projects: [Design method toolkit, Digital Society School](#)
- Methods for Design Thinking: [Tools for taking action, Stanford d.school](#)
- Methods for community development: [Community Tool Box](#)
- Methods for knowledge transfer between science and practices: [SCNAT Knowledge – td-net toolbox](#)
- Methods and resources for inter-and transdisciplinary research: [Shape-ID Toolkit](#)
- Encyclopaedia, courses, methods and tools on the topic of Sustainability: [Sustainability Methods Wiki](#)
- Brundiers, K.; Wiek, A. & Redman, C. L. (2010): [Real-world learning opportunities in sustainability: from classroom into the real world](#). In: 1467–6370 11 (4), p. 308–324.
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3.4. Implementation of a Spiral-curricular Integration of HESD

Competency development can span the entire duration of a study program, with certain competencies being progressively reinforced depending on the discipline. The operationalization of key competencies at different levels of expertise, as proposed by Wiek et al. (2016), is particularly useful in this context.

This approach ensures that various learning levels are addressed within the modules. Rather than covering all competencies in every module, they can be introduced selectively and built upon gradually. Spiral-curricular integration facilitates the strategic allocation of resources in module design and implementation, strengthens the interconnection between modules, and supports the overall didactic goals of the study program.

To implement a spiral-curricular integration of HESD, the following guiding questions are essential for analyzing the study program:

- Which understanding of sustainability is prevalent in the study program?
- Which key competencies for sustainable development should be particularly well-developed at the end of the study program, considering the intended occupational profiles?
- Which modules focus on which key competencies for sustainable development?
- Which key competencies for sustainable development will be deepened at which stage of the learning process?

The backcasting method can be a valuable tool for developing an implementation plan within a study program. In collaboration with those responsible for the modules (e.g., module coordinators), long-term goals for spiral-curricular integration are defined, and the necessary steps to achieve these goals are outlined retrospectively. This approach helps to identify potential challenges and resource requirements at an early stage.

In the Backcasting method, one starts with defining a desirable scenario for the future and then the group will analyse the way towards it. By planning the way backwards – starting from the goal – concrete steps and milestones can be defined. Further information on the backcasting method can be found under [this explanation](#).

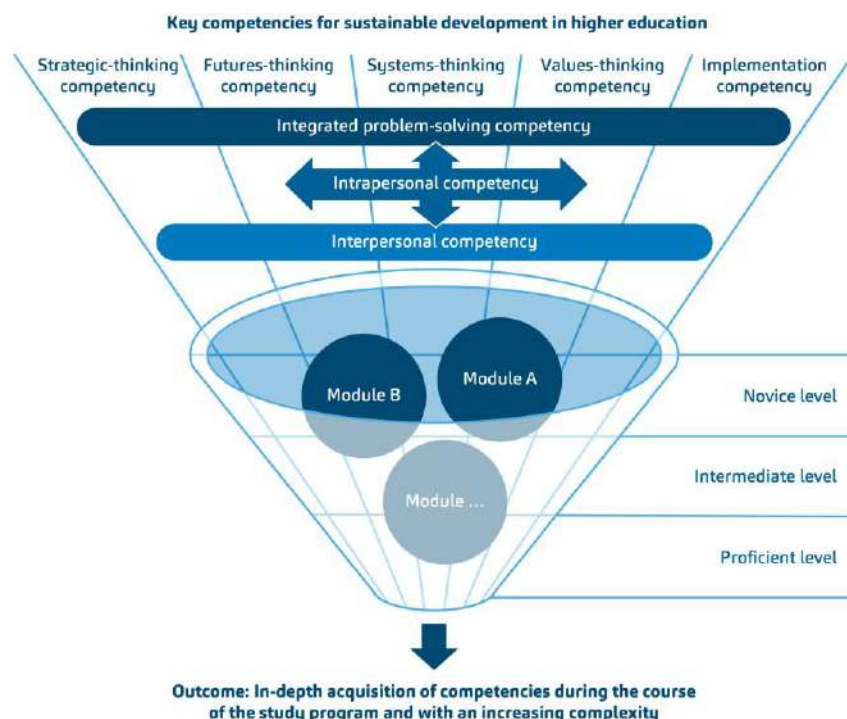


Figure 6 Visualization of the spiral-curricular integration of HESD in a study program. (Source: Molitor et al. 2022, based on Wiek et al. 2016 and Brundiers et al. 2021)

3.5. Module Description as a Framework for Action

Modifying curricular documents—such as study program and examination regulations, as well as module descriptions—depends on the accreditation requirements of the study program and the commitment of those responsible for the modules.

Therefore, two key steps are essential for the successful integration of HESD:

- (1) Who are those responsible for the modules in the study program and who can/would promote the integration of HESD? (see [Stakeholders map](#))
- (2) Where are starting points in the study program for integration of HESD in the module descriptions?

Various types of modules (see Fig. 9) provide opportunities to integrate ESD, regardless of whether a study program is undergoing (re-)accreditation. Compulsory elective modules, in particular, can play a key role by incorporating sustainability- and competency-oriented content across different study programs.

Additionally, elective modules create opportunities for offering supplementary qualifications in sustainable development, even outside the structure of a specific study program if needed.

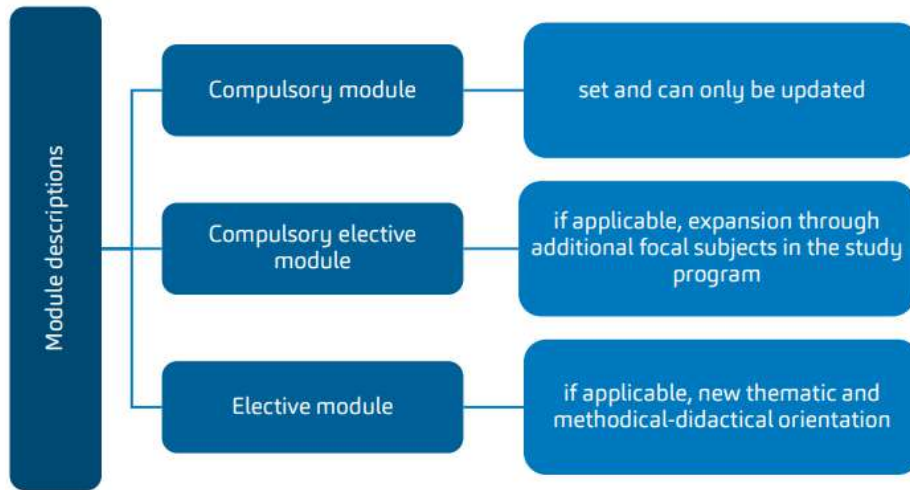


Figure 7 Possible starting points for integrating HESD in study programs, Source: Molitor et al. 2022

4. SUMMARY

To address the global challenge of fostering sustainable development, the competencies provided by Education for Sustainable Development (ESD) are essential as key skills for all relevant professions. This approach is outlined in the UNESCO *ESD2030* program (National Action Plan on Education for Sustainable Development [NAP], 2017), which serves as a roadmap for integrating ESD into the education sector.

(Higher) Education for Sustainable Development is viewed as an educational approach that *"prepares individuals to actively engage with the challenges threatening our planet's sustainable development and to collaboratively find solutions. ESD thus empowers people to participate as agents of change in the transformation toward more socially just and ecologically inclusive societies"* (Bellina et al., 2020, p. 24, translated by Molitor et al. 2022)

This practical guide for integrating HESD into the curriculum highlights three key areas of action:

- (1) The integration of key competencies for sustainability (Brundiers et al. 2021) in study programs or in their module descriptions,
- (2) The thematic and content-related integration of sustainability, using the examples of the Sustainable Development Goals (SDGs) and
- (3) The didactical and methodical implementation education for sustainable development in university teaching

The implementation of these three elements is designed to achieve a spiral-curricular integration of ESD, allowing a study program to be viewed as a cohesive whole. This integration can be carried out progressively and in a way that aligns with different levels of study. This

approach supports a range of implementation strategies and facilitates the continuous development of competencies throughout the course of the program.

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CLIMATE CHANGE AND TOURISM

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Abstract

Climate change and tourism are closely interconnected, with tourism both contributing to and being affected by global climate change. The greenhouse gas (GHG) effect, driven by emissions from fossil fuel combustion, deforestation, and industrial activities, leads to increased global temperatures. Major sources of GHG emissions include energy production, transportation, and agriculture. Global energy-related CO₂ emissions continue to rise, contributing to more frequent and severe weather events, rising sea levels, and biodiversity loss. Efforts to mitigate climate change involve international agreements, renewable energy adoption, and emission reduction policies.

Tourism significantly contributes to climate change through emissions from transportation, accommodation, and recreational activities. Aviation, in particular, is a major emitter of CO₂. A shift toward sustainable travel modes, such as rail transport, is essential to reduce the sector's impact.

Conversely, climate change affects tourism by altering destinations permanently. Coastal areas face erosion and flooding, while ski resorts experience shorter snow seasons. Vulnerability assessments help identify at-risk regions and guide adaptation strategies. To cope with climate change, adaptation measures must be implemented to improve infrastructure resilience, and to promote low-carbon travel alternatives. Effective adaptation ensures long-term sustainability and protects both the environment and the tourism industry's economic viability.

Keywords: *climate change, tourism, greenhouse gas emission, adaptation, vulnerability assessment*

1. INTRODUCTION INTO CLIMATE CHANGE

1.1. The Greenhouse Gas Effect

The greenhouse effect is a natural process that warms the Earth's surface. The Sun emits energy in the form of light and heat, some of which reaches the Earth. The Earth's surface absorbs most of this energy, warming up as a result, and then emits the absorbed heat as infrared radiation back into the atmosphere.

In the atmosphere, certain gases—known as greenhouse gases—such as carbon dioxide (CO₂), methane (CH₄), water vapor (H₂O), nitrous oxide (N₂O), and ozone (O₃), absorb and retain some of this heat. These gases then re-radiate the heat in all directions, including back toward the Earth's surface. This process keeps the planet warm enough to sustain life. Without the natural greenhouse effect, the Earth's average temperature would be around -18°C (0°F) instead of the current average of about 15°C (59°F).

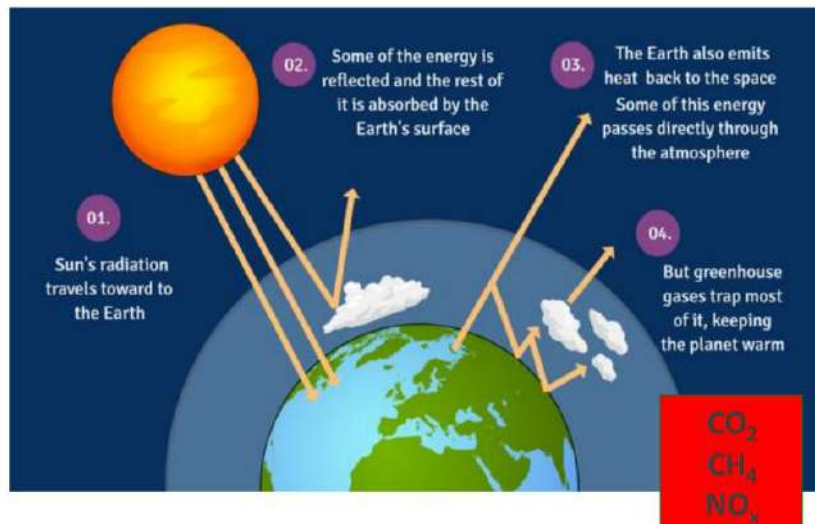


Figure 1 - The Greenhouse Gas Effect and Global Warming, Source: Learning Lilies

However, human activities such as burning fossil fuels, deforestation, and industrial processes are increasing the concentration of greenhouse gases in the atmosphere. This intensifies the greenhouse effect, causing more heat to be trapped and leading to global warming and climate change. This enhanced greenhouse effect is responsible for rising sea levels, more extreme weather events, and other environmental challenges. While the greenhouse effect is essential for life on Earth, its disruption due to human activities poses serious risks to the planet's climate and ecosystems. Human activities, like burning fossil fuels and deforestation, are increasing greenhouse gas concentrations, leading to excessive heat trapping. This causes global warming and climate change, with impacts like rising sea levels, extreme weather, and habitat loss. The greenhouse effect is essential for life, but its disruption poses serious environmental challenges.

1.2. Sources of Greenhouse gases

Global greenhouse gas (GHG) emissions reached a record high of 57.1 GtCO₂e in 2023, marking a 1.3% increase from 2022. This growth rate exceeds the pre-pandemic decade's (2010–2019) average annual increase of 0.8%. The rise spans all major GHG sources except for land use, land-use change, and forestry (LULUCF) CO₂, affecting every sector.

The power sector remained the largest emitter, contributing 15.1 GtCO₂e, followed by transport (8.4 GtCO₂e), agriculture (6.5 GtCO₂e), and industry (6.5 GtCO₂e). Notably, international aviation emissions surged by 19.5% in 2023—far exceeding the 2010–2019 average annual growth of 3.1%—indicating a near full recovery to pre-pandemic levels. Other rapidly growing sectors, with increases exceeding 2.5%, include fugitive emissions from fuel production (oil and gas infrastructure and coal mines), road transportation, and energy-related industry emissions (UNEP Emissions gap report 2024).

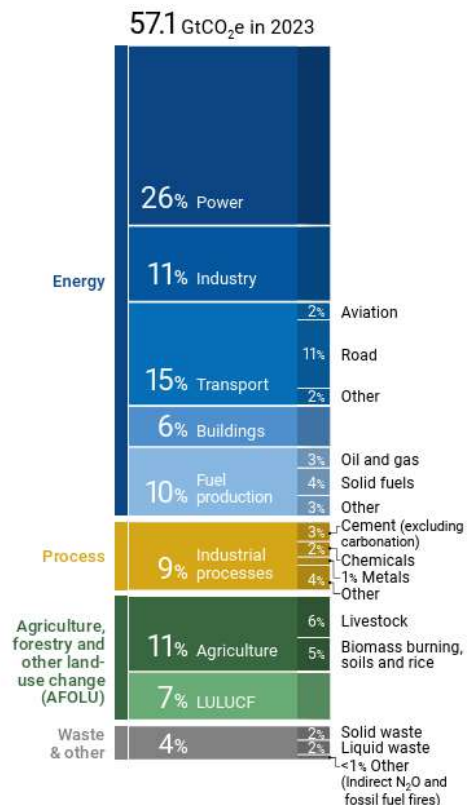


Figure 2 - Total GHG emissions in 2023, Source: UNEP Emissions gap report 2024

GHG emissions among G20 members rose in 2023, accounting for 77% of global emissions. Expanding this group to include all African Union members—more than doubling the number of countries from 44 to 99—raises the total share by just 5 percentage points to 82%. The six largest emitters alone were responsible for 63% of global emissions, while least developed countries contributed only 3%. Despite notable shifts over the past two decades, significant disparities persist in both per capita and historical emissions across major emitters and global regions. For instance, per capita GHG emissions in the United States and the Russian Federation are nearly three times the global average of 6.6 tCO₂e, whereas emissions remain well below this level in the African Union, India, and least developed countries. Additionally, emissions based on consumption patterns continue to reflect deep inequalities (UNEP Emissions gap report 2024).

1.3. Global energy-related CO₂ emission and their annual change

Global energy-related CO₂ emissions rose by 1.1% in 2023, increasing by 410 million tonnes (Mt) to reach a record high of 37.4 billion tonnes (Gt). This follows a 1.3% rise in 2022, when emissions grew by 490 Mt. Coal combustion accounted for over 65% of the increase in 2023.

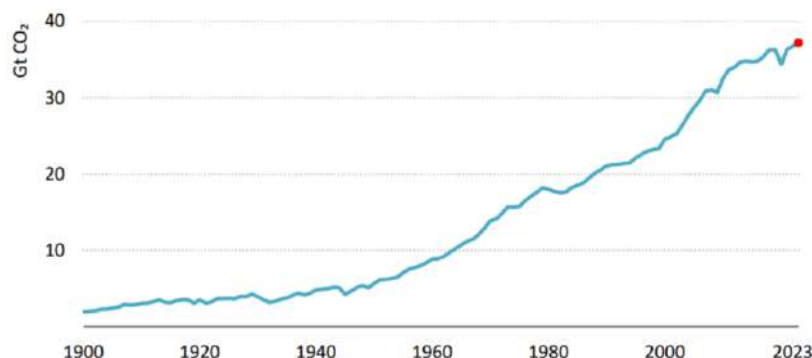


Figure 3 - Total increase in energy-related CO₂ emissions, 1900-2023 (without LULUCF), Source: [iea.org](https://www.iea.org), 2023

Severe droughts led to a global hydropower shortfall, adding approximately 170 Mt to emissions. Without this impact, emissions from the electricity sector would have declined in 2023. Between 2019 and 2023, total energy-related emissions grew by about 900 Mt. However, without the expansion of five key clean energy technologies—solar PV, wind, nuclear, heat pumps, and electric vehicles—this growth would have been nearly three times larger. Thanks to the accelerating adoption of clean energy, emissions are slowing structurally. Over the past decade, emissions have risen at an annual rate of just over 0.5%—the slowest pace since the Great Depression. In advanced economies, GDP grew by 1.7% in 2023, while emissions fell by a record 4.5% outside of a recession. With a decline of 520 Mt in 2023, emissions in these economies have returned to levels last seen 50 years ago, while coal demand—especially within the G7—has dropped to levels similar to those of 1900. The emissions decline in advanced economies was driven by strong renewable energy deployment, coal-to-gas switching in the U.S., weaker industrial activity in some countries, and milder weather conditions (International Energy Agency, 2023)

1.4. Increased global warming

Global warming continues to intensify, with temperature anomalies reaching record highs in recent years.

The graph (Fig 4) from NOAA's Climate at a Glance (2024) illustrates global average temperature anomalies from 1850 through 2024, using the 1901–2000 average as a baseline. Anomalies in climate science refer to deviations from an established baseline or long-term average temperature. A positive temperature anomaly means the observed temperature is higher than the reference average, while a negative anomaly indicates cooler conditions. The graph reveals a significant upward trend in global temperatures over the past century and a half, with the most pronounced increases occurring in recent decades. This trend underscores the ongoing impact of anthropogenic factors on climate change.

The past decade has been the warmest on record, with 2023 experiencing unprecedented temperature anomalies. Ocean heat content has also surged, fueling stronger storms and accelerating polar ice melt. These deviations from historical climate patterns highlight the

urgent need for swift emissions reductions and climate adaptation measures to mitigate the worst impacts of global warming (NOAA, 2024).

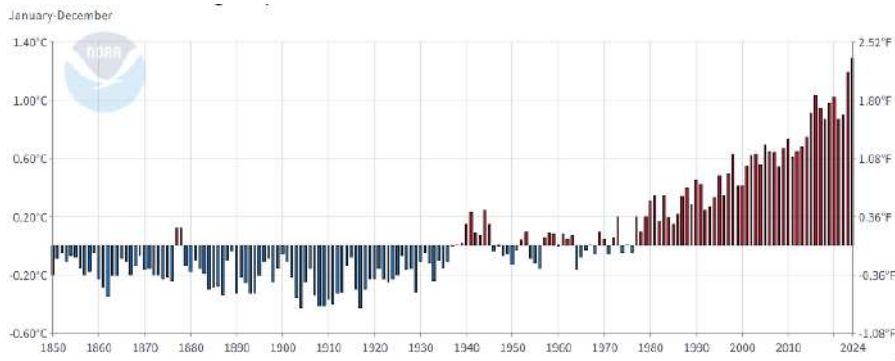


Figure 4 - Global land and Ocean Average Temperature Anomalies, Source: www.ncei.noaa.gov, 2024

The NASA GISS Surface Temperature Analysis (GISTEMP) provides global maps illustrating surface temperature anomalies, which are deviations from a specified baseline period. These maps allow users to visualize regional variations in temperature changes over selected time intervals. By selecting parameters such as data sources, map type (anomalies or trends), mean period, time interval, base period, smoothing radius, and map projection, users can generate customized maps to analyze specific aspects of global temperature changes. For instance, choosing a recent year as the time interval and a pre-industrial base period can highlight areas experiencing significant warming. These visualizations are crucial for understanding the spatial distribution of climate change impacts and identifying regions undergoing rapid temperature shifts (NASA, 2024).

