SEARCHING FOR SUSTAINABILITY:

TOURISM 4.0 ON THE SUNNY SIDE OF THE ALPS

by

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Technologies have fundamentally altered the functioning of the global tourism industry.

(Vasile Mazilescu, 2019)

ABSTRACT

Technological advancement has directly contributed to the exponential growth of the global tourism industry. This growth has led to tourism scholars, practitioners and local communities calling for sustainable tourism development. However, technologies, especially those of the Fourth Industrial Revolution, can also contribute to the sustainable development and management of the global tourism industry. Slovenia's pioneering Tourism 4.0 initiative is perhaps the newest and most cutting-edge examples of how technology can be used in order to more sustainably develop and manage tourism to the advantage of a destination's local communities. This initiative, said to be the future of tourism, makes use of the technologies of the Fourth Industrial Revolution to provide a highly innovative and technologically enhanced tourist experience as well as to turn tourism into a driver of the United Nations (UN) Sustainable Development Goals (SDGs). However, there is a distinct lack of accessible academic publications in the English language on this initiative. This dissertation therefore draws together several disciplines and foci to make Tourism 4.0 accessible, relevant and more apparent to the broader tourism domain by unpacking and considering the initiative's potential for destinations beyond Europe and the global North. This is done by conducting a best practice assessment of Tourism 4.0 using criteria that have been developed to align with the UN SDGs.

Key words: Fourth Industrial Revolution; Tourism 4.0; sustainable tourism; best practice; SDGs; Slovenia

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ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
AECID	Spanish Agency of International Cooperation for Development
AR	Augmented Reality
ARRS	Slovenian Research Agency
AT&T	American Telephone and Telegraph
AoE	Amazon of Europe
BCG	Boston Consulting Group
BPB	Best Practice Benchmarking
CDIS	Culture for Development Indicators
CEFTA	Central European Free Trade Agreement
CERN	Centré Européen pour Recherche Nucleaire
CHI	Cultural Heritage Institution
CIT	Collaboration Impact Token
CPS	Communist Party of Slovenia
CRS	Computer Reservation System
DC	Direct Current
DDC	Destination Character Chart
DOTI	Digital Online Tourist Identity
EC	European Commission
ENIAC	Electronic Numeric Integrator and Calculator
EU	European Union
ETIS	European Tourism Indicator System
FCS	Framework for Cultural Statistics

GDS	Global Distribution Systems
GDS	Green Destinations Standard
GDP	Gross Domestic Product
GSM	Groupe Spéciale Mobile Global System for Mobile Communications
GSST	Green Scheme of Slovenian Tourism
GSTC	Global Sustainable Tourism Council
GSTC-D	Global Sustainable Tourism Council Destination criteria
HMD	Head Mounted Display
HLPF	UN High-level Political Forum on Sustainable Development
HPC	High Performance Computing
IBM	International Business Machines Corporation
ICT	Information Communication Technology
INSITES	Erasmus+ Digital Cultural Heritage Custodians
IoT	Internet of Things
IP	Internet Protocol
IPCHS	Institute for the Protection of Cultural Heritage in Slovenia
ITU	International Telecommunications Union
ITU-T	International Telecommunications Union – Telecommunications Standardisation Sector
IY2017	International Year of Sustainable Development
JNA	Yugoslav People's Army
KSCS	Kingdom of Serbs, Croats and Slovenes
MAB	Man and the Biosphere Programme
MDG	Millennium Development Goal

MIT	Massachusetts Institute of Technology
ML	Machine Learning
MR	Mixed Reality
NATO	North Atlantic Treaty Organisation
NFC	Near Field Communication
NMT	Nordic Mobile Telephone Group
OTA	Online Travel Agency
PC	Personal Computer
PNR	Passenger Name Record
RFID	Radio Frequency Identification
RGD TIM	Responsible Green Destination Tourism Impact Model
RTP	Responsible Tourism Partnership
R&D	Research and Development
SABER	Semi-Automatic Business Environment Research
SABRE	Semi-Automatic Business Research Environment
SCT OMC	Sustainable Cultural Tourism Open Method of Coordination working group
SDG	Sustainable Development Goal
SCEWC	Smart City Expo World Congress
SSC	Smart Sustainable City
SSNP	Sečovlje Salina Nature Park
STB	Slovenian Tourism Board
STI	Sustainable Tourism Indicators
S4	Slovenian Smart Specialisation Strategy
TCP	Transmission Control Protocol

TIM	Tourism Impact Model
TTCI	Travel and Tourism Competitiveness Index
TWI	The Welding Insitute
T4.0	Tourism 4.0
T4BS	Tourism 4.0 for the Black Sea
UCLG	United Cities and Local Governments
UK	United Kingdom
UN	United Nations
UNCSD	UN Commission on Sustainable Development
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNGA	United Nations General Assembly
UNWTO	United Nations World Tourism Organisation
USA	United States of America
VET	Vocational Education and Training
VNR	Voluntary National Review
VR	Virtual Reality
WCCD	World Commission on Culture and Development
WCED	World Commission on Environment and Development
WEForum	World Economic Forum
WEAVE	Widen European Access to Cultural Communities via Europeana
WHO	World Health Organisation

Wi-Fi	Wireless Fidelity
WTO	World Trade Organisation
WTTC	World Travel and Tourism Council
WWW	World Wide Web
XR	Extended Reality
3G	Third Generation cellular network
3D	Three Dimensional
4G	Fourth Generation cellular network
5G	Fifth Generation cellular network
4IR	Fourth Industrial Revolution

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CHAPTER 1: INTRODUCTION

Sustainable tourism has been a prevailing topic of interest since the 1980s and is perhaps now more relevant than ever before. In light of the Covid-19 pandemic tourism researchers and practitioners have called for rethinking the way we do tourism, heralding the pandemic as a chance to reset and restart the global tourism industry.[1] Research for this dissertation commenced a few months before the World Health Organisation (WHO) declared the Corona virus outbreak a pandemic and although this research was of relevance then, it is perhaps now even more relevant given these calls for a smarter, safer and more sustainable tourism industry.[2]

The focus of this dissertation is Slovenia's Tourism 4.0 initiative, initiated in 2018 by local technology company Arctur.[3] Slovenia, a small twentieth century nation state on the sunny side of the Alps, is positioning itself at the forefront of sustainable tourism innovation through its Tourism 4.0 initiative – the largest government funded tourism research project in the history of the country.[4] Arctur hopes to make use of technological innovation to provide a more sustainable and highly competitive tourism offering geared towards the advancement of *Agenda 2030*.[5] This is potentially the most cutting-edge sustainable tourism project in development at the time of the writing of this dissertation. Beyond Tourism 4.0, Slovenia has evolved from a country in so-called "backwards Europe" with no presence in "the vacation arena", to being Europe's best kept secret; one of the world's most sustainable tourism destinations; the first

[1] J. Clausing, 'Rethinking travel', <https://www.travelweekly.com/Travel-News/Tour-Operators/Rethinking-travel-sustainable-travel>, 2020, access: 01 November 2020; G. Bowerman, 'Rethinking tourism for a post-Covid-19 recovery', <https://www.traveldailynews.asia/rethinking-tourism-for-a-post-covid-19-recovery>, 24 March 2020, access: 01 November 2020; J. Wilkins, 'Rethinking tourism after COVID-19', <https://www.euronews.com/2020/09/25/rethinking-tourism-after-covid-19>, 28 September 2020, access: 01 November 2020; R. Chandran, 'The world's most popular tourist cities may have to rethink their entire model', <https://www.weforum.org/agenda/2020/08/coronavirus-tourism-thailand-tourism-industry/>, 25 August 2020, access: 01 November 2020.

[2] WHO, 'Timeline: WHO's COVID-19 response', <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline/#!>, 2021, access: 07 February 2021.

[3] Tourism 4.0, 'Tourism 4.0 TRL 3-6', <https://tourism4-0.org/t4-0-projects/trl-3-6/>, 2019, access: 1 September 2020.

[4] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, 2020, p. 230.

[5] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, pp. 229-253.

green country; and eighth in the world in achieving the SDGs (2018).[6] Using Slovenia as a case study, this dissertation investigates the potential of harnessing the technologies of the Fourth Industrial Revolution (4IR) in combination with tourism in achieving the United Nations' (UN) Sustainable Development Goals (SDGs). This research is therefore concerned with three central issues: the Fourth Industrial Revolution (4IR), tourism, and sustainability. It therefore draws together a wide spectrum of disciplines and foci in order to engage with the Fourth Industrial Revolution, sustainability, and the tourism sector. It assesses the pioneering development in Slovenia as a best practice example in a futuristic tourism domain. As regards the latter, it also intends to make this innovative development more accessible, relevant and apparent to tourism beyond Europe.