In the figure 5, the anomaly between the years 1990 and 2020 in the mean period December 2023-2024 are illustrated.

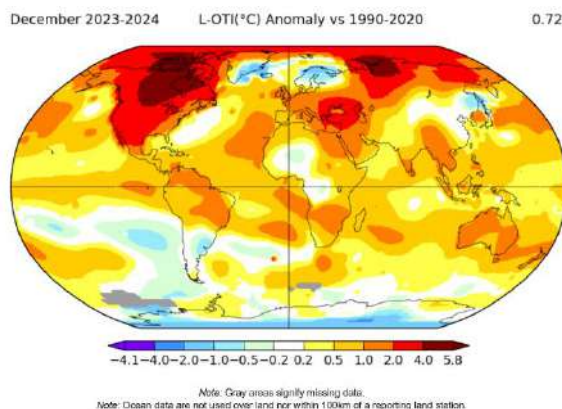


Figure 5 - Regional anomalies 2023-2024, Source: NASA, 2024

1.5. Impacts of climate change

Rising greenhouse gas concentrations have pushed global temperatures well above historical norms, intensifying extreme weather events such as heatwaves, droughts, forest fires and extreme storms as well as torrential rainfalls, flooding and sea level rise.

The melting of ice and thawing of permafrost are critical climate tipping points that accelerate global warming through self-reinforcing feedback loops. These processes are particularly concerning in the Arctic, Antarctic, and high-altitude regions, where rising temperatures lead to irreversible changes in the Earth's climate system.

Glaciers and ice sheets in Greenland and Antarctica are melting at unprecedented rates, contributing significantly to sea-level rise. The loss of land-based ice leads to an increase in ocean volume, threatening coastal communities worldwide. If the Greenland ice sheet were to melt completely, global sea levels could rise by over 7 meters, while the collapse of the West Antarctic ice sheet could add another 3–5 meters (Lunt, D. J., et al. 2017).

The Albedo Effect: A Dangerous Feedback Loop

The albedo effect refers to the ability of a surface to reflect sunlight. Ice and snow have a high albedo, meaning they reflect a significant portion of solar radiation back into space, helping to keep the planet cool. However, as temperatures rise and ice melts, darker surfaces—such as ocean water and exposed land—are revealed. These surfaces have a lower albedo, absorbing more heat instead of reflecting it, which further accelerates warming. This creates a vicious cycle where warming causes ice loss, and ice loss leads to more warming. Studies estimate that this feedback loop could add an additional 0.2°C to global temperatures (PIK, 2019).

Permafrost—frozen soil found in Arctic and sub-Arctic regions—stores vast amounts of carbon and methane, both potent greenhouse gases. As permafrost thaws due to rising temperatures, these gases are released into the atmosphere, amplifying global warming. Methane, in particular, is 80 times more powerful than CO₂ over a 20-year period, making permafrost thawing a major climate concern (ibid).

In addition to the environmentally-related impacts, climate change has significant social impacts, particularly in terms of famine and the displacement of people, leading to climate refugees. Mentioned above, climate change leads to extreme weather events such as droughts, floods, and unpredictable rainfall, which disrupt agricultural production. This reduces crop yields and food availability, causing food shortages and driving up prices. Communities, especially in developing countries, are hit hardest by these changes, leading to widespread hunger, malnutrition, and even famine. As agricultural systems struggle to cope with changing weather patterns, food security becomes more precarious, contributing to increased poverty and social unrest. As a result of rising sea levels, extreme weather events, and the degradation of habitable land, millions of people are forced to migrate in search of safer living conditions. These climate refugees often face significant challenges, including lack of access to basic resources, healthcare, and legal protection. They may be displaced within their own countries (internally displaced persons) or across borders, putting pressure on neighboring regions and exacerbating geopolitical tensions. Vulnerable populations, such as low-income communities and marginalized groups, are disproportionately affected by climate-induced migration, leading

to greater inequality and social instability (Intergovernmental Panel on Climate Change (IPCC) 2022).

According to Munich Re / NatCat Service (2022), extreme weather events, such as hurricanes, floods, and wildfires, have led to increasing economic losses, particularly in 2017 and 2021. Despite the rising damages, insured losses remain relatively low, highlighting a coverage gap. Many affected regions lack sufficient insurance, leaving them financially vulnerable. These events not only cause financial strain but also lead to social disruption, including displacement and increased poverty. As climate change intensifies these disasters, economic costs are expected to rise, underscoring the need for improved adaptation and insurance systems to better manage these risks.

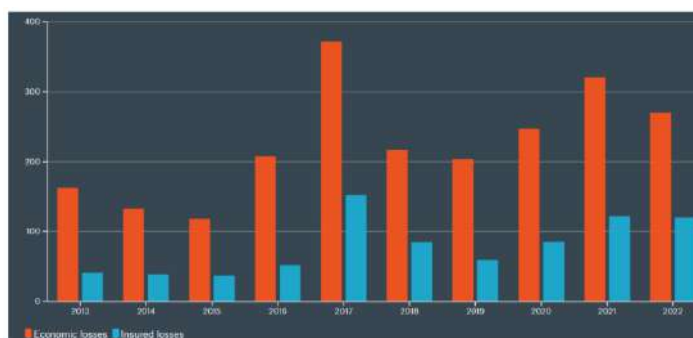


Figure 6 - Economic losses through extreme, Source: Munic Re /NatCat SERVICE; inflation adjusted

1.6. Actions against Climate change – an overview

Throughout the last decades, numerous initiatives have been started to fight against climate change. Uncountable reports written by different organizations have monitored the global increase of GHG emissions stating the urgency for taking action and have provided uncountable recommendations and call to actions in annual reports.

The Paris Agreement is a legally binding treaty that was signed in 2015 by 96 states with the aim of combating global warming. The agreement sets the target of keeping the rise in global temperatures clearly below +2°C, with efforts to limit it to a maximum of +1.5°C. Additionally, the treaty seeks to achieve climate neutrality by 2050. Under this treaty, all participating states are obligated to reduce their greenhouse gas emissions through Nationally Determined Contributions (NDCs). While the specific amounts of reduction are not explicitly defined, the reductions must collectively be sufficient to meet the overall global temperature and neutrality targets outlined in the treaty.

The Emissions Gap Report 2023: *Broken Record* and the Emissions Gap Report 2024: *No more hot air ... please!* are annual publications by the United Nations Environment Programme (UNEP) that assess the gap between current greenhouse gas emissions and the levels needed to meet the Paris Agreement's climate goals. The Emissions Gap Report 2023: *Broken Record* released in 2023 highlights that global greenhouse gas emissions have reached new highs, leading to record-breaking temperatures and intensified climate impacts. Despite these alarming trends, the report notes that the world continues to fall short in reducing emissions, underscoring

the urgent need for enhanced climate action, The most recent report, the Emissions Gap Report 2024: No more hot air ... please!, published in 2024, emphasizes the significant disparity between the rhetoric of climate commitments and the reality of actions taken. It calls for nations to close the substantial emissions gap in their new climate pledges and to implement immediate, robust measures to mitigate climate change (UNEP, Emission Gap Report 2023 and 2024, Climateanalytics.org, 2024).

“As greenhouse gas emissions rose to a new high of 57.1 gigatons of carbon dioxide equivalent in 2023, the cuts required from today are larger: 7.5 per cent must be shaved off emissions every year until 2035 for 1.5°C. Current promises are nowhere near these levels, putting us on track for best-case global warming of 2.6°C this century and necessitating future costly and large-scale removal of carbon dioxide from the atmosphere to bring down the overshoot.” (Emission Gap Report 2024).

Both reports stress the critical need for accelerated and more ambitious global efforts to reduce greenhouse gas emissions to avoid the most severe consequences of climate change.

The 2024 Nationally Determined Contributions (NDC) Synthesis Report, released on October 28, 2024, reveals that current global climate plans fall significantly short of the ambitious targets needed to prevent the worst impacts of climate change. According to Simon Stiell, the UN Climate Change Executive Secretary, the national climate plans, if fully implemented, would only reduce global emissions by 2.6% by 2030 compared to 2019 levels, which is far from the necessary reduction of 43% to limit global warming to 1.5°C. This disparity highlights the urgent need for more robust and transformative climate action. The report calls for bolder and more ambitious new national climate plans to ensure global emissions are drastically reduced, promoting clean energy, economic growth, and social benefits such as better health, job creation, and reduced pollution. The new NDCs must be economy-wide, covering all greenhouse gases and ensuring the targets are ambitious, sector-specific, and credible, supported by laws, regulations, and funding. The plans should also include clear adaptation strategies to protect vulnerable communities and sectors from the impacts of climate change.

*“The Intergovernmental Panel on Climate Change notes that **greenhouse gas emissions need to be cut 43% by 2030, compared to 2019 levels. By 2035, net global greenhouse gas emissions need to be cut by 60% compared to 2019 levels.** [...] Much bolder new national climate plans can not only avert climate chaos – done well, they can be transformational for people and prosperity in every nation. **Bolder new climate plans** are vital to drive stronger investment, economic growth and opportunity, more **jobs, less pollution, better health and lower costs, more secure and affordable clean energy, among many others benefits.**” (United Nations Climate Change Report, Oct. 2024).*

Furthermore, the report stresses that the COP29 should be a pivotal moment in the global climate fight. It calls on governments to turn previous pledges, such as scaling up renewable energy and transitioning away from fossil fuels, into actionable results. Climate finance must also play a central role, especially for developing countries, to ensure they have the resources needed to cope with the accelerating climate crisis. Ultimately, the report serves as a stark reminder that immediate, ambitious action is essential to avert catastrophic climate impacts and create a more sustainable, prosperous future for all nations (unfccc.int, 2024).

2. CONTRIBUTION OF TOURISM TO CLIMATE CHANGE

2.1. Greenhouse Gas Emission through Tourism

Tourism contributes significantly to greenhouse gas emissions. In 2005, the tourism sector was responsible for 4.9% of global greenhouse gas emissions, amounting to 1.7 gigatons (Gt), with aviation alone contributing 2% of this total (UNWTO 2008/WRI 2006). By 2013, the sector's share of emissions rose to 8% (4.5 Gt), when accounting for upstream supply chains such as food, shopping, and infrastructure, though non-CO₂ emissions from aviation were excluded (Lenzen et al. 2018).

Specifically, aviation's contribution to global emissions was reported as 2.5% for CO₂ alone and 5-8% for CO₂-equivalent emissions, which include other greenhouse gases (Umweltbundesamt 2019). Consequently, tourism contributes significantly to climate change.

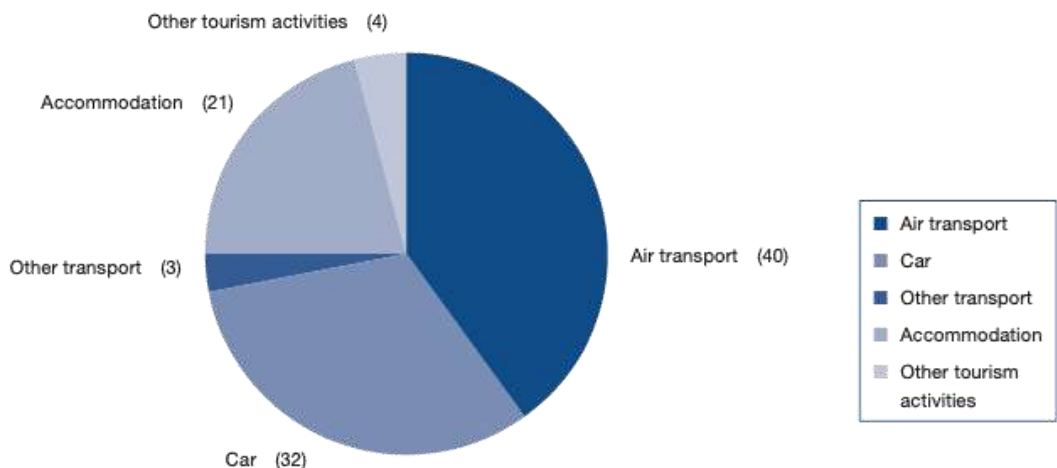


Figure 7 - Contribution of to greenhouse gas emissions by tourism activity

The research project “Climate Protection on Medium-Distance Routes Airplane- and Car-Free Travel in Europe” (BUAS, ZENAT et al. 2023) revealed clear differences regarding the climate impact of the various travel options to 22 European destinations.

Regardless of the configuration—whether using ferries or not—train and bus connections perform much better for the climate than all other modes of transport. In third place, though often with significantly higher values per person, is the car with four passengers.

At the bottom of the scale are motorhomes and airplanes, as well as ferry connections when vehicles are transported. The emissions already increase by a factor of 10 per person kilometer between long-distance trains in Western Europe and cars with two passengers. The following graphic illustrates these differences. The travel options are then further influenced by the factor of distance (ibid).

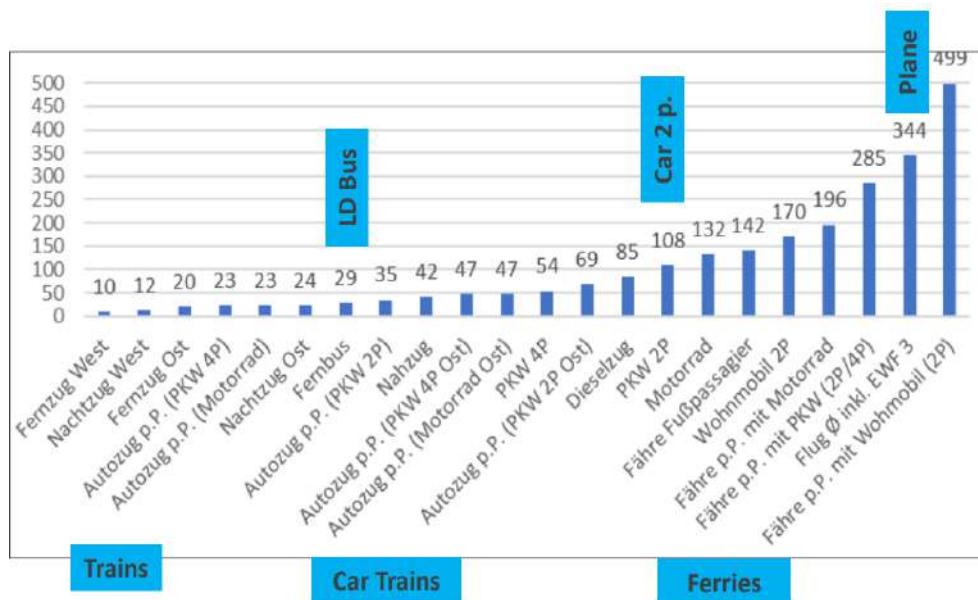


Figure 8 - GHG emissions/pkm per means of transport, Source: BUAS, ZENAT et al. 2023

Over the past two decades, domestic travel has grown slightly faster than international travel. The COVID-19 pandemic demonstrated that domestic tourism is more resilient during crises, though shifts in demand can lead to 'over-tourism' in certain locations, necessitating infrastructure investments. In many countries, domestic travel generally produces fewer emissions due to shorter travel distances. Promoting domestic tourism can thus serve as a key strategy for reducing climate impact.

When examining international tourist arrivals, the share of air travel has risen significantly, from 34% in 2000 to 47% in 2019. In comparison, land transport accounted for 47% of international arrivals in 2019, while the remaining 6% came from water transport, primarily cruise ships. Given the central role aviation plays in tourism, it is striking that the sectors often operate independently of each other—this is evident in areas like policy frameworks and sector initiatives (e.g., airlines' lack of support for the Glasgow Declaration).

The distance travelled by tourists over time was analyzed to assess whether both domestic and international travelers are opting for more distant destinations. From 1995 to 2019, the total travel distance increased on average by 3.9% per year, surpassing the 2.8% annual growth in the number of trips. This trend was further amplified by a sharper increase in international travel distances (Figure 9, Tourism Panel and Climate Change, 2023).

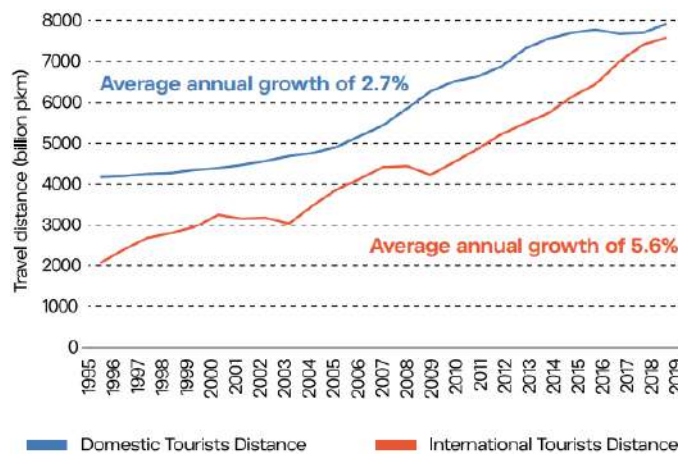


Figure 9 - Tourist distance travelled (billion pkm), Source: TPCC Report 2023

Importantly, 47% of international arrivals are by air (2019). consequently, a significant emissions of greenhouse gases are generated.

In their 2022 study, "Banning Super Short-Haul Flights: Environmental Evidence or Political Turbulence?", Dobrouszkes et al. analyze the environmental impact of flight distances, focusing particularly on the emissions generated by short-haul flights. Considering all departing flights from 31 European countries, the study found that flights shorter than 500 km account for 27.9% of departures but 5.9% of fuel burnt. In contrast, flights longer than 4,000 km account for 6.2% of departures but 47.0% of fuel burnt, although with significant variation across countries. It is concluded that targeting shorter flights (which often exist to alleviate physical obstacles imposed by physical geography) will contribute little to reducing the impact of aviation on climate, and that policy initiatives that target longer flights are urgently needed. Additionally, the authors highlight the complexity of addressing aviation emissions, emphasizing the need for broader, more effective climate policies within the transport sector (Dobrouszkes et al., 2023).

2.2. Modal shift in Tourism

Modal shift is urgently needed. The reserach project „Climate Protection on Medium-Distance Routes Airplane- and Car-Free Travel in Europe” (BUAS, ZENAT et al. 2023) focused on climate protection through medium-distance travel in Europe, advocating for plane- and car-free options to reduce emissions. The project explores sustainable travel alternatives to 22 European destinations, encouraging modal shifts towards more environmentally friendly modes of transport, such as train and bus travel. By prioritizing these low-emission travel methods, it provides a clear decision-making basis for travelers. At the same time, the project seeks to demonstrate that environmentally-friendly travel can also be the better choice in terms of experience. This applies not only to short trips—such as between European cities like Munich and Milan or Cologne and Paris—but also to longer journeys to destinations like Lapland, Scotland, or Andalusia. These trips, which cross the entire continent, offer significant adventure potential, making them an exciting and sustainable option for travelers (ibid).

3. HOW TOURISM IS AFFECTED BY CLIMATE CHANGE

Climate change has various impacts on the tourism sector. Increased temperatures can lead to unbearable heat during the summer, which may cause demand to shift to the shoulder seasons, such as spring and autumn, or to different destinations. This can result in both temporal and spatial changes in demand. Additionally, operational costs may increase due to the need for more air conditioning or heating.

Another issue is the lack of snow cover in winter destinations, which makes them less attractive to winter tourists. Altered precipitation patterns also affect tourism. More rain, increased cloud cover, or fog can reduce the attractiveness of destinations, while less rain can make a destination more appealing. However, reduced rainfall may lead to water scarcity, which can have negative effects on destinations. Extreme weather events, such as heavy rainfall and storms, can create safety issues and damage infrastructure, significantly impacting tourism. Additionally, increased climate variability leads to more short-term bookings and planning difficulties, as tourists adjust their travel plans more spontaneously due to unpredictable weather conditions.

Climate change will have both positive (higher air and water temperatures in spring and autumn, less precipitation in summer) and negative (heat waves in summer, more frequent extreme weather events, poorer water quality, reduced landscape quality) effects on tourism in Brandenburg, with the negative impacts increasing as global warming intensifies.

How will tourist demand respond to this situation? A variety of factors must be considered that influence travel decisions. While climatic conditions are among the key factors in choosing a specific destination and/or travel time, political and societal developments related to climate protection, as well as other factors unrelated to climate change, also play a role.