Research for this dissertation was conducted during the Covid-19 pandemic which took the world by storm and caused an unprecedented world-wide health and economic crisis that resulted in reoccurring nation-wide lockdowns for weeks or even months, with Europe being one of the hardest-hit regions in the world. [7] The pandemic and its resulting lockdowns therefore halted many initiatives geared towards the SDGs, including the Tourism 4.0 initiative, launched in 2018. The 2020 SDG progress report indicates that despite this, Europe is still in the lead in terms of progress on the SDGs, with only three of the top 20 countries not located in Europe.[8] The pandemic also brought the global tourism industry to a grinding halt at different stages in different

[6] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), 1990, pp. 33-42; Slovenia, 2020, <https://www.slovenia.info/en>, access: 02 March 2020; STB, 2016, 'Slovenia declared world's first green country', <http://www.sloveniatimes.com/slovenia-declared-world-s-first-green-country>, 28 September 2016, access: 23 February 2020; STB, 'Why Slovenia is Europe's best kept secret', <https://www.telegraph.co.uk/travel/beautiful-slovenia/europes-best-kept-secret/>, 27 March 2017, access: 01 November 2020; N. Charney, <https://www.theguardian.com/travel/2018/mar/24/slovenia-food-drink-ljubljana-bled-noah-charney>, 24 March 2018, access: 02 March 2020; STB, 'Slovenia 8th in reaching sustainable development goals', <http://www.sloveniatimes.com/slovenia-8th-in-reaching-sustainable-development-goals>, 09 July 2018, access: 23 February 2020.

[7] J. Sachs, G. Schmidt-Traub, C. Kroll, G. Lafortune, G. Fuller & F. Woelm, 'Executive Summary', *Sustainable Development Report 2020: The Sustainable Development Goals and Covid-19*, 2020, p. vi; UN Regional Information Centre, 'Tourism: Europe is one of the hardest hit regions by Covid-19', <https://unric.org/en/tourism-europe-is-one-of-the-hardest-hit-regions-by-covid-19/>, 2020, access: 01 November 2020.

[8] The report is not entirely reflective of the true situation with regards to progress on the SDGs as data on this is still emerging, and it might take years before the full impact of the pandemic on progress towards Agenda 2030 can be determined. See also: J. Sachs, G. Schmidt-Traub, C. Kroll, G. Lafortune, G. Fuller & F. Woelm, 'The SDG Index and Dashboards', *Sustainable Development Report 2020: The Sustainable Development Goals and Covid-19*, 2020, p. 26.

countries, and with Europe being responsible for over half the world's tourist arrivals, it was once again one of the hardest-hit regions in the world.[9] It was estimated that the global tourism industry would suffer a loss of 880 million to 1.1 billion international tourist arrivals, between US$910 million and US$1.1 trillion in export revenues, and a loss of 100 to 120 million jobs in 2020 because of Covid-19.[10] Tourism was the first industry to be shut down and, in many countries, will be the last to start up again and many experts fear that the industry will only return to "normal" by 2023 or 2024.[11]

Never before has the global tourism industry been this hard-hit by a global event. Yet we have never been more capable of keeping the industry from completely collapsing, reviving, and "resetting" it. Because of technologies such as Virtual Reality (VR) and Augmented Reality (AR) many destinations and tour operators offered tourists tours from the comfort and safety of their homes.[12] The pandemic has showcased the resilience of the tourism industry and its capability of taking innovative actions to reinvent itself in order to survive, proving that these calls for rethinking and resetting are not misplaced, and that the industry is indeed capable of being more sustainable.

Since the 1980s there have been urgent calls for more sustainable development across the globe. As the predominant international institution concerned with matters regarding the peace and stability of the world, and anything that might threaten this peace and stability, the UN commissioned a report on the threat of unsustainable development in 1987.[13] This growing concern about the effects of uninterrupted development, and thereby the exploitation of natural resources, quickly transferred to

[9] UN Regional Information Centre, 'Tourism: Europe is one of the hardest hit regions by Covid-19', <https://unric.org/en/tourism-europe-is-one-of-the-hardest-hit-regions-by-covid-19/>, 2020, access: 01 November 2020.
[10] B. N. Gopalakrishnan, R. Peters & D. Vanzetti, 'How the COVID-19 crisis hits tourism', *Covid-19 and tourism: Assessing the economic consequences*, 2020, p. 7.
[11] UNWTO, '2020: Worst year in tourism history with 1 billion fewer international arrivals', <https://www.unwto.org/news/2020-worst-year-in-tourism-history-with-1-billion-fewer-international-arrivals>, 2021, access: 21 June 2021.
[12] D. Jones, '12 historic sites you can virtually tour from the couch during the coronavirus outbreak', <https://www.washingtonpost.com/travel/2020/03/18/these-historic-sites-attractions-are-offering-virtual-tours-during-coronavirus-pandemic/>, 18 March 2020, access: 01 November 2020; L. B. Bloom, 'Ranked: The world's 15 best virtual tours to take during coronavirus', <https://www.forbes.com/sites/laurabegleybloom/2020/04/27/ranked-worlds-15-best-virtual-tours-coronavirus/?sh=20db4c4c6709>, 27 April 2020, access: 01 November 2020; B. Debusmann, 'Coronavirus: Is virtual reality tourism about to take off?', <https://www.bbc.com/news/business-54658147>, 31 October 2020, access: 01 November 2020.
[13] United Nations, 'Overview', <https://www.un.org/en/about-us>, n.d., access: 01 November 2020.