In addition, the future development of tourism will not only depend on local climatic conditions but also on what happens in source regions and in potential competing destinations. This is particularly true for the Mediterranean region, one of the favorite destinations of German travelers, accounting for approximately 40% of all trips lasting five days or more (FUR 2023).

In the Mediterranean, the effects of global warming, such as heat waves, droughts, and wildfires, are already much more severe than in Brandenburg. Against this backdrop, some studies have predicted a shift in tourist flows toward northern regions. Or, to put it more pointedly: the Baltic Sea could become the "new Mediterranean" because summers in the south may become too hot. More on this bold prediction later.

In general, climate change and its physical and societal consequences can influence tourist demand in both the short and long term. Extreme weather events and their consequences (such as floods, transportation disruptions, etc.) often lead to trip cancellations and short-term shifts or postponements of planned travels. Conversely, favourable weather conditions, such as sunny weekends or fresh snowfall, can prompt spontaneous day trips or short vacations. Interestingly, extreme weather events have triggered both overreactions and rapid acclimatization among tourists (Umweltbundesamt 2021a).

For example, the Elbe floods of June 2013 caused a wave of cancellations across Brandenburg, even though only a small part of the region was actually affected. On the other hand, tourists have returned to destinations quickly after major disasters, such as the devastating

wildfires on Rhodes, where travelers resumed beach vacations shortly after the fires were extinguished. To ensure that tourists receive objective information about local conditions during extreme weather events—beyond alarmism—targeted and coordinated communication efforts by destination management organizations (DMOs) are of central importance.

3.1. Permanent Changes to Destinations Due to Climate Change

Climate change can influence tourist demand through the following mechanisms:

- **Temporal Shifts:** Seasonal changes in traditional destinations, such as shifts, shortening, or lengthening of tourist seasons.
- **Spatial Shifts:** Movement of tourist flows to destinations with more favorable climatic conditions.
- **Decline in Travel Activity:** A general decrease in travel due to societal and economic developments triggered by climate change.
- **Stable Travel Patterns:** Travel patterns remain consistent due to adaptation to climate change or acceptance of negative changes in familiar destinations.

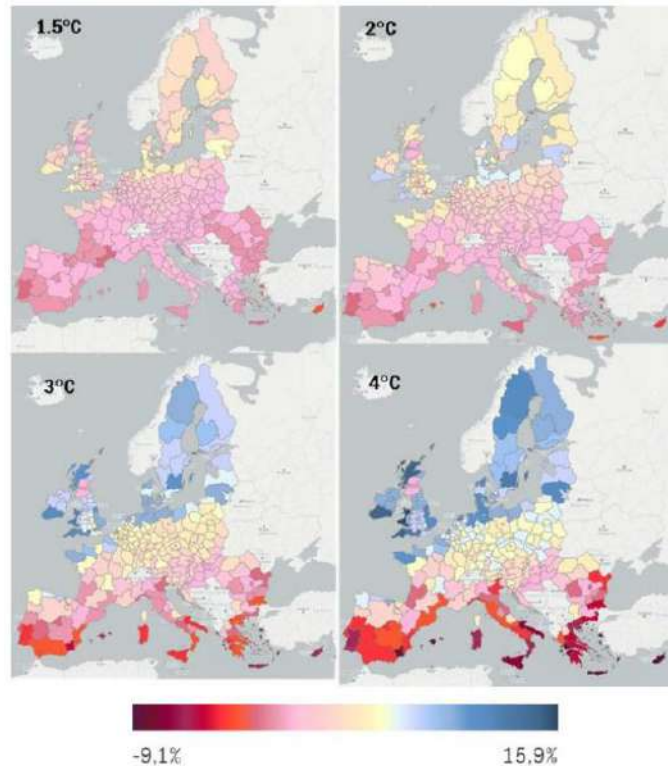
These varied reactions are rooted in the fact that vacations are "doubly substitutable products." People do not have to travel, and when they do, they usually have many alternative options (Umweltbundesamt 2021a). This flexibility is particularly high for short trips and day excursions, which are naturally more weather-dependent. In some German destinations, for example, rising temperatures have already led to an extension of the season into autumn (ibid.).

Long-Term Shifts in Tourism Patterns

Scientists began predicting permanent shifts in tourist flows in the late 2000s. These projections were typically based on future scenarios derived from Tourism Climate Indices. Originally developed in medicine, these indices are based on optimal weather conditions for tourists, such as temperature, precipitation, humidity, sunshine duration, and wind speed.

From the increasing heat in the Mediterranean region, paired with more pleasant climatic conditions in northern latitudes, researchers concluded that corresponding spatial shifts in tourism might occur. A similar projection appears in the 5th Assessment Report of the IPCC (2014), although it is associated with moderate to high uncertainty (low to medium confidence) (cited in Scott et al. 2016).

Last year, a study based on a Tourism Climate Index was published by the Joint Research Centre of the European Commission, which reached similar conclusions. According to the study, northern Germany would benefit slightly from "climate refugees" fleeing from the Mediterranean vacation region, but even more so would the Baltic Sea countries, the Scandinavian countries, as well as the United Kingdom and Ireland. However, this effect would only occur with a significant global temperature increase of 3°C or more (JRC 2023; see the following figure).



Source: JRC analysis. The values shown refer to the RCP8.5 emission scenario.

Figure 10 Projected climate-related change in the number of tourist arrivals in European regions (as a percentage compared to 2022); Source: European Commission 2023

Climate Indices, used as the basis for projecting shifts in demand, have often been criticized for oversimplifying the situation. For one, they rarely differentiate between tourism segments with varying weather preferences or between seasons. The so-called Holiday Climate Index (HCI) represents an advancement in this area, as it takes into account, for example, that beachgoers prefer higher temperatures than mountain hikers (Scott et al. 2016). However, the Holiday Climate Index (HCI) also does not account for the indirect physical impacts of climate change in its calculations. For example, warmer air and water temperatures, along with prolonged dry periods in northern latitudes, often lead to water scarcity, poorer water quality, and damage to vegetation. In addition, there is the adaptation and acclimatization of tourists to changing climatic conditions, as well as the complex societal consequences of climate change, which are so intricate that they cannot be accurately represented in quantitative models of future travel behavior. In the medium and long term, it could indeed happen. A new study by the European Travel Commission in 2023 analyzed social media data regarding tourism and climate change and concluded that, in response to heat waves and wildfires, negative sentiments are being communicated about destinations, which could damage their reputation in the long term—especially when these concerns are linked to personal safety. Greece was particularly affected, as well as Spain and Italy. However, the negative comments tended to subside over the course of the summer (ETC 2024).

Nevertheless, it is possible to make plausible assumptions about future travel patterns, though these are naturally associated with a high level of uncertainty. One such assumption is that rising temperatures and longer heat periods in key source areas could lead to an increase in "escape behavior" in the form of day trips and short vacations to the comparatively cooler surroundings with its swimming lakes. In other destinations increased excursions into the surrounding areas on hot days have already been observed (Pröbstl-Haider et al. 2021).

3.2. Vulnerability assessment

Through a climate risk analysis, it is determined which climate risks could significantly impact the tourist use (i.e., the vulnerable system) in Brandenburg. This knowledge paper largely follows the framework of a climate risk analysis as documented in the "Climate Risk and Vulnerability Analyses" guide by the Federal Environment Agency (UBA 2017). It is also based on the analytical framework of the Climate Adaptation Strategy of the state of Brandenburg (MLUK 2023).

A central element of the analysis are so-called climate impact chains, which map the relationships between various climate indicators (e.g., temperature, heat, or precipitation), the climate impacts, and the different tourist system elements. These chains visually demonstrate which climatic factors (at which interface) ultimately lead to specific climate impacts, such as heat causing health problems for employees and/or tourists.

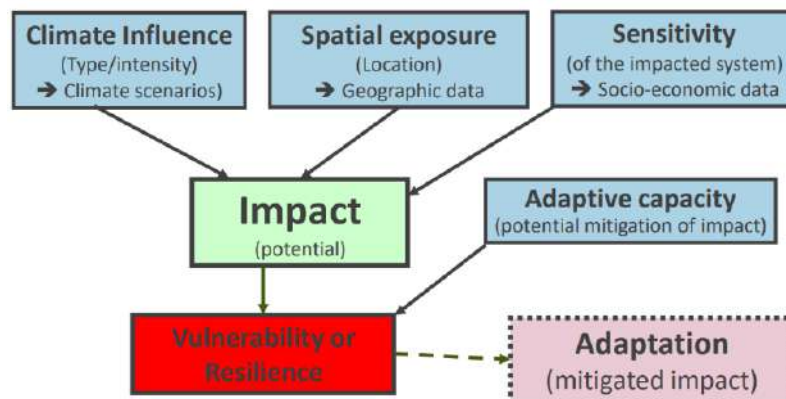


Figure 11 Vulnerability assessment, Source: own elaboration 2024, based on: Strasdas & Zeppenfeld (2010)

It becomes evident that in some cases, a climate indicator leads to a relatively immediate effect, while in other cases, the risks of primary effects unfold through a chain of subsequent effects or in combination with certain external and contextual conditions (e.g., demographic change, economic structural change). Interactions with other fields of action can also be crucial.

Spatial exposure (Selection)

- Proximity to sea; elevation
- Densely built urban areas with little ventilation
- Mountain slopes prone to land slides, avalanches
- Riverbeds prone to flooding

- Topography prone to flash floods
- Proximity to fire hazards (dry forests)
- Outdoor tours in remote areas

Aspects of adaptive capacity (companies and destinations)

- Level of water consumption ...
- Poorly insulated buildings
- Lack of (natural) shade
- Gardens (not) adapted to local climate conditions
- Lack of product diversification
- Focus on interchangeable low cost offers
- Dependence on long-haul source markets

Aspects of adaptive capacity (companies and destinations)

- Knowledge about climate change
- Companies: Efficient management structures and capability to innovate
- Authorities: Adaptation policies & strategies, spatial planning, adequate laws and enforcement (e.g. no construction permits in hazard areas)
- Experience and preparedness in dealing with extreme weather events (e.g. emergency plans, evacuation routes)
- Existence/availability of technologies (e.g. for coastal protection, early warning systems)
- Social structures (networking, willingness to cooperate, grassroots organisations, willingness to volunteer)
- Financial resources

4. ADAPTATION TO CLIMATE CHANGE

According to Isoard et al. (2008), the relationship between adaptation and mitigation is vital to addressing climate change effectively. The authors highlight that both strategies are interdependent and must be implemented together to tackle the challenges posed by a changing climate. While mitigation efforts aim to reduce greenhouse gas emissions and limit future climate change, adaptation focuses on adjusting to the already inevitable impacts of climate change. Isoard et al. (2008) stress that adaptation strategies can reduce the adverse effects of climate change, but they are more effective when paired with mitigation efforts that slow the pace of change. For instance, while adapting to rising sea levels or changing precipitation patterns may be necessary, mitigating the causes of these changes through emission reductions can prevent them from becoming more severe. Moreover, the authors suggest that integrating adaptation and mitigation strategies can result in synergies that benefit both objectives, such as climate-resilient infrastructure that is also energy-efficient, which contributes to emission reductions while improving community resilience to climate impacts.

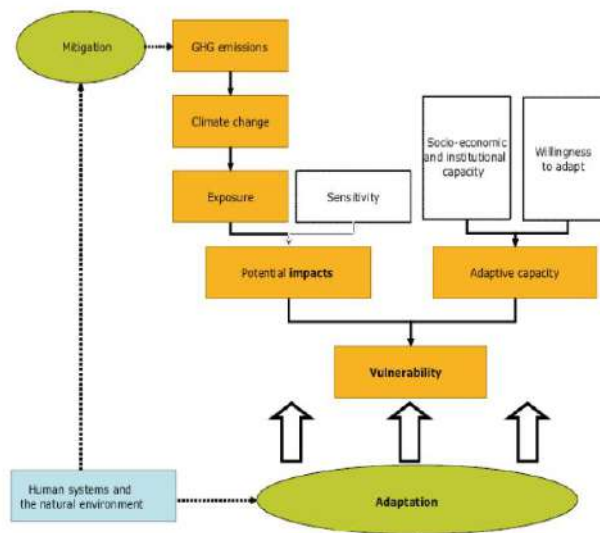


Figure 12 Mitigation and adaptation: an Interrelationship, Source: Isoard et al. 2008

Examples of adaptation measures include various strategies aimed at mitigating the impact of climate change:

- **Government regulation:** This involves actions such as mapping hazard areas, urban planning, issuing construction permits, and implementing effective water management practices to protect communities.
- **Technical measures:** These encompass architectural and building materials that are climate-resistant, sustainable snow-making or farming techniques, and protection measures against avalanches to safeguard properties and people.
- **Infrastructural measures:** These measures include coastal protection, the construction of dikes, and water retention systems to reduce the risk of flooding and protect vulnerable areas.
- **Early warning systems:** Special weather reports and apps are critical tools that provide timely information to help people prepare for extreme weather events.
- **Financial subsidies:** Governments or institutions may offer "soft" loans, tax breaks, or emergency aid to support vulnerable sectors and communities in adapting to climate challenges.
- **Risk management:** This includes strategies like insurance coverage to reduce financial loss and the development of contingency plans to address unforeseen risks.
- **Crisis management:** It involves preparing for emergencies with evacuation routes, plans, emergency shelters, and food supplies to ensure people's safety during climate-related crises.
- **Strengthening the resilience of ecosystems:** Protecting and preserving bodies of water, forests, and wetlands can enhance the environment's ability to recover from climate impacts.
- **Information and training:** Providing education and training for individuals and communities helps build awareness and resilience against climate change.

- **Product and target market diversification:** Businesses can reduce their vulnerability to climate impacts by diversifying their products or markets, which helps ensure sustainability even in the face of changing environmental conditions.

5. FURTHER READING

UNEP, Oxford. Climate Change Adaptation and Mitigation in the tourism sector. Frameworks, tools and practices (2008)

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CRISIS MANAGEMENT IN TOURISM

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Abstract

This paper explores the multifaceted nature of crisis management within the tourism ecosystem, emphasizing key definitions and concepts essential for understanding crises. It outlines the characteristics of crises, categorizing them into various types, including destination-specific crises. The discussion highlights the different time frames of crisis development, illustrating how crises evolve and impact tourism operations. Focusing on disruptions caused by natural disasters, the abstract delves into the implications for the tourism ecosystem, emphasizing the need for effective crisis management strategies. It details the stages of crisis management in tourism, identifying key drivers and enablers that enhance crisis management capacity and resilience. Furthermore, it examines tourism governance structures and processes that facilitate coordinated responses to crises. The importance of data elements and sources for assessing vulnerabilities is underscored, alongside the necessity for thorough assessments of crisis preparedness and risk. Finally, the abstract outlines the components of a comprehensive crisis management plan, which is vital for mitigating the adverse effects of crises on the tourism sector and ensuring a swift recovery. This holistic approach underscores the critical need for proactive measures in crisis management to safeguard the tourism industry.

Keywords: *risk management, tourism, preparedness, crisis response, crisis recovery, crisis management plan, crisis management, natural disasters, climate change*

Note: The paper is based on the Study: “Crisis Management and Governance in Tourism. Final report”. Retrieved from [Crisis Management and Governance in Tourism - European Commission](#) (European Commission 2024). All major information is sourced from the mentioned study.

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1. INTRODUCTION INTO CRISIS MANAGEMENT

1.1. Key Definitions and Concepts in Crisis Management

Crisis management involves identifying, assessing, and responding to unexpected and potentially harmful events that can disrupt operations, damage reputation, or endanger lives. Understanding key definitions is essential for effective crisis preparedness and response.

Risk

Risk refers to the potential for an adverse event to occur, causing harm or disruption. It is typically assessed based on two factors: the likelihood of occurrence and the impact it would have. Risks can be internal, such as system failures or employee misconduct, or external, such as natural disasters or cyberattacks.

Risk = the chance that something could happen and harm an organisations goals.

Incident

An incident is an unplanned event that has the potential to disrupt normal operations but is usually manageable within routine procedures. Unlike a full-scale crisis, an incident is often localized and can be resolved with standard response measures. For example, a minor IT outage affecting a few employees is considered an incident, while a complete system failure affecting an entire organization may escalate into a crisis.

Incident = Events or situations that could cause a disruption, loss, emergency or crisis.

Crisis Event

A crisis event is a significant disruption that threatens an organization's stability, reputation, or ability to function. These events are high-impact, time-sensitive, and often require immediate response beyond normal incident management. Crises may arise from financial collapses, product recalls, cyberattacks, natural disasters, or leadership scandals.

Crisis event = Unusual event/situation that poses a threat to an organisation or community and requires a strategic, quick and flexible response to preserve its viability and integrity.

Resilience

Resilience refers to the ability of an organization, system, or individual to anticipate, prepare for, respond to, and recover from crises or disruptions. It involves proactive planning, adaptability, and a strong crisis management framework. Organizations enhance resilience by conducting risk assessments, implementing emergency preparedness plans, training employees, and ensuring business continuity strategies are in place.

Resilience = the ability of a tourism destination or organisation to take actions that can prevent or mitigate the impacts of crises events or promote a rapid recovery from them.

Vulnerability

Vulnerability represents weaknesses or gaps in an organization's ability to prevent, respond to, or recover from risks and crises. These weaknesses may stem from poor infrastructure, inadequate resources, lack of preparation, or overreliance on a single supply chain. Reducing vulnerability requires identifying weak points and strengthening them through preventive measures, contingency planning, and capacity-building efforts.

Vulnerability = generally referred to as an indication of the degree to which a system (destination/organisation/business) is susceptible and unable to cope with the adverse impacts of a short term or long-term shocks. It encompasses factors that increase the likelihood or severity of adverse consequences.

Based on the ISO 22361 definition of crisis, **crisis in the tourism ecosystem** is defined as:

An abnormal or extraordinary event or situation that threatens a tourism destination or business and requires a strategic, adaptive, and timely response to preserve its viability and integrity.

Crisis-induced shocks can be either systemic or localized. A **systemic shock** occurs when a crisis affects a substantial number of economic agents across multiple tourism sectors and countries, with its impact unfolding within a relatively short period. These shocks are often linked to a "**domino effect**," where disruptions in one sector trigger cascading consequences in others. For instance, a crisis that disrupts airline transportation can have far-reaching effects on various related industries, such as hospitality, travel agencies, and local tourism services.



Figure 1 Link between issues, incidents, and crisis (adapted from Deloitte crisis management framework to emerge stronger), European Commission 2024

1.2. Characteristics of Crisis

A crisis is an unexpected and disruptive event that threatens an organization, community, or industry. While crises can vary in cause and impact, they generally share the following key characteristics:

Timing and impact of crisis are not always foreseeable.

- Crisis get a lot of attention from many stakeholders, like consumers, investors, media
- A crisis can harm destinations and organisations for a long time.

- A crisis can start something unexpected, or from an escalated incident that wasn't handled well.
- Standard procedures and plans might not be sufficient to handle a crisis, because they are unpredictable and have many consequences.
- Crisis need urgent attention as their impact can be very high.

1.3. Categorisation of Crisis in the Tourism Ecosystem

Crises have been classified into the following categories, reflecting recent developments: natural disasters, health-related crises, human-made incidents, financial disruptions, and technological failures.

Natural disaster crises arise from natural hazards. This includes various forms of severe weather that pose significant threats to human health and safety, property, and critical infrastructure. Such disasters can cause widespread disruptions, impacting human lives, material resources, and the environment.

Health-related crises encompass public health emergencies that affect individuals across one or more geographic regions. These crises can arise from diseases, industrial activities, or ineffective policies, significantly impacting both community well-being and the economy. The severity of their consequences largely depends on the response of public authorities. The COVID-19 pandemic underscored the critical importance of public health preparedness, as it caused widespread human suffering and unprecedented economic disruptions.

Human-made crises are events triggered by human actions, making the tourism industry particularly vulnerable. These crises can arise from various factors such as terrorist attacks, political instability, or civil unrest, all of which can significantly disrupt travel and tourism.

Financial crises refer to economic disruptions affecting both destination countries and source markets. These may include inflation crises, sovereign debt crises, banking collapses, and stock market crashes. A notable example is the 2008–2009 global economic crisis, which led to a 4% decline in international tourist arrivals and a 6% drop in international tourism revenues in 2009.

Technological crises involve failures or malfunctions in transportation, infrastructure, and digital systems. This includes airline, car, bus, or train crashes due to poor maintenance, service failures caused by outdated technology, and cyber threats such as cybercrime or cyberterrorism. With increasing digital reliance, cyber-attacks pose a growing risk, as they can compromise data, disrupt communications, and even render entire businesses or networks inoperable. For example, a cyber-attack on an airline's computer system could ground flights if no manual backup exists.

Any of these crises can severely impact the tourism sector's ability to function, either through direct damage to transportation and infrastructure or through the perception that a destination is unsafe. A tourism-related crisis often leads to a sharp decline in visitor arrivals, resulting in job losses, reduced business revenue, declining government tax income, and decreased investment in the affected region.

Table 1 Categorisation of crisis according to type, Source: European Commission 2024

Natural disasters	Health-related	Human-made	Financial	Technological
▪ Fires ▪ Flooding ▪ Drought ▪ Avalanche ▪ Winter storm ▪ Severe rain or windstorm ▪ Extreme heat ▪ Tsunami ▪ Earthquake ▪ Landslides ▪ Mudflows ▪ Blue green algae outbreak ▪ Volcanic plumes ▪ Hurricanes ▪ Tornadoes ▪ Animal attacks	▪ Epidemics ▪ Outbreak of diseases (Legionnaire's, Meningococcal or Ebola) ▪ Pest plagues (rodents and insects) ▪ Food poisoning ▪ Humanitarian crises	▪ War ▪ Terrorist attacks ▪ Oil spill ▪ Social unrest ▪ Political instability ▪ Water pollution ▪ Air pollution	▪ Economic crises ▪ Fiscal crises ▪ Exchange rate collapses	▪ Transportation accidents ▪ Cyber-attacks ▪ Human shortcomings in operating technology ▪ Technological failures ▪ Hazardous material accidents (gas leak)

1.4. Destination-Specific Crises

Regarding the risks by type of destination (urban, rural, coastal, island and mountain), although they generally share similar concerns, some differences can be noticed.

Environmental and natural risks are among the top concerns for all destinations, especially coastal areas, islands, and tourism-dependent regions. These locations rely heavily on natural assets like beaches and coastlines, which are vulnerable to climate change and natural disasters. They are also very dependent on the length and quality of the seasons. Overtourism is a major issue, particularly in Southern European countries like Greece, Spain, and Croatia. Islands also face infrastructure and connectivity risks, as they depend on air travel, making disruptions in aviation or airport infrastructure highly impactful. Strengthening governance and aviation industry ties is crucial for resilience.

Labour shortages are a key issue for coastal, island, and rural destinations, with islands facing additional challenges due to their isolation and low population density. Urban destinations are primarily concerned with financial crises, which impact business tourism significantly, as well as political instability and war.

Climate change is a major threat across multiple destination types. Coastal and island destinations are vulnerable to rising sea levels, storms, and coastal erosion, which endanger their natural assets and tourism-dependent economies. Mountain destinations face declining snowfall, threatening ski tourism, as well as risks like avalanches and changing ecosystems. Rural areas are particularly exposed to wildfires, storms, and floods, which severely impact their primary tourist resources—natural landscapes.

Governance challenges further complicate crisis management, especially in rural and mountain areas, where insufficient coordination and support hinder adaptation and resilience efforts.



Figure 1 Overview of risks that most concern destinations according to type, Source: European Commission 2024

1.5. Different Time Frames of Crisis Development

Crises can be categorized based on how quickly they develop: **sudden crises, creeping crises, and grey-rhino crises**. The speed at which a crisis unfolds influences how tourism destinations and organizations can effectively manage and respond to it.

Sudden Crisis Events:

Sudden crises occur rapidly and unexpectedly, with little to no warning signs. These events escalate quickly, requiring an immediate response due to their potential for widespread impact. In such cases, destinations and organizations typically have limited time to react, focusing on response and recovery efforts rather than proactive preparation.

Creeping Crisis Events

Creeping crises develop gradually over time, often starting as minor issues that may not be immediately recognized as threats. Their slow progression can lead to warning signs being overlooked until they escalate into major emergencies. Since these crises unfold over an extended period, destinations and organizations usually have more time to monitor, prepare, and implement mitigation strategies before they reach a critical stage.

Grey-Rhino Crisis Events

Grey-rhino crises refer to high-probability, high-impact threats that are obvious yet often ignored, underestimated, or denied until they become full-blown emergencies. Despite their visibility, these crises are frequently neglected due to complacency or competing priorities. Managing grey-rhino crises requires proactive risk assessment, scenario planning, and decisive action to minimize their impact before they escalate. Unlike sudden crises, organizations typically have sufficient time to prepare, respond, and recover from these events. Understanding these crisis types helps tourism destinations and organizations implement effective risk management strategies, ensuring better preparedness and resilience.

2. DISRUPTIONS AND IMPACTS OF CRISIS EVENTS ON THE TOURISM ECOSYSTEM: FOCUS NATURAL DISASTERS

This chapter examines the disruptions and consequences that various crisis events can have on the EU tourism ecosystem, with a particular focus on natural disasters and climate change. It explores the root causes and key drivers of these crises, highlighting their far-reaching effects on tourism infrastructure, economic stability, and environmental sustainability.

Natural disasters can have a significant impact on the tourism ecosystem. The major issue is the disruption of infrastructure, including the damage of transportation infrastructure (e.g., bridges, airports), accommodation, food service establishments or even natural attractions (e.g., beaches, parks, trails, wildlife habitats).

Major impacts are:

- **Loss of accommodation, food service establishments and other tourism support amenities:** Damage or destruction of hotels, resorts, and other tourism facilities, reduction of the number of available rooms and facilities for tourists.
- **Negative impact on natural attractions:** Damage or destruction of natural attractions such as beaches, parks, trails, and wildlife habitats, reduction of the appeal of destinations to tourists.
- **Negative impact on cultural and historical heritage:** Damage or destruction of invaluable cultural and historical heritage, reduction of the appeal of destinations to tourists.
- **Decrease in tourism demand:** Tourists consider other tourism destination alternatives. The impact of natural & environmental disasters is present even if no natural disaster actually occurred, rather such disasters are just probable.
- **Increase in safety concerns:** Increase of safety concerns of tourists, regarding events such as the risk of flooding, landslides, or other hazards.
- **Financial losses & unemployment:** Generation of considerable financial losses (due to infrastructure damage), difficult to surpass for small and medium-sized enterprises (SMEs). The closure of businesses also leads to unemployment.
- **Economic impact on local businesses:** Decline in tourist activity which has a ripple effect on local businesses that depend on tourist spending.

From a theoretical perspective, natural disasters are generally expected to have a negative impact on inbound tourism. However, in some cases, their effects can also lead to positive tourism trends in the medium to long term. Several factors contribute to this phenomenon. One key reason is that disasters can increase the visibility and global awareness of a destination. Media coverage and public interest often highlight affected areas, drawing curiosity and attention from potential visitors. Additionally, changes in the landscape or environmental conditions resulting from natural disasters may create new attractions or points of interest for tourists. Furthermore, natural disasters can generate solidarity and global interest, leading to economic revitalization through tourism.

Among different types of natural disasters, volcanic eruptions tend to have the most significant international tourism impact, as they often capture worldwide attention. In contrast,

most other natural disasters, such as floods, storms, and wildfires, typically have localized or regional effects, with their impact largely concentrated in the affected areas.

A comparison of different types of natural disasters reveals varying levels of impact on tourism:

- Volcanic eruptions, such as Iceland's Eyjafjallajökull, tend to have the most severe and widespread negative consequences for tourism. Their effects can disrupt air travel on an international scale, significantly affecting visitor flows.
- Floods, storms, and tsunamis generally have shorter-term impacts, but their overall effect on tourism depends on the extent of infrastructure damage and reputational harm. It is often difficult to determine whether the decline in tourist arrivals is due to physical destruction or negative perceptions of the destination.
- Wildfires and earthquakes exert a dual impact on international tourist arrivals. On one hand, they cause economic losses by damaging infrastructure, built assets, and business operations, which can deter visitors. On the other hand, the dramatic nature of these events may also attract tourists who are curious about the affected destination.
- Certain events, such as unexpected landslides or brief episodes of extreme temperatures, typically have minimal impact on tourist arrivals. They generally cause little to no infrastructure damage and do not pose any long-term risks to the tourism industry.

Case study: Impacts of Iceland Volcanic Plume 2010 crisis event

In April 2010, Eyjafjallajökull, a volcano in southern Iceland, began to expel ash into the atmosphere which lasted from 14 April until 23 May. Between €1.5 billion and €2.5 billion on the aviation industry and tour operators.

Impact on the Tourism Ecosystem: During the days of the eruption and in the days that followed, there was a reduction of 2% in the number of nights spent (-2,226) in April 2010, comparing to March (previous years registered an increase from March to April). The growth trend observed in the total arrivals of 2010 was interrupted with the referred eruption. In January the growth was 5%, in February 8%, in March 18% and in April a reduction of 5% in arrivals. More than 100,000 flights were cancelled during the volcanic ash crisis, affecting 10 million passenger journeys, with an estimated economic loss for the aviation sector of EUR 2.7 billion. (*Source: European Commission, 2024*)

Case study: Portugal Bushfires 2017 crisis event

On 17 June 2017, a wildfire started in the municipality of Pedrógão Grande and spread to other neighbouring municipalities. After the so-called fire season (June – October), there was more than 500 fires affecting 27 municipalities in the Centre Region of Portugal.

On 15 October, after the so-called critical fire season, there were more than 500 fires affecting 27 municipalities in the Centre Region of Portugal.

A total of 539 921 ha burnt in 2017. more than 100 died and more than 320 people were injured. Mid-June, around 500 homes were burnt, nearly 50 companies were destroyed and 372 people lost their jobs. In Mid-October, around 800 permanent homes were burnt and almost 500 businesses lost. The natural disaster had a huge impact on the economy. On 17 June 2017, €500,000,000 - €303,523,486 went to cover investment on preventive measures and economic recovery, and €193,289,791 to cover for immediate damage (e.g., private housing, the forest, economic activities, agriculture, municipal infrastructure and equipment, the national road network and civil protection).

The impact on the Tourism Ecosystem Infrastructure was tremendous: 15 October 2017 registered the destruction of 39 hotels & similar establishments, 2 restaurants, 5 local activities companies and networks of walking & cycling trails. In the week of 15 October 2017, 77% of the bookings in the municipalities affected by the fires were cancelled or postponed. However, in the year 2017, + 15% in overnights stays compared to the previous year (more than 752 thousand overnight stays) and +20% compared to the previous year (€44,610 increase) were registered (*Source: European Commission, 2024*).

3. CRISIS MANAGEMENT IN TOURISM

3.1. Stages of Crisis Management in Tourism

Crisis management is a strategic process designed to help organizations anticipate, address, and recover from disruptive events. Whether triggered by natural disasters, technological failures, or reputational threats, crises can significantly impact operations, finances, and stakeholder trust. By understanding the three key stages of crisis management—**Preparedness**, **Response**, and **Recovery**—tourism destination can develop comprehensive plans to mitigate potential risks, take swift and effective action when a crisis unfolds, and ultimately restore normalcy in its aftermath. This structured approach ensures not only the protection of critical assets and stakeholders but also the resilience and adaptability needed to thrive in an increasingly unpredictable environment.

- **Crisis Preparedness** refers to the level of readiness and capabilities an organisation possesses to effectively respond to and manage crises or emergency situations. It involves the proactive measures and planning put in place to minimise the impact of a crisis and ensure a swift and coordinated response when one occurs.
- **Crisis Response** refers to the immediate actions and measures taken by an organisation in response to a crisis. It involves executing the crisis management plan, mobilising resources, and implementing strategies to mitigate the impact of the crisis and protect the organisation's vital interests.
- **Crisis Recovery** refers to the period following the immediate crisis response, during which an organisation works to restore normal operations, rebuild trust and reputation and recover from the impacts of the crisis. Crisis recovery is focused on moving the organisation towards stability and resilience after the disruptive event.

3.2. Key Drivers and Enablers for Improving Crisis Management Capacity and Resilience

Effective tourism management is crucial for ensuring the resilience and sustainability of destinations facing various crisis, including climate change, natural disasters, financial or human-made risks. Strengthening tourism governance, enhancing crisis management, and supporting tourism organizations are key to mitigating risks and ensuring long-term stability.

Drivers

The **COVID-19 pandemic** underscored tourism's critical role in economic growth, job creation, and cultural exchange, prompting its integration into long-term strategic planning and resilience efforts. **Climate change** has driven tourism organizations to adopt sustainable practices, such as eco-friendly tourism products, initiatives to reduce seasonality, and has also meant organisations develop better preparedness for the more frequent and severe climate-related and natural crisis events. Additionally, shifting **consumer preferences** toward sustainability, slow tourism, and authentic rural experiences are fostering more resilient tourism models that ease pressure on major destinations, mitigating seasonality and contributing to the preservation of natural, cultural, and historical assets.

Enablers

The growing **digitalization** of the tourism sector, along with new tools and big data, is significantly improving crisis management capabilities. Advanced technologies enable better risk detection and data-driven decision-making, strengthening the sector's ability to anticipate and respond to crises. **Specialized technical assistance and training programs**, such as those offered by the Enterprise Europe Network (EEN) and national initiatives like Portugal's Digital Academy and BEST program, enhance crisis management skills and awareness. Additionally, funding opportunities, including the Recovery and Resilience Facility (RRF), National and Regional Strategic Reference Frameworks (2021-2027), and Interreg, provide crucial financial support to develop resilience-building initiatives.

3.3. Key Actions for Crisis Management in Tourism

Having robust mechanisms for managing shocks and crisis events is crucial for maintaining the sustainability and viability of tourism destinations and associations. It demonstrates a proactive approach to challenges, fosters resilience, and ensures the long-term success of the tourism ecosystem sector.

Effective crisis management in the tourism ecosystem relies on three key areas of tourism crisis management:

- **Measures for the Tourism Ecosystem:** Encompasses various strategies implemented by destinations and cross-border associations to tackle challenges, reduce adverse effects, and support recovery. These initiatives aim to sustain the tourism industry before, during, and after a crisis.
- **Tourism Governance Structures and Processes:** Involves the organizational frameworks and decision-making procedures established to manage the consequences of a crisis. These structures and processes facilitate **stakeholder coordination**, ensuring a timely and effective response.

- **Key Data Elements and Sources to Assess Vulnerabilities:** Involves the systematic collection and analysis of tourism-related information. These insights help identify **potential risks and impacts**, enabling destinations and cross-border professional associations to develop and implement **targeted crisis management strategies**.



Figure 2 Examples of key actions for crisis management, Source: <https://academy.europa.eu/courses/crisis-management-and-governance-in-tourism>

3.3.1. Measures for the Tourism Ecosystem

When a crisis occurs, key tourism stakeholders implement a pre-defined set of policies and measures to tackle emerging challenges, minimize negative impacts, and facilitate post-crisis recovery. These strategies are designed to provide prompt and effective support to vulnerable tourism businesses (particularly SMEs), workers, and tourists. By establishing clear protocols in advance, stakeholders can respond swiftly and efficiently to disruptions, ensuring the resilience and continuity of the tourism sector. The measures typically address six main areas, reflecting the diverse needs and challenges that arise during a crisis.

Financial and fiscal measures: Financial measures need to be set up to support businesses, preventing defaults and insolvency by providing the necessary liquidity to continue operating during a crisis and to make the necessary investments to prepare for re-opening. These measures can include, for example, guarantee schemes, direct grants, and bank loans, temporary VAT exemptions and reductions, tax credits, tax deferrals and tax-related liquidity and flexibility in tax payment.

- **Guarantee schemes** provide assurance to lenders that loans will be repaid
- **Direct grants** offer funds without the need for repayment
- **Bank loans:** provide borrowed money with specific repayment terms.

In particular, **fiscal measures** help to ease the liquidity constraints faced by businesses severely affected by the pandemic and stimulus by introducing flexibility mechanisms in tax payment.

- **Temporary exemptions:** Giving businesses a break from paying certain taxes for a limited.

- **Tax credits:** Providing discounts on taxes to organisations
- **Deferred tax payments:** Allowing businesses to postpone paying taxes until a later date.
- **Reductions in VAT:** Lowering the amount of value-added tax (VAT) businesses have to pay on goods and services.

Example: Tax Reliefs in Turkey: to increase the liquidity of companies (VAT payment postponement) and increase consumer spending (VAT reduction), reduction in the VAT rate for domestic flights within Turkey, zero rating of VAT for hotel accommodation and related services, suspension of national insurance payments on employees, were undertaken.

Promotional measures: Promotional measures and campaigns are essential for reviving or boosting tourism during and after crisis. In order to maintain tourist engagement during crises and boost demand upon reopening, various measures can be implemented. These may include promotional campaigns targeting both domestic and international markets, the distribution of vouchers to encourage travel, and subsidies to support citizen participation in tourism activities.

- **Concrete action plans:** Developing specific strategies to achieve targeted objectives.
- **Vouchers:** Offering vouchers for specific services or combinations thereof to incentivise travel.
- **Promotional activities:** Engaging in marketing efforts directed at specific audiences such as residents and domestic travellers.

Example: Domestic Tourism Promotional Campaigns in Latvia to mitigate the decline of inbound tourists and providing support to local businesses.

Social measures: Social measures are required to protect workers and employees by providing the necessary support to retain the workforce and make it better prepared for the reopening. Also, to help sustain domestic demand during a crisis and therefore, serve as an automatic economic stabiliser. These measures can include, for example, temporary layoffs, income protection, short time working schemes, wage subsidies/compensations, job retention schemes, exemptions from paying social security contributions and training/learning courses.

- **Temporary layoffs:** Giving employees time off, usually with access to unemployment benefits.
- **Wage compensation:** Providing partial wages when work hours are reduced or during temporary unemployment.
- **Training programmes for industry professionals:** Helping workers learn new skills to adjust to changes.
- **Exemptions from Social Security contributions:** When businesses and workers are not required to make the usual payments to Social Security

Example: Wage compensation scheme in Bulgaria: A compensation partially covering the loss of income suffered by the employees and self-employed persons at a rate of 75% of their income.

Data and digital measures: To enhance decision-making and gain a comprehensive understanding of crisis developments, as well as to foster tourism's digitalization and competitiveness various measures can be implemented. These may include acquiring additional data sets, establishing crisis management dashboards, assembling expert panels and stakeholder groups to gather information, and developing digital platforms to monitor crisis events.

- **Mobile apps, online platforms and websites:** Aimed to facilitate information sharing.
- **Data-sharing platforms:** Aimed to foster collaboration among tourism professionals and citizens.
- **Dashboards:** Used to gather data, monitor the evolution and forecast of crisis events.

Health-related measures: To rebuild consumer confidence and trust in the tourism and travel sectors, various measures can be introduced. These may involve health and safety initiatives for both residents and tourists, including training programs, established guidelines, and certification schemes.

- **Vaccination campaigns** Organised efforts to vaccinate many people in their community to protect them from diseases.
- **Data-sharing platforms:** Electronic records that show a person's health status such as vaccination or test results.
- **Digital certificates:** Official approvals given to places like hotels and restaurants confirming they follow health and safety standards to protect customers.

Example: The EU Digital COVID Certificate was a standardised digital proof of an individual's COVID 19 vaccination status, test results, or recovery from the virus.

3.3.2. Tourism Governance Structures and Processes

National and regional recommendations emphasize the need for clear governance models with well-defined roles and responsibilities, focusing on tourism development, resilience building, and crisis management. Key activities should be coordinated at the highest administrative level, led by National Tourism Organizations (NTOs) or Regional Destination Management Organizations (DMOs), which must be equipped with strong operational and promotional mandates.

Similarly, regional and local DMOs should have broad mandates to effectively support tourism businesses at their respective levels.