the ever-growing tourism industry as it reached mega industry status as early as the 1980s.[14] With each passing year since the origin of modern tourism, and each new technological development brought about by the Industrial Revolutions, tourism infiltrated more and more corners of the world previously thought inaccessible. Technological advancement made travel more accessible to the general population, thereby directly contributing to the exponential growth of the industry.[15]

Between the years 1995 to 2010 the tourism industry had an average growth rate of 3.9% per year.[16] In 2019, travel and tourism contributed 10.3% (US$8.9 trillion) to the global Gross Domestic Product (GDP) and constituted for 1 in 10 (330 million) jobs around the world. Over 1.5 billion people travelled in 2019.[17] According to the United Nations World Tourism Organisation (UNWTO) "tourism density in Europe in general and in the EU-28 in particular is the highest in the world".[18] In 2019, Europe received 745.2 million international tourist arrivals, 51% of the total global tourist arrivals, making it the biggest tourism market.[19] It is widely recognised that tourism, as one of the biggest industries in the world, is a driver for economic growth. However, it has far reaching negative impacts on both natural and cultural (tangible and intangible) resources if not managed properly.[20] With the industry's negative impacts quickly becoming apparent in the 1980s to early 1990s, research on these impacts was initiated and many recommendations on potential methods of mitigation were published.[21] Recognising the importance of a sustainable tourism industry, the UN published policy recommendations for the sustainable development of the industry, as well as the sustainable use of the cultural resources on which it is so often

[14] M. Roser, 'Tourism', <https://ourworldindata.org/tourism>, 2017, access: 11 May 2020.
[15] S. Bearne, 'How technology has transformed the travel industry', <https://www.theguardian.com/media-network/2016/feb/29/technology-internet-transformed-travel-industry-airbnb>, 29 February 2016, access: 02 November 2020.
[16] UNWTO, 'Key results', *Tourism Towards 2030: Global Overview*, 2011, p. 10.
[17] WTTC, 'Economic Impacts Reports', <https://wttc.org/Research/Economic-Impact>, 2020, access: 31 October 2020.
[18] J. Kester, 'Executive summary', *International tourism trends in EU-28 member states – Current situation and forecast for 2020-2025-2030*, 2010, p. 6.
[19] S. Lock, 'International Tourist Arrivals in Europe 2010-2019', <https://www.statista.com/statistics/186743/international-tourist-arrivals-worldwide-by-region-since-2010/>, July 2020, access: 31 October 2020; UNWTO, 'International tourism growths continues to outpace the global economy', <https://www.unwto.org/international-tourism-growth-continues-to-outpace-the-economy>, 2020, access: 31 October 2020.
[20] UNWTO, 'Tourism and Culture', <https://www.unwto.org/tourism-and-culture>, n.d., access: 09 February 2021.
[21] D. Weaver, 'The emergence of Sustainable Tourism', *Sustainable Tourism: Theory and Practice*, 2006, p. 10.

dependent.[22] International organisations dedicated to the accreditation and certification of sustainable destinations and tourism businesses were also established to further the move to a more responsible and sustainable tourism industry.[23]

With the adoption of *Transforming our World: The 2030 Agenda for Sustainable Development* in 2015 the issue of sustainability was placed on the world stage, no longer avoidable or deniable. The *2030 Agenda* put forward 17 Sustainable Development Goals (SDGs) with 169 targets which act as guidelines for the sustainable development of nations, and their tourism industries.[24] Tourism is explicitly mentioned in and directly contributes to Goals 8, 12 and 14. However, because of its multiplier effect it has the potential to contribute more broadly to all 17 SDGs. According to the UNWTO "harnessing tourism's benefits will be critical to achieving the [SDGs] and implementing the post-2015 development agenda".[25] Continued and intensive (technological) innovation is regarded by many as the key to sustainable tourism development and thereby tourism's contribution to the SDGs.[26] At the second World Conference on Smart Destinations, the UNWTO Secretary-General Zurab Pololikashvili stated that:

> technology helps us to better manage our social, cultural and environmental impacts. And if well managed, tourism can act as an agent of positive change for more sustainable lifestyles, destinations, and consumption and production patterns.[27]

Given the call for the "rethinking" of tourism, UN Secretary-General António Guterres's call in 2020 for a decade of action towards *Agenda 2030*, the Fourth Industrial