To effectively handle a crisis, a strong coordination and collaboration between all the different key stakeholders is crucial to ensure an efficient approach to monitoring, strategizing, implementing measures, coordinating responses, communicating and collaborating with

national and international organisations. Such crisis management structures should combine the three levels of coordination:

- **Horizontal collaboration:** coordination among various stakeholders operating at the same level. The goal is to promote cooperation, information sharing, and joint decision-making among peers to address common challenges and opportunities.
- **Vertical collaboration:** coordination / communication between different levels of tourism governance (i.e., national, regional, local authorities). It is aimed to ensure that policies, regulations, and strategies at different governance levels are aligned and complementary.
- **Sectoral collaboration:** coordination and communication between different sectors or industries. Tourism ecosystem is highly interconnected, relying on various sectors. Sectoral coordination aims to foster cooperation between these sectors to enhance the overall tourism experience and support sustainable tourism development.

It is recommended that professional associations create a dedicated resilience and crisis management team to support their sector and enhance collaboration with the public sector.

3.3.3. Key Data Elements and Sources to Assess Vulnerabilities

Destinations and associations can greatly benefit from mutually leveraging their data by establishing shared platforms for data exchange. This collaboration enables a comprehensive understanding of tourism trends across different countries and supports informed decision-making for visitor well-being. Additionally, forming alliances and hosting regular expert gatherings fosters the exchange of insights, best practices, and benchmarking opportunities within the tourism sector. To determine the appropriate frequency for updating data, destinations and associations can follow recommendations from the EU Tourism Crisis Management Task Force and conduct cost-benefit analyses to assess data needs and investment priorities. The most commonly used data processing tools include digital software such as SPSS, GIS, Python, and online survey platforms, as well as in-house or externally developed data visualization dashboards. Official dashboards and statistical methods from national, European, and UN Tourism sources also play a crucial role in data analysis and decision-making.

Why do destinations/associations need data?

- **Prepare:** Risk sensing, monitoring, early warning/detection, forecasting and nowcasting
- **Respond:** Situational awareness, decision-making, communication and public information
- **Recover:** Damage assessment, monitoring progress, lessons learned

What are the top consulted data sources by destinations/associations in times of crisis?

- Government websites/statistics (e.g., INSTAT)
- The United Nations World Tourism Organization (UN Tourism)
- The International Air Transport Association (IATA) data
- European Travel Commission (ETC)
- EU Tourism Dashboard

3.4. Assessment of Crisis Preparedness

Assessing and enhancing crisis preparedness, as well as strengthening the ability to respond effectively during times of crisis, is crucial for several reasons. Firstly, conducting a **Crisis Preparedness Evaluation** allows organizations to evaluate their level of readiness and identify areas for improvement to effectively manage and respond to crises. Secondly, it provides a **baseline for Measuring Progress**, enabling organizations to track advancements in their crisis preparedness efforts over time. Additionally, fostering **Employee Awareness and Training** is essential to emphasize the importance of crisis management, encouraging employees to actively participate in training and awareness initiatives. Ultimately, these efforts contribute to building **Long-term Resilience**, ensuring the organization is better equipped to withstand and adapt to future crises, thereby safeguarding its stability and continuity.

Central questions for an assessment:

Measures for the tourism ecosystem sector

- Do you identify and evaluate risks related to potential crisis?
- Do you have a set of pre-defined policies / measures to activate when a crisis event hits?
- Do you have a documented crisis management plan and procedures?
- Do you conduct / have received training for crisis management and preparedness?

Tourism Governance Structures and Processes

- Do you have a clear crisis management structure with defined roles and responsibilities?
- How is the coordination/communication with different stakeholders during a crisis?

Key data elements and sources to assess destination vulnerabilities

- Do you have system in place to early identify crises and to monitor its evolution?
- Do you have the data sources and processing capabilities needed for informed decision-making?
- Do you properly analyse industry sentiment?

3.5. Risk Assessment

Destinations and sectors should also implement risk assessment mechanisms and conduct regular risk sensing to identify early warning signals of potential crises. The tourism ecosystem, without systematic risk evaluation, remains vulnerable to unexpected disruption. The main objective is to identify the likelihood and impact of risks that may disrupt the tourism ecosystem and, consequently, the destination/cross-border professional association.

There are seven essential steps for conducting a risk assessment:

(1) Identify the risk(s) → (2) Evaluate the likelihood → (3) Evaluate the impact → (4) Determine the risk level → (5) Determine the acceptance level → (6) Prioritise risks → (7) Identify mitigation measure

To address potential risks that could affect your destination we use a table called risk register (Fig. 3). The filled risk register table shows all potential risks that may disrupt the industry, their short description, their impact, likelihood and risk level and possible mitigation measures to be applied for the risks with a “High” and “Very High” risk rating.

Identified risks	Likelihood	Impact	Risk level	Acceptance level	Mitigation measures
Wildfires	3 - moderate	3 - Serious	9	Moderate	1. Develop plans 2. Assign responsibility 3. Implement measures 4. Set up monitoring
Record risks that may impact the destination/ business	Evaluate how likely each risk is to occur (1-5)	Assess the potential impact each risk, ranging from minimal to extreme (1-5)	Determine the risk level of each identified risk based on its likelihood and impact (risk level =likelihood * impact)	Risk prioritisation: Based on the risk level, determine the acceptance level of each identified risk	Brainstorm potential actions to reduce risks.

Figure 3 Risk register table, Source: European Commission 2024

3.6. Crisis Management Plan

The purpose of drafting a Crisis Management (CM) Plan is to ensure preparedness and an effective response to various crises. While the content and structure of the plan must be customized to suit specific needs, the following key highlights provide essential guidance:

1 Scope and objectives of the CM Plan		2 Activation and Notification Procedures	3 Crisis Management Governance Structure
Define the scope and objectives of your CM plan and what is considered a crisis situation as well as the scenarios that are covered by the plan.		Clearly define how and when the CM Plan will be activated. Describe the notification process for alerting internal and external stakeholders.	Outline the crisis response governance structure and related roles and responsibilities. This may include (1) Crisis management team members with their roles and responsibilities, (2) Working/crisis groups, their responsibilities and team members, (3) Overview of multilevel (regional, local) crisis coordination structures, (4) Chain of command and communication flowcharts.
4 Crisis response actions	5 Crisis recovery action	6 Deactivation and Notification Procedures	
For each crisis scenario, outline specific step by step actions to respond. Prioritise actions, define timeframe for completion and appoint responsible owners. Describe all predefined policies and measures (e.g. communication and evacuation plans, safety protocols) related to the crisis scenario, the activation criteria and steps to take to activate them.	Plan for the recovery phase, including strategies to rebuild the destination's reputation, attract tourists back, and support affected businesses.	Clearly define how and when the CMP will be deactivated Describe the notification process for stakeholders.	

Good practice example: Visit Helsinki (2023). Compass: A Handbook for Safety in Tourism and Events in Helsinki. https://www.hel.fi/static/kanslia/elo/Compass_Handbook_for_the_Safety_of_Tourism_in_Helsinki_EN_accessible.pdf

Figure 4 Crisis Management Plan: Key steps, Source: European Commission 2024

4. FURTHER READING

EISMEA Project Website “Crisis Management and Governance in Tourism - Making EU tourism resilient” https://eisma.ec.europa.eu/crisis-management-and-governance-tourism_en

EU Academy E-Learning “Crisis Management and Governance in Tourism” <https://academy.europa.eu/courses/crisis-management-and-governance-in-tourism>

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IMPORTANCE OF SUSTAINABLE TOURISM SUSTAINABLE DESTINATION DEVELOPMENT

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Abstract

This paper explores the relationship between sustainability, tourism, and climate change, emphasizing the importance of sustainable tourism development as a long-term strategy for resilience and responsible growth. It begins by defining sustainability and its application in the tourism sector, highlighting how sustainable tourism seeks to balance environmental protection, social equity, and economic viability. The analysis then focuses on the role of tourism in climate change, both as a contributor through greenhouse gas emissions and as a sector highly vulnerable to its effects.

Key climate-related impacts on tourism include rising temperatures, extreme weather events, and changes in seasonality, all of which affect tourism demand and destination attractiveness. Special attention is given to the vulnerability of specific types of destinations, such as coastal areas, mountain regions, and small islands. The paper presents both mitigation and adaptation strategies at the destination level, outlining a strategic process for planning and implementing climate-resilient tourism policies. This includes identifying suitable adaptation measures and engaging stakeholders in decision-making.

Finally, case studies of Slovenia and Berlin illustrate strategic approaches to sustainable destination development. Slovenia's Green Scheme and Berlin's Tourism Plan 2018+ demonstrate how local and national strategies can guide tourism toward sustainability, climate action, and long-term competitiveness. These examples serve as models for destination-level transformation.

Keywords: *sustainable tourism, sustainable destination development, climate change, adaptation, mitigation*

1. THE ORIGIN OF SUSTAINABILITY

The concept of sustainability has existed since the 18th century. It originally emerged in the context of forestry, introduced by the German mining administrator Carl von Carlowitz, who emphasized the importance of using natural resources—particularly timber—responsibly, ensuring that no more trees are felled than can grow back over time.

In the modern political and environmental context, the term gained global prominence through Gro Harlem Brundtland, former Prime Minister of Norway. She chaired the World Commission on Environment and Development, which published the influential "Brundtland Report" in 1987, officially titled *Our Common Future*. This report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It marked a key moment in integrating environmental concerns with economic and social development on a global scale, laying the foundation for international efforts such as the UN's Agenda 21 and the Sustainable Development Goals (SDGs) (<https://www.un.org/en/academic-impact/sustainability>).

2. SUSTAINABLE TOURISM AND SUSTAINABLE TOURISM DEVELOPMENT: AN INSIGHT

2.1. Sustainable Tourism

Sustainable tourism is a holistic approach to tourism development that aims to balance ecological sustainability, social equity, and economic viability. It focuses on meeting the needs of present generations without compromising the ability of future generations to meet their own. At its core, sustainable tourism integrates the following key components:

- **People:** Sustainable tourism prioritizes the well-being of all stakeholders, including local hosts, tourists, and employees, fostering a positive and inclusive environment.
- **Culture:** It emphasizes the protection and promotion of tangible and intangible heritage, such as traditions, local cuisine, music, and crafts, which contribute to the identity and uniqueness of destinations.
- **Nature:** Natural landscapes, flora, and fauna are vital assets that form the foundation of many tourism products, requiring careful stewardship and preservation.

In a nutshell, human, cultural and natural resources form the basis for attractive and competitive tourism products!

According to the 2005 guidelines by the United Nations Environment Programme (UNEP) and the United Nations World Tourism Organization (UNWTO), sustainable tourism is based on three interdependent dimensions:

- **Environmental Dimension:** Sustainable tourism emphasizes the importance of making optimal use of natural resources to support tourism activities. It aims to maintain essential ecological processes that sustain the environment's health and functionality. Additionally, sustainable tourism seeks to conserve natural heritage and biodiversity, ensuring that ecosystems and species are protected for future generations.

- **Economic Dimension:** Sustainable tourism aims to ensure viable and long-term economic operations that support the stability and growth of local economies. It focuses on providing socio-economic benefits that are fairly distributed among all stakeholders, including local communities, businesses, and tourists. By fostering stable employment opportunities, income generation, and access to essential social services for host communities, sustainable tourism contributes to improving livelihoods. Moreover, it plays a significant role in poverty alleviation by promoting equitable economic development and empowering marginalized populations.
- **Social Dimension:** Sustainable tourism places great importance on respecting the socio-cultural authenticity of host communities. This includes the conservation of their built and living cultural heritage, as well as the preservation of traditional values that define their identity. Additionally, sustainable tourism fosters inter-cultural understanding and tolerance, promoting positive interactions and mutual respect between visitors and local communities.

All three dimensions are interconnected, requiring the active participation of all relevant stakeholders and the guidance of strong political leadership to ensure effective implementation and sustainable outcomes.

By aligning these dimensions, sustainable tourism aims to create a positive impact on the environment, society, and economy, ultimately contributing to global sustainability goals.

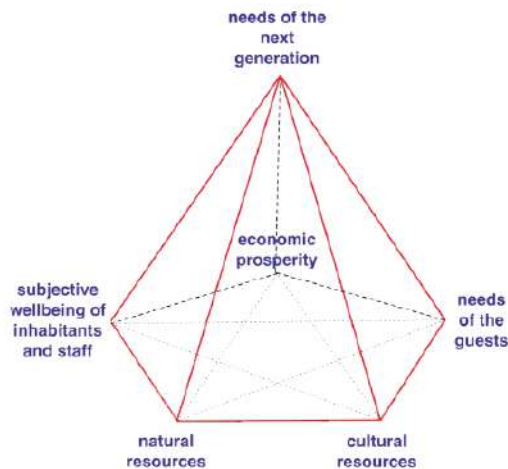
2.2. Sustainable Tourism Development

Sustainable tourism development focuses on creating tourism practices that balance environmental conservation, socio-cultural preservation, and economic growth. It aims to meet the needs of present tourists and host communities while safeguarding resources and opportunities for future generations. This approach emphasizes responsible resource management, equitable stakeholder involvement, and fostering mutual respect between visitors and local communities.

According to the 2005 guidelines by the United Nations Environment Programme (UNEP) and the United Nations World Tourism Organization (UN Tourism), sustainable tourism development is defined as

“Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability.”

The magic pentagon pyramid represents the holistic approach to approach to sustainability and serves all 3 dimensions mentioned above.



Das 5-Eck-Modell, Müller 1999

Figure 1 Magic pentagon pyramid of sustainable tourism development, Source: MÜLLER 2007, p.29

3. TOURISM AND CLIMATE CHANGE

3.1. Contribution of Tourism to Climate Change

Tourism contributes significantly to greenhouse gas emissions. In 2005, the tourism sector was responsible for 4.9% of global greenhouse gas emissions, amounting to 1.7 gigatons (Gt), with aviation alone contributing 2% of this total (UNWTO 2008/WRI 2006). By 2013, the sector's share of emissions rose to 8% (4.5 Gt), when accounting for upstream supply chains such as food, shopping, and infrastructure, though non-CO₂ emissions from aviation were excluded (Lenzen et al. 2018). Specifically, aviation's contribution to global emissions was reported as 2.5% for CO₂ alone and 5-8% for CO₂-equivalent emissions, which include other greenhouse gases (Umweltbundesamt 2019). Consequently, tourism contributes significantly to climate change.

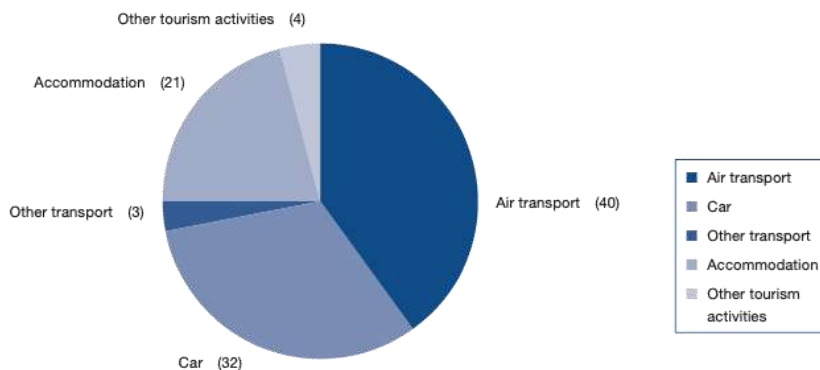


Figure 2 Contribution of greenhouse gas emissions by tourism activity.

Daniel Scott, WMO Expert Team on Climate and Tourism once said: “Bad weather can ruin a holiday. Global climate change can ruin a holiday destination.”

3.2. Impacts on Tourist Destinations

The increasing impacts of climate change on tourist destinations are becoming more evident and are increasingly affecting the attractiveness and functionality of many locations worldwide. A range of natural disasters, such as tropical cyclones, extreme heatwaves, and other extreme weather events, is having devastating consequences for the tourism industry, changing the way people travel.

- **Destroyed Holiday Destinations by Cyclones:** Cyclones and other extreme weather events cause significant damage to popular tourist destinations, particularly in tropical and coastal regions. This affects both infrastructure (hotels, restaurants, airports) as well as natural landmarks such as beaches, coral reefs, or national parks. The destruction of holiday resorts leads to a dramatic decline in visitor numbers, as these areas often become inaccessible or unattractive after the disasters. In many cases, it takes years to repair the damage and reopen the destination to tourists.
- **Extreme Heat in Urban Tourism Destinations:** In urban tourist hotspots, especially in large cities, rising heat levels create uncomfortable conditions for visitors. The “Urban Heat Island” effect, where cities retain more heat due to concrete, asphalt, and lack of green spaces, is becoming more pronounced. This not only affects the well-being of tourists but also increases energy consumption (e.g., through air conditioning) and overall reduces the quality of stay. Extreme heat makes outdoor areas less enjoyable and diminishes the appeal of the destination for tourists.
- **Loss of Tourism Attractions:** Natural disasters and climate change are not only causing physical damage but also leading to a gradual loss of natural wonders that once served as key tourism draws. This includes the loss of glaciers, coral reefs, and other unique ecosystems that have attracted tourists to specific regions. The loss of such attractions has long-term economic impacts, as tourism often represents one of the most important sources of income for many regions.
- **Reduced Landscape Aesthetics:** Climate change is also affecting the aesthetics of landscapes and scenic areas. Changing weather patterns, rising temperatures, and extreme events lead to shifts in ecosystems, affecting the visual appeal of natural surroundings. The aesthetic decline of once-pristine landscapes diminishes their tourism potential and can lead to a decline in visitor interest. This affects not only natural environments but also cultural and historical sites, as weathering, erosion, and extreme weather alter their appearance over time.

But: Tourism is dependent on climate! Biodiversity and landscape aesthetics are essential for attracting tourists and supporting tourism activities. Healthy ecosystems, rich in wildlife and natural beauty, create unique experiences like wildlife viewing or hiking, which draw visitors. When these elements are degraded, it diminishes the destination's appeal and limits tourism opportunities. Preserving biodiversity and scenic landscapes is crucial for maintaining sustainable tourism and the local economy.

As outlined, there is a strong interdependency between tourism and an intact ecosystem due to the fact that nature is an important component of the tourism product and an intact nature serves as scenery for tourism activities, especially in the case of:

- Beach and recreational vacation
- Types of nature tourism
- Tourism relies on an (intact) nature and diversity of ecosystems and species

Natural and cultural resources are fundamental to tourism development, requiring continuous attention and active preservation to ensure long-term sustainability. At the international level, there is growing demand and a willingness to pay more for sustainable tourism products, particularly from environmentally-conscious visitors. Adopting sustainability practices in tourism not only leads to cost savings and revenue growth but also delivers significant environmental benefits. The long-term success of tourism operations hinges on equitable distribution of benefits among all stakeholders, ensuring stable employment, income opportunities, and access to social services for local communities. Embracing sustainability enhances the quality of tourism products, offering a competitive advantage, fostering customer loyalty, improving employee retention, and boosting brand value.

3.3. Direct and Indirect Impacts of Climate Change on Tourism Demand

When considering the impacts of climate change on tourism demand, it is important to recognize that tourism demand is shaped by a large number of influencing factors. Only a small portion of these factors are directly (e.g. weather at the destination, lack of snow reliability) or indirectly (e.g. changes in tourism supply in response to climate change, climate-related shifts in economic conditions or in the landscape) influenced by changing climatic conditions. This means that observed changes in tourism demand are always the result of a complex interplay of many different factors.

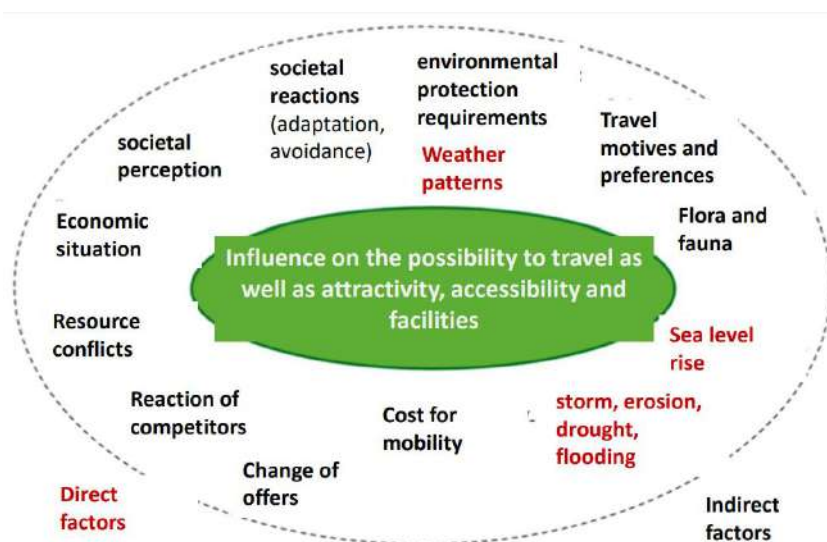


Figure 3 Direct and indirect impacts of climate change on tourism demand. Source: Umweltbundesamt 2021

Moreover, it is not necessarily the actual change in tourism supply that matters, but rather the perception of the potential guest, which may differ from reality (for example, even though a region still has regular snowfall, it may no longer be perceived as snow-reliable). In addition, tourism demand in a specific travel destination is not only influenced by changes in local conditions and factors, but also by externally driven shifts in demand. Changes in local factors might include new tourism infrastructure or improved accessibility. Demand shifts, on the other hand, may occur due to the changing attractiveness of other destinations caused by factors such as new travel restrictions or changes in the security situation of other countries.

Travelers have multiple ways to respond to undesirable or particularly attractive developments in destination areas. Travel is considered a doubly substitutable product, meaning

- a. one does not have to travel at all, or at least not necessarily at a specific time, and
- b. there is almost an unlimited number of alternative travel options available.

This flexibility allows for various possible reactions, for example:

- Choosing not to travel at all
- Traveling to the same destination, but at a different time
- Traveling to a different destination temporarily or as a one-time alternative, with the possibility of returning to the original destination after some time
- Permanently switching to other travel destinations

3.4. Types of Vulnerable Destinations

The idea of sustainability, which has its roots in 18th-century forestry practices introduced by Carl von Carlowitz, has evolved into a crucial framework for global development. His principle—to only use as much wood as can naturally regenerate—has become a guiding philosophy for balancing environmental, economic, and social needs. In 1987, this concept gained global political relevance through the *Brundtland Report (Our Common Future)*, which defined sustainable development as meeting current needs without compromising future generations.

Sustainability is particularly vital when discussing vulnerable destinations in tourism. These are places that are especially susceptible to the negative impacts of environmental, economic, or social stress, often exacerbated by tourism activities or climate change.

Examples of vulnerable destinations include:

- **Winter sports destinations at low altitudes**, which are increasingly affected by rising temperatures and reduced snowfall due to climate change.

Example: Chamonix, France and Garmisch-Partenkirchen, Germany: Destinations such as Chamonix in France and Garmisch-Partenkirchen in Germany are facing major challenges due to climate change. Rising global temperatures are causing reduced snowfall and shorter ski seasons, making winter tourism less reliable. Glacial retreat and the melting of permafrost threaten the stability of ski slopes and infrastructure, while the increased use of artificial snow leads to higher water and energy consumption, adding further environmental pressure.

- **Coastal and island destinations**, which face threats from rising sea levels, stronger storms, coastal erosion, and freshwater scarcity.

*Examples: **Maldives, Cox's Bazar (Bangladesh):*** Coastal and island destinations like the Maldives and Cox's Bazar in Bangladesh are particularly vulnerable to sea level rise, which threatens to submerge land and erode coastlines. These areas also face an increased frequency and intensity of storms and cyclones, which can destroy tourism infrastructure and disrupt travel. Saltwater intrusion contaminates freshwater sources, and the degradation of protective coastal ecosystems such as mangroves and coral reefs leaves these destinations even more exposed to climate impacts.

- **Beach destinations with low product differentiation**, meaning places that rely solely on sun and sand tourism without unique attractions. These are at risk due to coral bleaching, extreme weather, and water shortages.

*Examples: **Cancún (Mexico), Bali (Indonesia):*** Tourism hotspots like Cancún in Mexico and Bali in Indonesia heavily rely on their beaches and marine life, making them highly susceptible to climate change. Rising sea temperatures lead to coral bleaching, which diminishes the appeal of diving and snorkelling. Extreme weather events damage beach resorts and disrupt tourism, while water scarcity becomes more pressing due to increasing demand from tourists during dry seasons. As sea levels rise, beach erosion also threatens the very asset these destinations depend on.

- **Nature and adventure tourism areas**, such as remote mountain regions or rainforests, which suffer from biodiversity loss, landscape degradation, and exposure to natural disasters.

*Examples: **Amazon Rainforest, Nepal (Himalayas):*** Destinations such as the Amazon rainforest and the Himalayas in Nepal are being significantly affected by climate change. In the Amazon, more frequent droughts and wildfires threaten biodiversity and reduce the quality of ecotourism experiences. In Nepal, glacial melting and landslides pose serious risks to trekkers and local communities. Changes in rainfall and temperature patterns alter landscapes and ecosystems, reducing the reliability and attractiveness of nature-based tourism.

- **Long-haul destinations without regional source markets**, which rely heavily on international travellers and are vulnerable to rising transport costs and shifting travel behaviour.

*Examples: **New Zealand, Fiji:*** Countries like New Zealand and Fiji, which rely heavily on long-distance travel, are vulnerable to changes in transportation trends caused by climate change. As governments introduce stricter aviation emissions policies and carbon taxes, the cost of long-haul travel is expected to rise, potentially reducing tourist arrivals. In addition, destinations like Fiji are at risk from rising sea levels and storm surges that damage coastal infrastructure and key attractions like coral reefs.

- **Destinations dependent on low-cost mass tourism**, which often struggle with the financial burden of adapting to sustainability measures, such as upgrading infrastructure or reducing emissions.

Examples: Costa del Sol (Spain), Phuket (Thailand): Mass tourism destinations such as Costa del Sol in Spain and Phuket in Thailand face a range of climate-related challenges. Increasing temperatures and frequent heatwaves may deter tourists during peak seasons, while droughts put pressure on water supplies. Coastal erosion and flooding damage hotels, roads, and beaches, making the destination less attractive. Environmental degradation due to overuse of resources and biodiversity loss further threatens long-term tourism sustainability.

- **Countries with a high dependency on tourism and few economic alternatives,** where any decline in tourism—due to climate events, pandemics, or economic shocks—can have severe consequences.

Examples: Dominican Republic, Seychelles: Tourism-dependent countries such as the Dominican Republic and Seychelles are especially at risk from climate change. Their economies rely heavily on seasonal tourism income, which is easily disrupted by hurricanes, cyclones, and other extreme weather events. Environmental degradation, including the loss of coral reefs and sandy beaches, reduces the appeal of these destinations. Because tourism is the primary economic driver, recovery from climate shocks is often slow and costly.

- **Developing countries and small island developing states (SIDS)** with limited adaptive capacity, lacking the financial or institutional resources to effectively manage climate risks or transform their tourism sectors sustainably.

Examples: Haiti, Vanuatu: Countries like Haiti and Vanuatu have limited resources to cope with the effects of climate change. They are frequently hit by natural disasters such as hurricanes, tsunamis, and earthquakes, which cause widespread damage to both tourism infrastructure and local communities. Weak governance, poor infrastructure, and limited financial capacity make it difficult for these countries to implement effective climate adaptation strategies, further increasing their vulnerability to tourism decline.

These destinations require special attention in sustainable tourism planning. Without thoughtful intervention, they risk long-term environmental degradation and social harm, which in turn undermines their economic viability.

3.5. Strategies for Sustainable Tourism and Climate Action

To respond effectively to the growing impacts of climate change, destinations and tourism stakeholders must adopt two complementary strategies: **mitigation** and **adaptation**.

Mitigation Refers to measures for preventing and reducing greenhouse gas emissions into the atmosphere, as well as removing these emissions from the atmosphere. A challenge for countries and regions that need to significantly restructure their energy systems.

Adaptation, Refers to measures taken to adapt to actual or expected climate change and to manage its impacts, by reducing vulnerability and exposure to its harmful effects. Through long-term planning, shaping the resilient development of a tourism destination, and thus maintaining its attractiveness.

3.5.1. Mitigation Measures to Climate Change in Tourism: Destination Level

To effectively address climate change in the tourism sector, a combination of sustainable practices and cross-sector collaboration is essential. The following strategies aim to reduce tourism's environmental footprint while promoting climate resilience:

- **Promoting Sustainable Mobility and Climate-Friendly Transportation:**
Encouraging the use of environmentally friendly modes of transport—such as trains, electric buses, bicycles, and shared mobility services—helps significantly reduce greenhouse gas emissions. Supporting infrastructure for low-emission travel and incentivizing tourists to make eco-conscious transport choices is a key part of this approach.
- **Developing Innovative Climate-Friendly Tourism Products:**
Tourism providers are encouraged to design and promote products and experiences that have a low environmental impact. This could include eco-lodges, nature-based tours with low carbon footprints, or carbon-neutral vacation packages. Close collaboration with private tourism stakeholders ensures these products meet market demand while supporting climate goals.
- **Implementing Environmental Education Programs:**
Educational initiatives aimed at tourists, tourism professionals, and local communities raise awareness about climate change and sustainability. These programs help foster responsible behavior, such as energy-saving practices, respect for natural habitats, and support for local conservation efforts.
- **Reducing Printed Materials and Shifting to Digital Marketing:**
To minimize paper waste and reduce the carbon footprint of promotional materials, destinations are increasingly replacing printed brochures with digital content. Websites, social media platforms, and downloadable PDFs provide information efficiently while allowing for regular updates without reprinting.
- **Using Destination Apps and Digital Maps:**
Mobile apps offer a sustainable alternative to paper maps by providing real-time navigation, visitor guidance, and information on attractions. These digital tools enhance the visitor experience while supporting environmental goals by eliminating the need for disposable materials.
- **Training Tourism Stakeholders on CO₂ Emissions and Climate Strategies:**
Training programs for tourism operators and businesses are essential for building knowledge about the sector's climate impact. These programs cover both mitigation (reducing emissions) and adaptation (preparing for climate impacts), helping stakeholders to integrate climate considerations into business decisions and operations.
- **Collaborating Across Sectors and Industries:**
Addressing climate change requires cooperation beyond the tourism sector. Effective strategies involve working with transport providers, energy companies, environmental NGOs, and government bodies to implement joint solutions. This integrated approach strengthens the resilience and sustainability of destinations.

While many climate action strategies are implemented at the destination level, the primary responsibility for climate change mitigation lies with tourism businesses themselves. Tour

operators, accommodation providers, and transport companies have direct control over their operations and can make meaningful changes—such as improving energy efficiency, switching to renewable energy sources, reducing waste, and offering low-carbon products. By integrating sustainability into their core business models, these companies play a crucial role in cutting emissions and driving the transition to a climate-resilient tourism sector.

3.5.2. Adaptation Measures to Climate Change in Tourism: Destination Level

Adaptation to climate change requires a broad set of strategies to reduce vulnerability and increase resilience at both national and local levels.

- **National Planning**

Effective climate adaptation begins with strategic national planning. Governments can reduce risk by integrating climate considerations into building regulations and land-use planning. This includes designating hazard zones (e.g., floodplains, wildfire-prone areas), planning escape routes, and ensuring emergency access routes are in place. Tourism infrastructure built according to updated codes is more likely to withstand extreme weather events.

- **Technical Measures**

Tourism businesses can adopt technical solutions to adapt to new climate realities. For instance, ski resorts may invest in artificial snowmaking to compensate for shorter winter seasons, while coastal resorts may reinforce buildings with storm-resistant architecture. Heat-adapted building materials and improved insulation or air conditioning systems can enhance comfort and safety during heatwaves. Protective measures like avalanche barriers are also critical in mountainous areas.

- **Infrastructural Measures**

Large-scale infrastructure projects can protect vulnerable tourism areas from climate threats. Coastal destinations might construct sea walls, dunes, or flood barriers to guard against sea level rise and storm surges. Similarly, flood-prone inland areas can benefit from improved drainage systems and river embankments, ensuring long-term viability for tourism operations.

- **Information and Training**

Raising awareness and building capacity among tourism stakeholders is essential. Training programs for staff, businesses, and local communities can focus on climate risks, emergency procedures, and sustainable practices. Providing tourists with accurate, real-time information about weather conditions and safety protocols also supports risk reduction and informed decision-making.

- **Product and Target Group Diversification**

To reduce dependence on climate-sensitive tourism, destinations can diversify both their offerings and their markets. For example, winter sports regions can develop summer hiking or wellness tourism, while beach resorts might introduce cultural or eco-

tourism experiences. Diversifying target groups—such as attracting domestic visitors in addition to international tourists—can also improve economic resilience.

- **Financing Measures**

Adaptation often requires significant financial investment. Governments can support tourism businesses through subsidies for energy-efficient upgrades, tax relief for adaptation projects, or direct funding for infrastructure improvements. Emergency financial support may also be necessary after climate-related disasters to aid in recovery and maintain operations.

- **Development and Dissemination of Early Warning Systems**

Early warning systems provide crucial lead time before extreme weather events such as hurricanes, floods, or heatwaves. These systems can alert both tourism operators and visitors, allowing for evacuation or precautionary measures. The wider dissemination of such tools—via apps, SMS alerts, or local networks—can significantly reduce the risk of harm.

- **Crisis Management**

Destinations must be prepared to act swiftly in times of crisis. Effective crisis management includes clear evacuation plans, accessible emergency shelters, medical support, and communication protocols. Tourism businesses should regularly update and rehearse these plans to ensure readiness in case of climate-related emergencies.

- **Risk and Innovation Management**

Insurance plays a critical role in managing climate risk for tourism businesses, covering potential damages from events like storms or wildfires. Additionally, innovation management—through climate risk assessments, new technologies, or flexible business models—helps companies anticipate and respond to future challenges proactively.

- **Resilience and Strengthening of Ecosystems**

Healthy ecosystems provide natural protection against climate risks. Restoring wetlands can reduce flood risks, while preserving forests helps stabilize slopes and maintain biodiversity. Coastal mangroves, dunes, and coral reefs act as natural barriers against storm surges. Supporting ecosystem resilience is not only environmentally sound, but also enhances the attractiveness and sustainability of destinations.

3.5.3. Strategic Process for Climate Change Adaptation of Destinations – Introduction

Adapting to climate change is a complex but essential task for tourism destinations aiming to remain resilient, competitive, and sustainable in the face of growing environmental challenges. A structured, strategic process helps destinations systematically assess risks, involve key stakeholders, and develop targeted, location-specific adaptation measures. This process typically unfolds in several phases, each building on the previous one to ensure an integrated and effective response. The following figure outlines the five key phases of this strategic adaptation process in more detail.

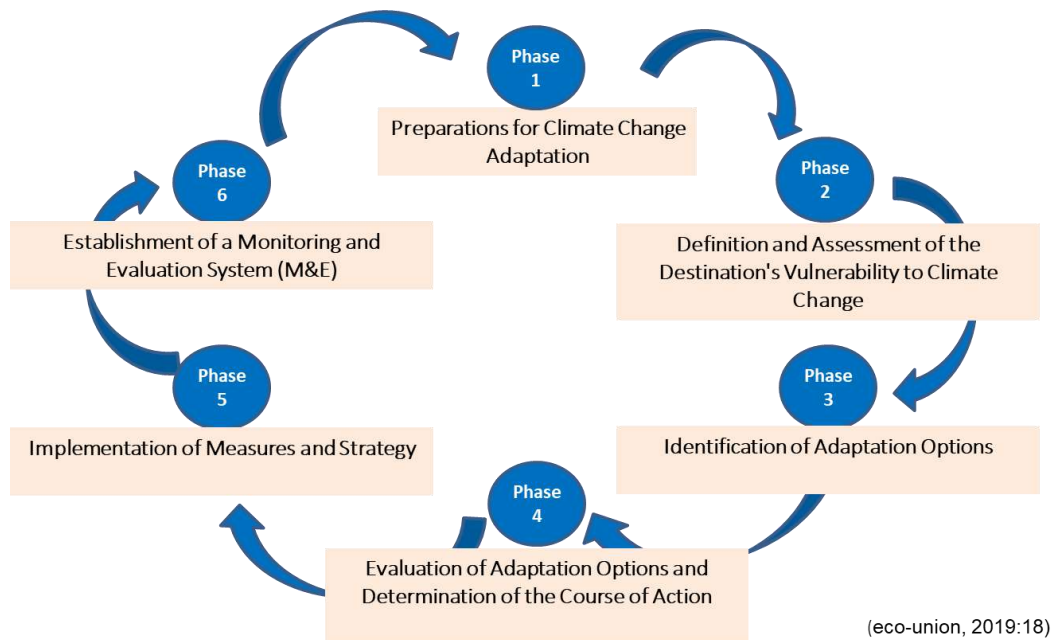


Figure 4 Strategic Process for Destination Adaptation. Source: Eco-Union, 2019

PHASE 1: Preparing the ground for climate change adaptation

The first step is to organise the resources needed to develop the strategy.

- Achieve a high level of institutional support.
- Involve all government departments with different levels of competence
- Establish coordination mechanisms between departments
- Identify the necessary financing sources
- Collect and review all relevant studies, information and data on tourism and climate change
- Identify and involve all social agents linked to tourism and climate change

PHASE 2: Definition & evaluation of the vulnerability of the destination to climate change

Evaluating the vulnerability of a tourist destination to climate change provides a clearer understanding of the risks, as well as the climate-related and non-climate impacts on both the current and future tourism systems. This analysis helps identify opportunities, such as emerging markets or new green job prospects, while also offering insights on assessing adaptive capacity and addressing uncertainties. Adaptation requires both climate projections and an understanding of how climate change interacts with the regional tourism system. This information serves as a foundation for scenario planning, enabling a better grasp of key challenges and facilitating the creation of a long-term vision for the destination's future.

PHASE 3: Identification of adaptation options

Identifying and assessing potential adaptation options, based on the vulnerabilities identified, helps to guide strategies that minimize impacts while capitalizing on opportunities arising from climate change. From a destination's perspective, this process involves finding solutions to preserve its appeal, which may include adapting the most vulnerable resorts to target different markets, products, or seasons. Local and regional authorities must not only rely on scientific and technical knowledge to define adaptation measures but also ensure that these strategies align with regional, national, and European frameworks.

PHASE 4: Evaluation of adaptation options and definition of course of action

The process of selecting adaptation options involves evaluating various measures and prioritizing or eliminating them based on economic, social, and environmental criteria. This evaluation should be conducted in collaboration with the stakeholders of the tourist destination. By assessing the options, the foundation for strategic planning is established. Therefore, it is crucial to define the primary goals and adaptation objectives.

PHASE 5: Implementation of the actions and strategy

Strategic planning for adapting destinations to climate change can begin once the appropriate adaptation options have been selected and assessed, with active participation from all relevant stakeholders. This strategic process focuses on developing an action plan that systematically outlines the steps needed to turn adaptation options into tangible actions. It specifies the responsibilities of local, regional, and national authorities, establishes a timeline, and identifies the required resources (human, technological, and financial). The adaptation plans for the tourist destination must align with local, regional, and national strategies.

PHASE 5: Construction of a Monitoring and Evaluation (M&E) System

Only recently have we begun to gain a deeper understanding of how destinations can adapt to climate change. Mountain destinations and the Mediterranean coast, in particular, face high levels of exposure and sensitivity to climate change, making their tourism models vulnerable to its impacts and risks. Investing in adaptation is crucial for ensuring the efficiency, effectiveness, and sustainability of adaptation measures. In this context, developing a climate change adaptation strategy offers an opportunity to identify the best approaches for monitoring, evaluating, and reporting on adaptation progress. National and regional governments must also support and oversee these processes to create destination models that are more resilient to climate change and can be further developed as sustainable tourist destinations. To build a monitoring and evaluation (M&E) system for adaptation, it is important to define the purpose of monitoring and evaluation, determine the best methods, identify the stakeholders to involve, and decide how the results will be applied to adaptation policies and practices. (Eco-union, 2019)

3.5.4. Identification of Adaptation Measures at Destination Level

To adapt to the consequences of climate change, tourism destinations have various options at their disposal. In order to provide an overview of possible adaptation measures, a wide range of actions were collected, relevant ones selected, and then examined in greater detail. A framework for identifying these measures is shown in Figure 5.

To support tourism stakeholders in adapting to climate change, a fact-sheet-style description was developed for each measure. These descriptions include practical guidance and information on costs, ecological impacts, socio-economic aspects, potential barriers, and solutions for implementation.