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[22] UNCSD NGO Steering Committee, *Sustainable Tourism: A Non-governmental organisation perspective*, <https://sustainabledevelopment.un.org/content/documents/401ngo4.pdf>, 1999; UNESCO, *Culture: a driver and enabler of sustainable development*, <https://www.un.org/millenniumgoals/pdf/Think%20Pieces/2_culture.pdf>, 2012, p.5; M. Robinson & D. Picard, *Tourism, Culture and Sustainable Development*, 2006.
[23] D. Weaver, 'Quality control', *Sustainable Tourism: Theory and Practice*, pp. 110-131.
[24] L. Dlamini, '2030 Agenda', <http://www.un.org.za/sdgs/2030-agenda/>, n.d., access: 07 May 2020.
[25] UNWTO, 'Tourism in the 2030 Agenda', <https://www.unwto.org/tourism-in-2030-agenda>, n.d., access: 01 November 2020.
[26] World Summit on Sustainable Tourism, 'Sustainable Tourism Futures', *World Charter for Sustainable Tourism +20*, <https://ajuntament.barcelona.cat/turisme/sites/default/files/documents/world_charter_for_sustainable_tourism_20_eng.pdf>, 2015, pp. 19-24; Modern Diplomacy, 'Use technology for more sustainable tourism management', <https://moderndiplomacy.eu/2018/06/29/use-technology-for-more-sustainable-tourism-management/>, 29 June 2018, access: 01 November 2020.
[27] Modern Diplomacy, 'Use technology for more sustainable tourism management', <https://moderndiplomacy.eu/2018/06/29/use-technology-for-more-sustainable-tourism-management/>, access: 01 November 2020.

Revolution's applicability to and compatibility with both, and the above statements, this research is timely and in line with current (tourism) research trends.[28]

Defining key terms

This section will define several terms relevant to this study. The defining and understanding of these terms are vital to the discussion of the Fourth Industrial Revolution, (Smart) sustainable tourism and the preservation of cultural and natural heritage that is so often utilised to enhance the tourist experience.

Before defining sustainable tourism, it is imperative to define the concept of sustainability. Sustainability refers to decision-making and resource-use that does not impact negatively on future generations. In terms of development, it is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[29] On the other hand, sustainable tourism as defined by the UNWTO, is "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and the host community".[30]

Although the concept of "carrying capacity" has its origin in agriculture in the 1930s, it has been widely used in tourism studies since the 1960s.[31] There have been multiple definitions of the term over the years. In terms of tourism, it refers to the maximum amount of tourist activity a destination is able to endure, as well as its capacity to manage it, before it causes irreversible damage to the physical and sociocultural environment, thereby decreasing visitors' satisfaction and community wellbeing.[32]

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[28] A. Guterres, 'Remarks to High-Level Political Forum on Sustainable Development', <https://www.un.org/sg/en/content/sg/speeches/2019-09-24/remarks-high-level-political-sustainable-development-forum>, 24 September 2019, access: 07 May 2020.
[29] S. Jeanrenaud, *The Future of Sustainability: Have your say!*, <https://portals.iucn.org/library/sites/library/files/documents/2008-112.pdf>, 2006, access: 09 February 2020.
[30] UNWTO, 'Sustainable Development', <https://www.unwto.org/sustainable-development>, n.d., access: 31 October 2020.
[31] J. Kennell, 'Carrying Capacity', *in* J. Jafari & H. Xiao (eds.), *Encyclopedia of Tourism*, 2016, p. 133.
[32] J. R. Clark, 'Management Information', *Coastal Zone Management Handbook*, 1996, p. 250; V. T. C. Middleton & R. Hawkins, 'Select Glossary', *Sustainable Tourism: A Marketing Perspective*, 1998, p. 239; Z. Pololikashvili, 'Foreword', *in* UNWTO, *'Overtourism'? Understanding and Managing Urban Tourism Growth beyond Perceptions*, 2018, p. 3; J. Kennel, 'Carrying Capacity', *in* J. Jafari & H. Xiao (eds.), *Encyclopedia of Tourism*, p. 133.

James Kennell points out that although it was one of the key concepts that led to the development of the sustainability discourse, the concept of carrying capacity and its use in tourism studies and management has decreased in popularity in recent years.[33]

In 2018, Rafat Ali, founder of the travel and tourism website "Skift", coined the term "overtourism" when discussing the year on year exponential growth of Iceland's tourism industry. Ali defines overtourism as "a new construct to look at potential hazards to popular destinations worldwide, as the dynamic forces that power tourism often inflict unavoidable negative consequences if not managed well".[34] The term took the world by storm with others quickly coming up with their own definitions. According to the UNWTO overtourism can be defined as "the impact of tourism on a destination, or parts thereof, that excessively influences perceived quality of life of citizens and/or quality of visitors' experiences in a negative way".[35] The Responsible Tourism Partnership (RTP) refers to overtourism as "destinations where hosts or guests, locals or visitors feel that there are too many visitors and that the quality of life in the area, or the quality of the experience has deteriorated unacceptably".[36] Overtourism is therefore tourism that far exceeds the carrying capacity of a specific destination, thereby negatively impacting the natural, cultural and social aspects of the destination.