The effects of an adaptation measure can vary greatly depending on local conditions. These conditions must be carefully examined before implementation, and if necessary, the measure should be revised accordingly. A final evaluation of the measures was deliberately omitted, as each measure has its own advantages and disadvantages, and there is no single solution that fits all destinations.

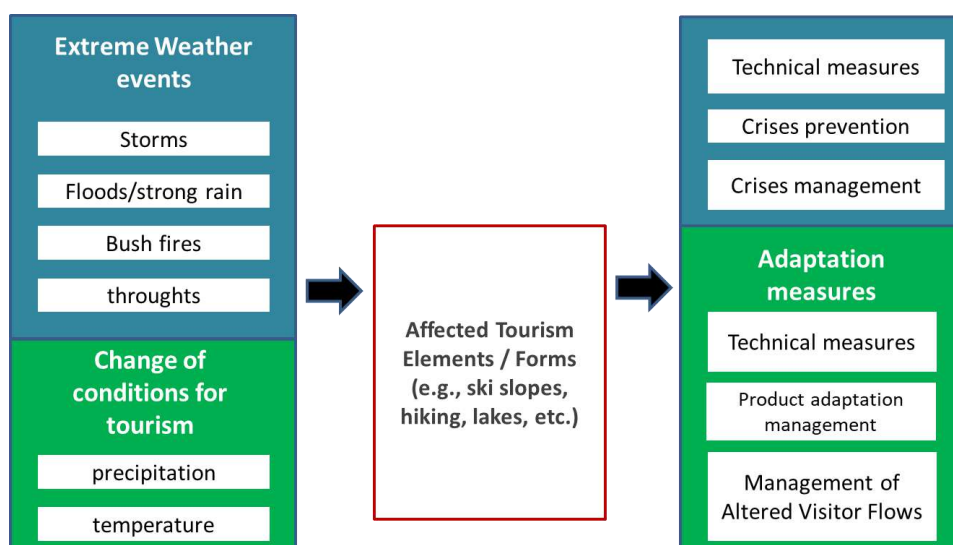


Figure 5 Framework for Identifying Adaptation Measures, Source: Umweltbundesamt 2021

4. CASE STUDIES: SUSTAINABLE DESTINATION DEVELOPMENT

4.1. Destination at National Level: SLOVENIA

Slovenia's sustainable tourism development strategy focuses on promoting tourism that preserves natural and cultural heritage while supporting economic growth and social well-being. Slovenia's national initiative for sustainable tourism is encapsulated in the Green Scheme of Slovenian Tourism (GSST). Launched in 2015 by the Slovenian Tourist Board (STO) in partnership with the GoodPlace Sustainable Tourism Factory, this certification programme aims to position Slovenia as a leading green destination by promoting sustainable practices across its. Key elements of the country's sustainable tourism development include:

1. **Environmental Sustainability:** Emphasizing eco-friendly practices, conservation of natural resources, and minimizing the environmental footprint of tourism activities. Slovenia aims to be a green destination, with a strong commitment to sustainable transport, energy efficiency, and waste management.

2. **Cultural and Heritage Preservation:** Promoting the protection of cultural heritage and local traditions while encouraging tourism that respects local communities and traditions.
3. **Economic Growth:** Supporting local businesses, creating jobs, and fostering a sustainable tourism economy that benefits both urban and rural areas.
4. **Diversified Offerings:** Developing various types of tourism, e.g., eco-tourism, adventure tourism, health tourism, to cater to different markets while ensuring sustainability.
5. **Certification & Quality Standards:** Implementing green certifications, like the "Green Scheme of Slovenian Tourism," to encourage businesses to adopt sustainable practices.

The strategy aims to position Slovenia as a green, healthy, and responsible tourist destination that prioritizes both environmental and social sustainability.

SLOVENIA'S STRATEGIC GUIDELINES



Figure 6. Slovenia's strategic guidelines Source: www.slovenia.info

4.2. Destination at Local Level: Berlin, Germany

VisitBerlin works continuously on the topic of sustainability, both at company level and throughout Berlin and in the congress business. With voluntary Corporate Social Responsibility (CSR), visitBerlin integrates social, ethical and ecological measures into its corporate culture and strategic planning.

The Tourism Plan 2018+ for Berlin was developed through stakeholder consultations and with the support of visitBerlin, offering a framework for the future development of tourism in the city. The plan emphasizes sustainable, high-quality, and city-friendly tourism. visitBerlin is responsible for implementing various aspects of this plan. By creating a broader sustainability strategy for visitBerlin, the goals of the Tourism Plan 2018+ can be integrated into the company's operations, enabling more efficient and effective management of sustainable development initiatives.

VisitBerlin Mission statement is the bedrock of its corporate as well as of its sustainability strategy. Sustainability plays an overarching role in the future of visitBerlin and its work as a Destination Marketing and Management Organization (DMMO).

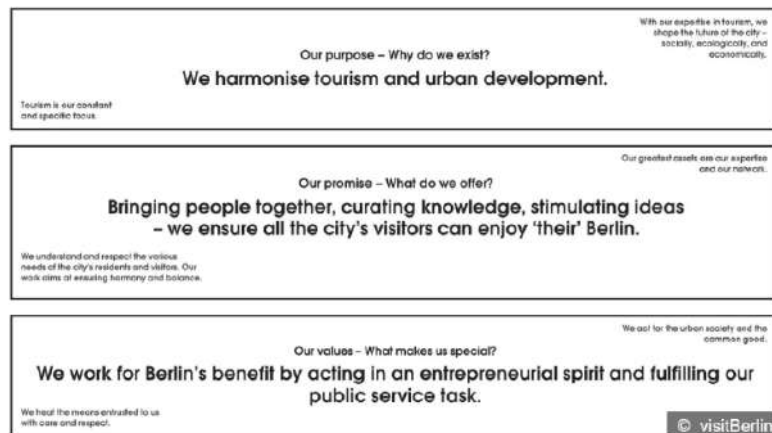


Figure 7 Mission Statement of visitBerlin, Source: visitBerlin 2025

visitBerlin actively fosters the destination's sustainable development in the context of the Sustainable Development Goals. The UN Sustainable Development Goals allows them to locate themselves within the overarching social context, while the Global Sustainable Tourism Council (GSTC) Destination Criteria provide a specific reference to tourism. Their sustainable orientation is set out in their visitBerlin Sustainability Policy.

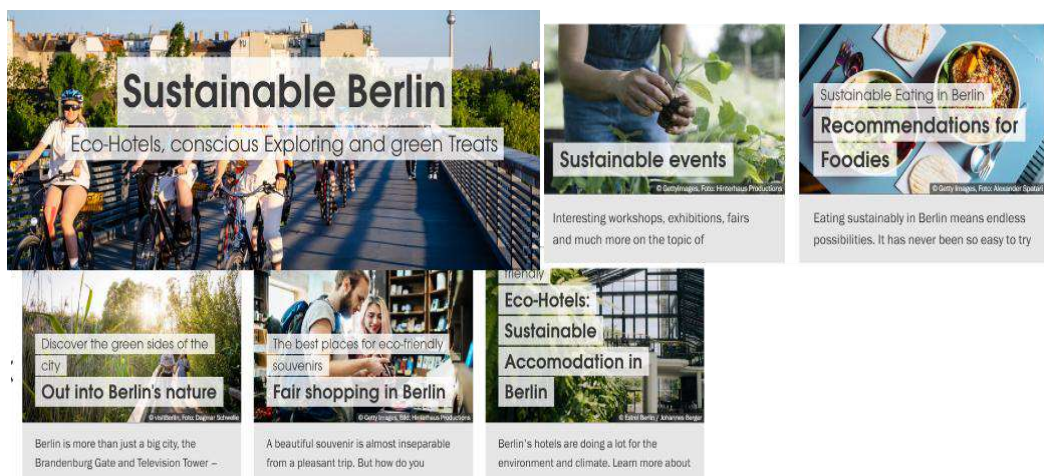


Figure 8 Sustainable products offered by visitBerlin

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SUSTAINABLE TOURISM AND CORPORATE SOCIAL RESPONSIBLE IN TOURISM

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Abstract

Sustainable tourism development has become a crucial objective in ensuring the long-term viability of the tourism industry while minimizing its environmental and social impacts. This paper explores key aspects of sustainable tourism, starting with its core principles and its intersection with climate change, which poses significant challenges to destinations worldwide. Additionally, the paper reviews international milestones that have shaped policies and frameworks for sustainable tourism.

Corporate Social Responsibility (CSR) plays a pivotal role in promoting sustainability in tourism businesses. This paper introduces the concept of CSR and its fundamental principles, such as ethical business practices, stakeholder engagement, and environmental stewardship. It also examines the integration of CSR into tourism enterprises, highlighting the institutional placement of CSR strategies within companies. Furthermore, specific CSR instruments tailored for the tourism sector are discussed, including sustainability certifications, responsible supply chain management, and community engagement initiatives.

The paper further analyzes CSR and sustainability management in key tourism subsectors, including tour operators and the hospitality industry. It explores how these businesses implement CSR strategies to enhance environmental sustainability, social responsibility, and economic resilience. Ultimately, this paper underscores the importance of integrating CSR into tourism businesses to foster a more sustainable and responsible global tourism industry.

Keywords: *SDGs, sustainable practices, corporate social responsibility, sustainable management, CSR in the hospitality industry, CSR at tour operators*

1. SUSTAINABLE TOURISM

1.1. Sustainable Tourism and Sustainable Tourism Development: An Insight

Sustainable Tourism Development

Sustainable tourism is a holistic approach to tourism development that aims to balance ecological sustainability, social equity, and economic viability. It focuses on meeting the needs of present generations without compromising the ability of future generations to meet their own. At its core, sustainable tourism integrates the following key components:

- **People:** Sustainable tourism prioritizes the well-being of all stakeholders, including local hosts, tourists, and employees, fostering a positive and inclusive environment.
- **Culture:** It emphasizes the protection and promotion of tangible and intangible heritage, such as traditions, local cuisine, music, and crafts, which contribute to the identity and uniqueness of destinations.
- **Nature:** Natural landscapes, flora, and fauna are vital assets that form the foundation of many tourism products, requiring careful stewardship and preservation.

In a nutshell, human, cultural and natural resources form the basis for attractive and competitive tourism products!

According to the 2005 guidelines by the United Nations Environment Programme (UNEP) and the United Nations World Tourism Organization (UN Tourism), sustainable tourism is based on three interdependent dimensions:

- **Environmental Dimension:** Sustainable tourism emphasizes the importance of making optimal use of natural resources to support tourism activities. It aims to maintain essential ecological processes that sustain the environment's health and functionality. Additionally, sustainable tourism seeks to conserve natural heritage and biodiversity, ensuring that ecosystems and species are protected for future generations.
- **Economic Dimension:** Sustainable tourism aims to ensure viable and long-term economic operations that support the stability and growth of local economies. It focuses on providing socio-economic benefits that are fairly distributed among all stakeholders, including local communities, businesses, and tourists. By fostering stable employment opportunities, income generation, and access to essential social services for host communities, sustainable tourism contributes to improving livelihoods. Moreover, it plays a significant role in poverty alleviation by promoting equitable economic development and empowering marginalized populations.
- **Social Dimension:** Sustainable tourism places great importance on respecting the socio-cultural authenticity of host communities. This includes the conservation of their built and living cultural heritage, as well as the preservation of traditional values that define their identity. Additionally, sustainable tourism fosters inter-cultural understanding and tolerance, promoting positive interactions and mutual respect between visitors and local communities.

All three dimensions are interconnected, requiring the active participation of all relevant stakeholders and the guidance of strong political leadership to ensure effective implementation and sustainable outcomes.

By aligning these dimensions, sustainable tourism aims to create a positive impact on the environment, society, and economy, ultimately contributing to global sustainability goals.

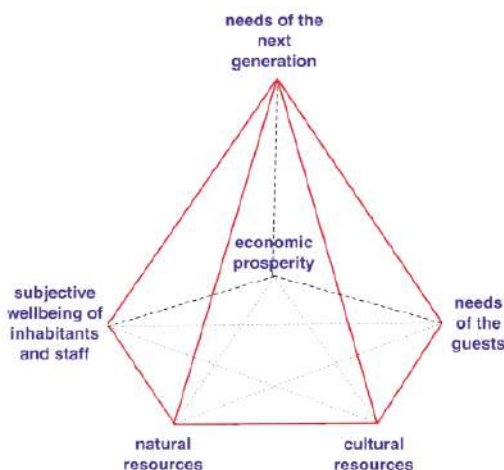
Sustainable Tourism Development

Sustainable tourism development focuses on creating tourism practices that balance environmental conservation, socio-cultural preservation, and economic growth. It aims to meet the needs of present tourists and host communities while safeguarding resources and opportunities for future generations. This approach emphasizes responsible resource management, equitable stakeholder involvement, and fostering mutual respect between visitors and local communities.

According to the 2005 guidelines by the United Nations Environment Programme (UNEP) and the United Nations World Tourism Organization (UN Tourism), sustainable tourism development is defined as

“Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability.”

The magic pentagon pyramid represents the holistic approach to approach to sustainability and serves all 3 dimensions mentioned above.



Das 5-Eck-Modell, Müller 1999

Figure 1 Magic pentagon pyramid of sustainable tourism development, MÜLLER (1999), in Miller (2007)

1.2. Tourism and Climate Change

Tourism contributes significantly to greenhouse gas emissions. In 2005, the tourism sector was responsible for 4.9% of global greenhouse gas emissions, amounting to 1.7 gigatons (Gt), with aviation alone contributing 2% of this total (UNWTO 2008/WRI 2006). By 2013, the sector's share of emissions rose to 8% (4.5 Gt), when accounting for upstream supply chains such as food, shopping, and infrastructure, though non-CO₂ emissions from aviation were excluded (Lenzen et al. 2018). Specifically, aviation's contribution to global emissions was reported as 2.5% for CO₂ alone and 5-8% for CO₂-equivalent emissions, which include other greenhouse gases (Umweltbundesamt 2019). Consequently, tourism contributes significantly to climate change.

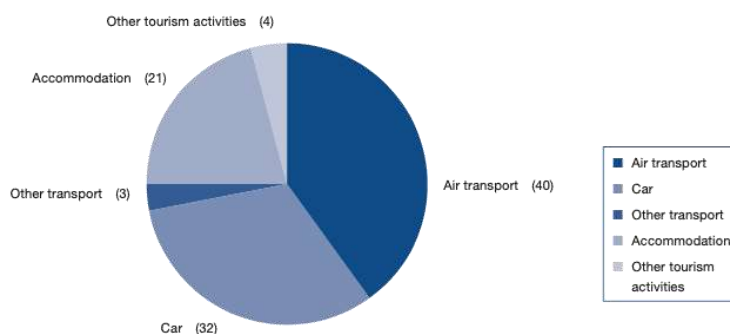


Figure 2 Contribution of to greenhouse gas emissions by tourism activity

Daniel Scott, WMO Expert Team on Climate and Tourism once said: “Bad weather can ruin a holiday. Global climate change can ruin a holiday destination.”

The increasing impacts of climate change on tourist destinations are becoming more evident and are increasingly affecting the attractiveness and functionality of many locations worldwide. A range of natural disasters, such as tropical cyclones, extreme heatwaves, and other extreme weather events, is having devastating consequences for the tourism industry, changing the way people travel.

- Destroyed Holiday Destinations by Cyclones:** Cyclones and other extreme weather events cause significant damage to popular tourist destinations, particularly in tropical and coastal regions. This affects both infrastructure (hotels, restaurants, airports) as well as natural landmarks such as beaches, coral reefs, or national parks. The destruction of holiday resorts leads to a dramatic decline in visitor numbers, as these areas often become inaccessible or unattractive after the disasters. In many cases, it takes years to repair the damage and reopen the destination to tourists.
- Extreme Heat in Urban Tourism Destinations:** In urban tourist hotspots, especially in large cities, rising heat levels create uncomfortable conditions for visitors. The “Urban Heat Island” effect, where cities retain more heat due to concrete, asphalt, and lack of green spaces, is becoming more pronounced. This not only affects the well-being of tourists but also increases energy consumption (e.g., through air conditioning) and

overall reduces the quality of stay. Extreme heat makes outdoor areas less enjoyable and diminishes the appeal of the destination for tourists.

- **Loss of Tourism Attractions:** Natural disasters and climate change are not only causing physical damage but also leading to a gradual loss of natural wonders that once served as key tourism draws. This includes the loss of glaciers, coral reefs, and other unique ecosystems that have attracted tourists to specific regions. The loss of such attractions has long-term economic impacts, as tourism often represents one of the most important sources of income for many regions.
- **Reduced Landscape Aesthetics:** Climate change is also affecting the aesthetics of landscapes and scenic areas. Changing weather patterns, rising temperatures, and extreme events lead to shifts in ecosystems, affecting the visual appeal of natural surroundings. The aesthetic decline of once-pristine landscapes diminishes their tourism potential and can lead to a decline in visitor interest. This affects not only natural environments but also cultural and historical sites, as weathering, erosion, and extreme weather alter their appearance over time.

But: Tourism is dependent on climate! Biodiversity and landscape aesthetics are essential for attracting tourists and supporting tourism activities. Healthy ecosystems, rich in wildlife and natural beauty, create unique experiences like wildlife viewing or hiking, which draw visitors. When these elements are degraded, it diminishes the destination's appeal and limits tourism opportunities. Preserving biodiversity and scenic landscapes is crucial for maintaining sustainable tourism and the local economy.

As outlined, there is a strong interdependency between tourism and an intact ecosystem due to the fact that nature is an important component of the tourism product and an intact nature serves as scenery for tourism activities, especially in the case of:

- Beach and recreational vacation
- Types of nature tourism
- Tourism relies on an (intact) nature and diversity of ecosystems and species

Natural and cultural resources are fundamental to tourism development, requiring continuous attention and active preservation to ensure long-term sustainability. At the international level, there is growing demand and a willingness to pay more for sustainable tourism products, particularly from environmentally-conscious visitors. Adopting sustainability practices in tourism not only leads to cost savings and revenue growth but also delivers significant environmental benefits. The long-term success of tourism operations hinges on equitable distribution of benefits among all stakeholders, ensuring stable employment, income opportunities, and access to social services for local communities. Embracing sustainability enhances the quality of tourism products, offering a competitive advantage, fostering customer loyalty, improving employee retention, and boosting brand value.

1.3. International Milestones for Sustainable Tourism Development

The evolution of sustainable tourism initiatives can be traced through several key milestones. In 1995, the "Lanzarote Charter for Sustainable Tourism" was introduced by the WTO, UNEP, UNESCO, and the EU, marking an early global effort to promote responsible travel. This was followed by the 1996/99 development of the "Agenda 21 for the Travel & Tourism Industry" and the "Global Code of Ethics for Tourism" by UN Tourism and WTTC. In 2001, the Santo Domingo International Guidelines for Sustainable Tourism were established to protect biodiversity, with further support from the CBD/CSD. The year 2002 marked the International Year of Ecotourism, highlighted by the Québec Declaration on Ecotourism, which focused on nature conservation and supporting rural communities. The foundation of the Global Sustainable Tourism Council in 2007 and the formation of the Global Partnership for Sustainable Tourism in 2011, involving UNEP, UN Tourism, WTTC, and the OECD, further solidified international collaboration for sustainable travel practices. In 2012, the Green Economy Report, published by UNEP and UN Tourism, included a chapter dedicated to tourism, highlighting its role in a sustainable economy. In 2015, the Sustainable Development Goals explicitly named tourism as a key sector for fostering sustainable development. The year 2017 saw the declaration of the International Year of Sustainable Tourism for Development, emphasizing tourism's potential to contribute positively to global well-being. Most recently, in 2022, the Glasgow Declaration on Climate Action in Tourism was introduced, underscoring the industry's responsibility to take decisive action in addressing climate change.

In the following, special attention will be put on the SDG, the Glasgow Declaration and in addition, to the Framework "Global Code of Ethics".

1.3.1. Sustainable Development Goals (SDG)

During the 70th Session of the UN General Assembly 154 heads of state or government adopted the bold and ambitious 2030 Agenda for Sustainable Development, along with the 17 Sustainable Development Goals (SDGs).