As mentioned above, "cultural heritage" is often used in the tourism industry. It comprises tangible and intangible aspects of a certain cultural group, is transferred from generation to generation and includes buildings, monuments, artefacts, folklore or indigenous stories as well as song and dance.[37] Because of its (over) use in the tourism industry the preservation of cultural heritage is crucial. According to IGI Global cultural heritage preservation is "the act of using deliberate and well-designed

[33] J. Kennel, 'Carrying Capacity', *in* J. Jafari & H. Xiao (eds.), *Encyclopedia of Tourism*, p. 133.
[34] R. Ali, 'Why we came up with the term and what's happened', <https://skift.com/2018/08/14/the-genesis-of-overtourism-why-we-came-up-with-the-term-and-whats-happened-since/>, 14 August 2018, access: 31 October 2020.
[35] UNWTO, 'Executive Summary', *'Overtourism'? Understanding and managing Urban Tourism Growth beyond perceptions, Executive Summary*, <https://www.e-unwto.org/doi/book/10.18111/9789284420070 >, 2018, p. 6.
[36] Responsible Tourism Partnership, 'Overtourism: what is it and how do we address it?', <https://responsibletourismpartnership.org/overtourism/>, access: 12 May 2020.
[37] UNESCO, <http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage/>, 2017, access: 09 February 2020.

methodologies to maintain cultural heritage from the past for the benefit of the present and future generations".[38]

Research approach

This study is a literature based qualitative study based on both primary and secondary material in the public domain. Besides an extensive use of books, articles, papers and internet sites this study has also used and analysed social media, official documents and correspondence with individuals in the public and private sector. The study focuses on Slovenia as a case study and best practice example by considering both its history as well as the origin and development of its now highly acclaimed tourism sector. It also investigates how to address the potential "crisis" and accompanying challenges of the 4IR within the tourism domain. In addition, it assesses how the SDGs can be achieved by using tourism in combination with the 4IR. It has adopted an analytical and summative approach with elements of comparative and integrative methodology. It also uses various models to appraise Slovenia's Tourism 4.0 initiative in terms of select UN SDGs.

The dissertation comprises seven chapters which contribute to the abovementioned research objective of determining whether Slovenia and its Tourism 4.0 initiative can be regarded as a best practice example of the use of 4IR technologies to make tourism more sustainable and to achieve the SDGs.

Chapter one provided an overview of the research topic and the main themes that will be addressed in this dissertation. As this research was conducted during the Covid-19 pandemic, this chapter also briefly referred to its impact on the tourism industry as it is relevant to the broader study of tourism. The chapter also provided definitions of key terms and discussed the research approach and methodology of this dissertation.

Chapter two presents a literature review of research relevant to the topic of this dissertation. The chapter also points out gaps in research on topics that were crucial

[38] IGI Global, 'What is Cultural Preservation', <https://www.igi-global.com/dictionary/culture-and-heritage-preservation-in-an-era-of-globalization-and-modernism/62136>, 2020, access: 09 February 2020.

to the writing of this dissertation. The next chapter presents a detailed discussion of the last three industrial revolutions as well as the now emerging Fourth Industrial Revolution. It also discusses the emergence and development of modern tourism parallel to the Industrial Revolutions. It emphasises the fact that tourism as we know it today would not exist without this technological innovation.

The first section of chapter four presents an in-depth look at tourism, the UN and sustainability. The section provides an overview of the origin of the concept of sustainability, its application to the tourism industry and the UN's role in both occurrences, as well as how culture factors into the concept of sustainability. The second section discusses evaluation and assessment in the tourism industry with specific focus on sustainability. Best practice, benchmarking, accreditation, and certification are also discussed. This chapter lays the foundation for the assessment of Slovenia as a possible best practice example.

Chapter five presents an overview of the history of Slovenia and its journey to independence. It outlines the history and development of Slovenian tourism as well as Slovenia's emphasis on and advancement of sustainable tourism, in order to contextualise the origin and development of Tourism 4.0.

Chapter six focusses on the Tourism 4.0 initiative, it provides a detailed discussion of all aspects of the "largest government-funded research and development project in the field of Slovenian tourism".[39] Chapter seven makes use of chapters four and six to determine whether Slovenia's Tourism 4.0 initiative can be regarded as a best practice example for the use of technology to make tourism more sustainable, thereby turning it into a driver for the SDGs. Based on the assessment conducted in the first two sections of the chapter, the last section reflects on the future of (Smart) sustainable tourism, especially in light of the ramifications of the Covid-19 pandemic, and its impact on the tourism sector.

[39] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, 2020, p. 230.