For detailed information on the SDGs, please visit the website of the United Nations:
[THE 17 GOALS | Sustainable Development](#)

Source: UN Communication Material, 2024

SDGs and Tourism

Sustainable Tourism is mentioned explicitly in number 8, 12 and 14 of the 17 Sustainable Development Goals (SDGs) of the Agenda 2030.

- SDG 8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
- SDG 12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs, promotes local culture and products.
- SDG 14.7: By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

However, Tourism can and should also contribute to the achievement of all 17 SDGs!

Find further information on SDGs and tourism here: [Tourism for SDGs – Welcome To The Tourism For SDGs Platform!](#)

1.3.2. Glasgow Declaration

The Glasgow Declaration on Climate Action in Tourism, a key framework for driving climate action within the tourism industry, outlines a clear and unified approach to climate action for the sector over the next decade. It is a catalyst for increased urgency about the need to accelerate climate action in tourism and to secure strong commitments to support the global goals to halve emissions over the next decade and reach Net Zero emissions as soon as possible before 2050.

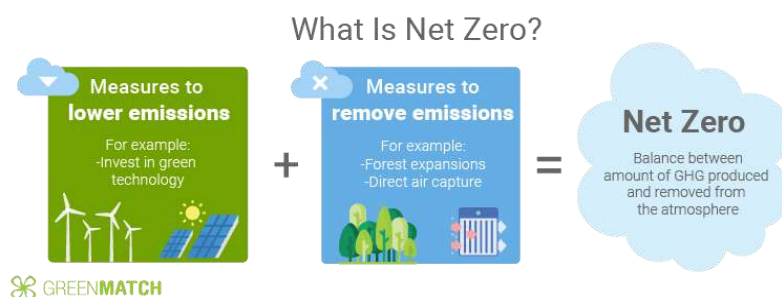


Figure 3 Net Zero explained, Source: Green Match 2024

What is NET ZERO?

NET ZERO refers to the balance between the amount of greenhouse gas (GHG) that's produced and the amount that's removed from the atmosphere. It can be achieved through a combination of **emission reduction and emission removal**. (Source: Green Match, 2024)

By becoming signatories, organizations commit to implementing the goals outlined in the Glasgow Declaration. Signatories are required to develop and deliver comprehensive climate action plans within 12 months of signing, aligning their strategies with the five core pathways of the Declaration: Measure, Decarbonise, Regenerate, Collaborate, and Finance. These pathways serve as a guide to accelerate and coordinate meaningful climate action across the tourism sector. Furthermore, signatories commit to reporting their progress publicly on an annual basis, providing transparency on both interim and long-term targets and the specific actions being undertaken to meet them. Collaboration is at the heart of the Declaration, with signatories encouraged to work together in a spirit of cooperation—sharing best practices, solutions, and lessons learned. By disseminating valuable information and encouraging additional organizations to join the initiative, signatories support each other in reaching climate targets as quickly and effectively as possible, creating a united front for a sustainable future in tourism. By 2024, a total of 450 companies have signed the Glasgow Declaration (OnePlanetNetwork, 2024).

Find further information on the Glasgow Declaration and its implementation here: [OnePlanet.org](https://www.oneplanetnetwork.org)

1.3.3. Framework: GLOBAL CODE OF ETHICS FOR TOURISM

"Tourism is a genuine driver of solidarity and development. Let us all fully harness its power to bring people and communities together, abiding by the Global Code of Ethics for Tourism. This way tourism can keep delivering better opportunities and sustainable development for millions across the globe."

(Zurab Pololikashvili, UN Tourism Secretary-General, August 2020, UN Tourism, 2024)

Sustainable tourism requires ethical behavior from all the stakeholders in the tourism system. A Code of Ethics is an important guide for people wishing to behave ethically. It signals the way we want to see things happen and can contribute to the culture within an industry or sector. Even so, it is important to remember the UN Tourism cannot enforce the Code of Ethics. It's up to governments, businesses, and even travelers to adopt the code.

The Code of Ethics with its 10 "articles" outlines the ethical ways that tourism stakeholders should behave to achieve the best possible outcomes for society. It set of principles whose purpose is to guide stakeholders in tourism development: central and local governments, local communities, the tourism industry and its professionals, as well as visitors. Not legally binding, the Code features a voluntary implementation mechanism through its recognition of the role of the [World Committee on Tourism Ethics](#) (WCTE, (UN Tourism 2024).

In the following, the Code of Ethics with its 10 "articles" are presented, whereby the articles with major relevance for the private sector are highlighted (ibid):

- Article 1 Tourism's contribution to mutual understanding and respect between peoples and societies
- Article 2: Tourism as a vehicle for individual and collective fulfilment: Tourism businesses should promote tolerance and gender equality, respecting human rights while combating the exploitation of the most vulnerable groups in society.

- Article 3: Tourism, a factor of sustainable development: Tourism practitioners should safeguard the environment and natural heritage, preserve resources, and avoid waste production, ideally by agreeing to limitations on their activities in highly sensitive areas.
- Article 4 Tourism, a user of the cultural heritage of mankind and contributor to its enhancement
- Article 5: Tourism, a beneficial activity for host countries and communities: Tourism companies should integrate locals into a destination's economic and social fabric, giving priority to local manpower. Studies on the impact of development projects and dialogue with host populations are both essential.
- Article 6: Obligations of stakeholders in tourism development: Tourism professionals should provide tourists with objective information on destinations and conditions of travel, demonstrating concern for clients' security, ensuring suitable insurance and assistance systems, and supporting tourists' cultural and spiritual fulfilment.
- Article 7 Right to tourism
- Article 8 Liberty of tourist movements
- Article 9: Rights of the workers and entrepreneurs in the tourism industry: Tourism enterprises should not exploit their positions or impose socio-cultural models on host communities. They should be involved in local development, avoid the excessive repatriation of profits, and guarantee workers' fundamental rights.
- Article 10 Implementation of the principles of the Global Code of Ethics for Tourism

2. CORPORATE SOCIAL RESPONSIBILY IN TOURISM

2.1. Corporate Social Responsibility: An Introduction

Corporate Social Responsibility (CSR) refers to the responsibility of an organization for the impacts of its decisions and activities on society and the environment. This responsibility is demonstrated through transparent and ethical behaviour that contributes to sustainable development, including the health and welfare of society, takes into account the expectations of stakeholders, complies with applicable laws and international norms of behaviour, and is integrated throughout the organization. Despite its significance, there remains a lack of a universal definition for the concept of CSR.

The European Commission has put forward a simpler definition of CSR as “the responsibility of enterprises for their impacts on society”. (European Commission 2011)

To fully meet their corporate social responsibility, enterprises should have a process in place to integrate social, environmental, ethical, human rights, and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders, with the aim of:

- maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large;
- identifying, preventing, and mitigating their possible adverse impacts.”

Benefits for businesses:

For enterprises, Corporate Social Responsibility (CSR) and Responsible Business Conduct (RBC) offer significant benefits, including improved risk management, cost savings, better access to capital, strengthened customer relationships, enhanced human resources management, increased operational sustainability, greater capacity for innovation, and ultimately higher profitability. For the economy, these practices make companies more resilient and innovative, fostering the development of a more sustainable economy. For society, CSR and RBC promote values that support the creation of a more cohesive community and provide a foundation for transitioning to a sustainable economic system.

Main principles of CSR:

Voluntariness emphasizes that CSR implementation should go beyond mere legal compliance, arising from a business's voluntary commitment and ethical motivation. Management orientation involves a top-down and bottom-up approach, requiring active involvement from top management, along with the allocation of personnel and financial resources. Value chain orientation highlights that CSR should influence supply chain management, potentially impacting business activities among suppliers. CSR also focuses on several interest groups, requiring the creation of dialogue with stakeholders to ensure inclusivity. The Triple-Bottom-Line principle stresses the need to address and balance all three dimensions of sustainability—economic, environmental, and social. Process orientation promotes continuous improvement, viewing sustainability as a learning and development approach. Finally, transparency is crucial, with businesses expected to report on all their activities to ensure accountability.

The pyramid of Corporate Social Responsibility (CSR) is a framework that outlines the different levels of responsibilities businesses have toward society.



Figure 4 The CSR "Pyramid", Source: Carroll 1991

At its base is economic responsibility, where businesses are expected to be profitable as their primary obligation. Above that is legal responsibility, requiring compliance with laws and regulations. The next level is ethical responsibility, encouraging businesses to do what is morally right, even beyond legal requirements. At the top of the pyramid is philanthropic responsibility, which involves voluntary actions to contribute to societal well-being, such as charitable donations or community support. The pyramid reflects how businesses can integrate various levels of responsibility into their operations.

2.2. Integration of CSR in tourism businesses

Corporate Social Responsibility (CSR) in tourism means countering the negative ecological and social consequences of the increased volume of travel in recent decades with strategies of corporate responsibility.

Some of the most common socially responsible activities that businesses commit to include:

Social aspects

- Employee rights
- Improving working conditions
- Implementing diversity, equality and inclusion
- Promotion of child protection in the service chain
- Prevention of (sexual) exploitation of employees
- Investing in socially responsible projects, funds/organisations to positively impact the development of communities and regions.
- Making charitable donations and volunteering
- Participating in fair trade

Environmental aspects

- Consideration of climate change in tourism: Reducing their carbon footprint
- Implementing corporate policies that benefit the environment
- Respect legal environmental regulations

In addition, the dialogue with stakeholders plays a crucial role in this context. Stakeholders are not only meant to be addressed, but also to act as partners in CSR measures.

2.2.1. Institutional placement of CSR within the company

The implementation of CSR within an organization can take various forms, depending on how it is structured and prioritized:

- **Directly in top management (CEO or owner):** When CSR is led by the CEO or owner, it becomes a top priority for the organization, ensuring high visibility and strategic importance. However, this approach may result in CSR initiatives staying vague or lacking detailed, actionable plans if not well-defined.

- **Appointment of a CSR officer or department:** A dedicated CSR officer, whether full-time or part-time, reports either to top management or holds a lower status within the hierarchy. Alternatively, creating a dedicated CSR department ensures a structured approach to CSR, with clear responsibilities and accountability. This setup often leads to more focused and sustained CSR implementation.
- **Appointment of a CSR committee or working group:** Establishing a committee or working group brings together representatives from different management departments. This cross-departmental collaboration ensures that CSR strategies are inclusive, well-integrated, and reflective of various organizational perspectives.
- **Integration into operational departments:** Embedding CSR into operational areas such as technicians, food and beverage (F&B), housekeeping, procurement, or sales ensures that CSR becomes a practical, everyday part of the business. This approach helps in implementing sustainability at the ground level and aligning CSR with core operations.
- **Placement in the PR department or with interns:** Assigning CSR responsibilities to the public relations (PR) department or interns may prioritize branding or communication over meaningful implementation. This often results in lower levels of CSR integration and limited long-term impact.
- **Placement in a non-profit foundation:** When CSR is managed by a non-profit foundation associated with the business, it tends to focus on philanthropic activities or community initiatives. While these efforts are valuable, they may lack a broader, organization-wide impact and result in lower CSR implementation within the business's core operations.

Each approach comes with its advantages and limitations, and the choice depends on the organization's priorities, resources, and commitment to embedding CSR into its business strategy.

2.2.2. Particularities and instruments of CSR in tourism

CSR in certain industries is shaped by several unique factors. The complexity of product components and the involvement of a multitude of suppliers, ranging from small and medium-sized enterprises (SMEs) to international corporations, makes effective supply chain management essential. Additionally, the environmental and social impacts of business activities often occur outside the company's headquarters, as seen with outbound tour operators. Product characteristics are frequently influenced by the physical environment, with destinations themselves being considered the "product." Furthermore, consumer behavior plays a critical role in sustainability, as their choices—such as the mode of transport to the destination and the types of activities they engage in—make them "co-producers" in the sustainability process.

CSR Instruments in Tourism

A company's vision and mission serve as fundamental guiding principles for management, employees, and stakeholders, providing a clear direction and purpose. To support this, businesses often establish codes of conduct and implement dedicated CSR programs that outline their commitment to ecological and social responsibility. Industry recognition plays a role in

promoting responsible practices, as seen in contests like the WTTC Tourism for Tomorrow Award, which highlight excellence in sustainable tourism. Additionally, eco- and CSR-management systems based on international standards such as ISO 14001, ISO 26000, and EMAS offer structured frameworks for implementing and monitoring sustainability initiatives. Certification schemes and quality labels further reinforce these efforts by providing credibility and recognition for environmentally and socially responsible tourism practices (Lund-Durlacher 2015).

Drivers to implementation of CSR in tourism

The adoption of Corporate Social Responsibility (CSR) practices offers numerous benefits for businesses, both tangible and intangible. One significant advantage is the reduction of operational costs, as sustainable practices often lead to greater efficiency, such as energy and resource conservation, waste reduction, and optimized processes. These cost-saving measures not only improve profitability but also align with the broader goals of sustainability. Another key benefit is the creation of competitive advantages in the market. Companies that prioritize sustainability can differentiate themselves, appealing to environmentally and socially conscious consumers. This unique positioning often leads to increased customer loyalty and a stronger market presence, particularly as demand for responsible businesses continues to grow. Implementing CSR also contributes to image improvement, enhancing the reputation of a business among stakeholders, including customers, investors, and employees.

A strong commitment to sustainable practices demonstrates ethical leadership and builds trust, which can elevate a company's standing in its industry. CSR further provides numerous publicity and promotional opportunities. By engaging in responsible initiatives, businesses can share their efforts through marketing campaigns, social media, and sustainability reports, showcasing their positive impact on society and the environment. These stories resonate with audiences and can foster meaningful connections with the public. Finally, CSR aligns with personal motivation and values, encouraging employees and leaders to act in accordance with their ethical principles and awareness of the importance of sustainable development. This alignment fosters a sense of purpose, increasing employee engagement, satisfaction, and productivity.

Moreover, it cultivates a workplace culture where knowledge and awareness of sustainability are valued, promoting continuous learning and innovation. Through these interconnected benefits, CSR not only contributes to a better world but also strengthens the foundation of a successful, forward-thinking organization (Lund-Durlacher 2015)

Barriers to implementation of CSR in tourism

The amount of time and effort required for assessing and implementing sustainability management can be significant, often demanding extensive resources and careful planning. Additionally, organizations face high investments in operational costs when integrating sustainable practices, which can deter some from pursuing these initiatives. Furthermore, a lack of awareness and knowledge about sustainability among top management can lead to challenges in prioritizing and driving these efforts effectively. Moreover, the scarcity of governmental support for sustainability initiatives further complicates the implementation process, leaving businesses with fewer resources and incentives to adopt green practices (Lund-Durlacher 2015).

2.2.3. CSR/sustainability management in the hospitality industry

The hospitality sector is multifaceted. It comprises of accommodation, restaurants, museum, cruise ships, theme park and MICE (meetings, incentives, convention and events). CSR measures within the hospitality sector should be implemented in the three dimensions of sustainability, in addition the management sector. In the table below, the main fields of CSR activities per sustainability dimension are outlined.

Environment	Economy	Socio-culture
• Water management • Energy management • Waste management • Food management • Architecture and planning • Conservation of biodiversity • Mobility	• Fair payment • Responsible purchasing policies • Responsible investment	• Safety and security at work • Human rights • Training and development • Fair working conditions/ standards • Good relations btw employees and communities • Accessibility • Diversity, equality and social inclusion

Best practice example: Guldsmenhoteles

Guldsmenhoteles, established in 1999, has made sustainability a core principle of its operations. Over the years, the hotel group has implemented various best practices to ensure environmentally responsible, socially conscious, and sustainable business practices.

The Guldsmenhoteles has implemented a sustainable management plan that outlines the strategic approach to integrating sustainability across all facets of our hotel operations. By implementing this plan, Guldsmenhoteles strive to minimize their environmental footprint, enhance the guest experience through sustainable luxury, and contribute positively to the local community and the planet.

The hotels have implemented specific policies that embrace the topics of: Food sourcing, food waste, water, housekeeping, textiles, communities, décor/interior and animal welfare. Their sustainable business plan focuses on meeting and exceeding industry standards, which has helped the hotel chain to get important certifications and join respected environmental groups. They are certified with the Green Globe which is a 360-degree certification, that helped them ensure that they didn't miss any aspect of sustainability in the choices that they make, and in the way that they operate on a daily basis. Other obtained certifications are the Green Key and The Golden Ø (The Organic Cuisine Label), and they are members of GoGreen Denmark and Økologisk Landsforening. In addition, they have achieved the third and highest level in the Booking.com "Travel Sustainable Levels".

Detailed information on the sustainability and CSR practices of the Guldsmenhoteles can be found here: <https://guldsmenhoteles.com/sustainable-management-plan/>

Source: guldsmenhoteles.com

2.2.4. CSR/sustainability management at tour operators

Tour operators create and promote travel packages, selecting appealing destinations, especially abroad, and designing customized trips. They choose and contract suppliers like hotels and airlines, acting as intermediaries between travelers and service providers. Operators drive integrated tourism corporations, linking tour operators, travel agencies, airlines, and hotels for seamless experiences. They can influence demand by popularizing destinations like Tunisia or Cape Verde. However, their influence is challenged by increasing individualism and online booking platforms. To maintain relevance, operators can target sustainability-conscious travelers, offering eco-friendly trips, especially within special-interest segments.

CSR measures tackle upon the following four fields along the supply chain.



Figure 5 CSR at tour operators, own elaboration

Internal Management

The primary goals are to integrate environmental management into the overall business strategy and operations, ensuring it becomes a key component of governance and management systems. This includes reducing resource consumption and minimizing the environmental impact at office locations, promoting sustainability across daily activities and business practices.

Measures

- Mobility management (video-conferencing, business travel, staff mobility)
- Environmental office management (energy saving, ICT solutions, heating, air conditioning, lighting ...)
- Reduce paper consumption ("paperless office", smaller catalogues, recycled/certified paper, climate-neutral printing ...)
- Staff participation & training

Supply-Chain-Management: Focus product design and development

The primary goals focus on selecting sustainable destinations, ensuring that travel choices contribute to the preservation of natural and cultural resources. This also includes promoting environmentally friendly means of transport, reducing the carbon footprint associated with travel. The emphasis is on offering sustainable types of accommodation and catering, prioritizing eco-friendly options that minimize waste and energy use. Additionally, the aim is to provide environmentally compatible activities, encouraging travelers to engage in experiences that respect and protect the environment.

Measures

- Sustainable relation between trip length, distances covered, modes of transport
- Avoid overrun, badly managed natural areas or overrun areas (“overtourism”); prefer well-managed destinations
- Avoid exaggerated luxury in inappropriate settings
- Exclude certain activities (e.g., pleasure driving, scenic flights)
- Adapted group sizes

Supply-Chain-Management: suppliers

Quality assurance is central to operations, with a priority placed on working with environmentally friendly business partners who share a commitment to sustainability. There is also a strong emphasis on supporting local or disadvantaged suppliers, contributing to economic growth and equity within communities. In all business dealings, fair treatment of partners is ensured, promoting ethical practices and maintaining strong, respectful relationships based on trust and mutual benefit.

Measures

- Checklists for transport companies (e.g., atmosfair airline index)
- Checklists or use of sustainability labels for hotels, restaurants
- Training for local travel guides
- Include environmental/sustainability criteria in contracts
- Promote/highlight sustainable business partners in catalogues

Communication and marketing

The focus is to facilitate high-quality experiences for customers, ensuring that they enjoy memorable and enriching journeys. At the same time, there is an emphasis on promoting sustainable travel choices and encouraging responsible behavior among customers through learning experiences. These initiatives aim to raise awareness about sustainability and inspire travelers to make eco-friendly decisions, contributing positively to both their travel experience and the environment.

Measures

- Include environmental and cultural information on website, social media, catalogue (e.g., emissions indicators, travel ethics)
- Provide more specific information material in travel documents after booking
- Integrate GHG compensation into booking procedure
- Post-trip activities (newsletter, special events)

Cooperation with the destination

Efforts are made to both contribute to and request sustainable development at the destination, ensuring that growth aligns with environmental and social responsibility.

Measures

- Cooperation with/consulting local population/stakeholders when developing products
- Constructively participating in planning processes
- Take own environmental measures if local authorities are not able to implement them (e.g., garbage collection)
- Provide information and training to empower potential local suppliers (skilled labor, organic food production)
- Actively contributing to conservation measures (e.g., anti-poaching patrols)

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