CHAPTER 2: LITERATURE REVIEW

In 1997 the renowned tourism scholar, John Tribe, aptly described tourism as an "indiscipline".[40] The very nature of tourism means that it can draw from a range of disciplines in the construction of its knowledge base. Its indisciplinarity therefore lends itself to a much broader field of inquiry. However, this does mean that when research is conducted on an essentially multidisciplinary case study such as the one in this dissertation, the study becomes complex. This literature review therefore considers publications from a range of disciplines and scholars focusing on the now emerging Fourth Industrial Revolution, the development of tourism, the UN SDGs and sustainability, cultural heritage preservation, and lastly Slovenia and the characteristics of its tourism industry. It also points to the lack of accessible research on Tourism 4.0.

The Industrial Revolutions and tourism

There seems to be a lack of consensus not only on when each Industrial Revolution occurred, but also on whether we are indeed on the brink of a fourth one, which has caused much conjecture. Authors such as Jeremy Rifkin are of the opinion that we are now only approaching the Third Industrial Revolution, implying that what other authors have termed the Third Industrial Revolution (mid-1990s) was simply a continuation of the Second Industrial Revolution.[41] In a paper presented at the Annual Rendezvous of Energie-Cités and Climate Alliance in Brussels in 2009, he argued that "the Third Industrial Revolution looms on the horizon".[42] According to Rifkin "the great economic changes in history have occurred when new energy regimes converge with new communication regimes".[43]

[40] J. Tribe, 'The Indiscipline of Tourism', *Annals of Tourism Research* 24(3), 1997, pp. 638-657.
[41] J. Rifkin, *The Third Industrial Revolution: how lateral power is transforming energy, the economy and the World*, 2011; J. Rifkin, *The zero marginal cost society: The Internet of Things, the Collaborative* Commons*, and the eclipse of Capitalism*, 2014.
[42] J. Rifkin, 'Leading the way to the Third Industrial Revolution: a new energy agenda for the European Union in the 21st century – the next phase of European integration', Conference paper - Annual Rendezvous of Energie-Cités and Climate Alliance, Brussels, 2009, p. 4.
[43] J. Rifkin, 'Leading the way to the Third Industrial Revolution: a new energy agenda for the European Union in the 21st century – the next phase of European integration', Conference paper - Annual Rendezvous of Energie-Cités and Climate Alliance, Brussels, p. 2.

Despite the popularity and widespread acceptance of Rifkin's Third Industrial Revolution by heads of state, since 2015 the so called, and sometimes debated, Fourth Industrial Revolution has been a prevailing topic of interest. Klaus Schwab's book, *The Fourth Industrial Revolution*, outlines the key drivers of this burgeoning Industrial Revolution, discusses its potential impacts and makes suggestions on how we can shape a better future for humanity.[44] Information in the book is derived from "ongoing projects and initiatives of the World Economic Forum [that have] been developed, discussed and challenged at … Forum gatherings".[45] In writing the book Schwab also drew from multiple conversations he had with "business, government and civil society leaders as well as technology pioneers and young people".[46] In the first chapter Schwab provides an overview of the 4IR, first discussing its historical context followed by the "profound systemic changes" it will bring about.[47] The second chapter discusses the drivers of this new Industrial Revolution. According to Schwab these can be divided into three clusters: physical (autonomous vehicles, 3D printing, advanced robotics, new materials); digital (IoT, AI, crypto currencies, sharing economy); and lastly biological (genetic sequencing, synthetic biology).[48] The third chapter critically discusses the impact this revolution will have on governments, national and international security, businesses, society and individuals.[49] Effects or impacts such as those discussed by Schwab "are forecasts, assumptions or projections" as this is still an emerging Industrial Revolution.[50]

In the paper 'Industry 4.0: what makes it a revolution?' Cristina Orsolin Klingenberg and José Antônio do Vale Antunes Jr. attempt to better the understanding of the so-called 4IR by taking a historical approach to the explanation and by identifying three main elements of a revolution.[51] The authors discuss the technical advances, economic scenario, and demography (three main elements) of the previous three Industrial Revolutions (historical approach). They explain the concept of Industry 4.0

[44] K. Schwab, *The Fourth Industrial Revolution*, 2017, Penguin, UK.
[45] K. Schwab, *The Fourth Industrial Revolution*, p. 5.
[46] K. Schwab, *The Fourth Industrial Revolution*, p. 5.
[47] K. Schwab, *The Fourth Industrial Revolution*, pp. 6-13.
[48] K. Schwab, *The Fourth Industrial Revolution*, pp. 14-27.
[49] K. Schwab, *The Fourth Industrial Revolution*, pp. 28-106.
[50] C. O. Klingenberg & J. A. do Vale Antunes Jr., 'Industry 4.0: what makes it a revolution?', Conference paper – EurOMA, Edinburgh, 2017.
[51] C. O. Klingenberg & J. A. do Vale Antunes Jr., 'Industry 4.0: what makes it a revolution?', Conference paper – EurOMA, Edinburgh.

and make use of the elements to illustrate why it can be considered a revolution. It is concluded that Industry 4.0 requires collaboration on all levels in order for everyone to benefit from it.[52]

Min Xu, Jeanne M. David and Suk Hi Kim, on the other hand, are of the opinion that "only in being knowledgeable about [the changes brought about by the 4IR] and the speed at which it is occurring can we ensure that advances in knowledge and technology can reach and benefit all".[53] In their article, 'The Fourth Industrial Revolution: opportunities and challenges', they analyse potential opportunities and challenges the 4IR might hold, concluding that despite these challenges "the capability of advancing technology … has the potential to make even bigger and greater improvements [in] every aspect of our lives than the first three industrial revolutions".[54]

Turning to the broad topic of tourism, U. Gyr in his article 'The history of tourism: structures on the path to modernity' provides a concise history of tourism.[55] This is done by presenting an overview of "the important structures, processes, types and trends of tourism against the background of historical developments".[56] He discusses early forms of travel, the precursors of modern travel, the rise of mass tourism and finally the expansion of tourism in the 1950s. Gyr first presents an overview of the globalized system of tourism stating that "its importance is evident from the fact that its influence thoroughly penetrates society, politics, culture and, above all, the economy".[57] This overview is followed by a discussion of early recreational and educational travel as a precursor to modern tourism with the Grand Tour of the seventeenth to eighteenth century.[58] Gyr identifies several foundations of modern tourism, including steam navigation (trains and ships) and early forms of guidebooks

[52] C. O. Klingenberg & J. A. do Vale Antunes Jr., 'Industry 4.0: what makes it a revolution?', Conference paper – EurOMA, Edinburgh.
[53] M. Xu, J. M. David & S. H. Kim, 'The Fourth Industrial Revolution: opportunities and challenges', *International Journal of Financial Research* 9(2), 2018, p. 90.
[54] M. Xu, J. M. David & S. H. Kim, 'The Fourth Industrial Revolution: opportunities and challenges', *International Journal of Financial Research* 9(2), p. 94.
[55] U. Gyr, 'The history of tourism: structures on the path to modernity', *European History Online*, 2010, n.p.
[56] U. Gyr, 'The history of tourism: structures on the path to modernity', *European History Online*, 2010, n.p.
[57] U. Gyr, 'The history of tourism: structures on the path to modernity', *European History Online*, 2010, n.p.
[58] U. Gyr, 'The history of tourism: structures on the path to modernity', *European History Online*, n.p.

and travel guides as well as an overview of the boom of mass tourism.[59] Gyr concludes by stating that "various factors brought about [the boom of tourism during the post-war period], including rising affluence, urbanization, the unprecedented construction of transportation and communication networks, and the increase in leisure time as a result of shortening working hours…".[60]

Another key text that also provides a history of tourism by discussing changes brought about in tourism as a result of transportation developments is Beata Gierczak's 'The history of tourist transportation after the modern industrial revolution'.[61] According to Gierczak "the progress of resources and transport infrastructure, resulting in acceleration of travel, its greater comfort and lower cost, allowed for mass participation in tourism" and "transport development is *conditio sine quo non* of the development of tourism…".[62] Four groups of determinants of the development of tourist transport in each country are identified: (1) natural and cultural, (2) economic, (3) demographic, social and welfare and (4) political. Gierczak also identifies three phases in the development of tourist transport: steam engine (1769 – 1879), electricity and internal combustion engine (1879 – 1945) and lastly the jet engine (1945 to the present). These are, essentially, the phases of the development of the tourism industry. Gierczak concludes that "[transport] is one of the most crucial elements of the tourist sector and directly affects the development of tourism".[63] This can also be seen as an alignment between tourism and technological development.

Historian Eric Zuelow's book *A History of Modern Tourism* is perhaps the most comprehensive account of the rise of the modern tourism industry.[64] The introduction gives a brief account of pre-modern travel and what Zeulow terms "glimmers of the modern", events that hinted at what was to come. The book describes the origin and development of modern tourism starting with the Grand Tour of the seventeenth to

[59] U. Gyr, 'The history of tourism: structures on the path to modernity', *European History Online*, n.p.
[60] U. Gyr, 'The history of tourism: structures on the path to modernity' , *European History Online*, n.p.
[61] B. Gierczak, 'The history of tourist transport after the modern industrial revolution', *Polish Journal of Sport Tourism* 18, 2011, p. 275.
[62] B. Gierczak, 'The history of tourist transport after the modern industrial revolution', *Polish Journal of Sport Tourism* 18, p. 275.
[63] B. Gierczak, 'The history of tourist transport after the modern industrial revolution', *Polish Journal of Sport Tourism* 18, p. 281.
[64] E. G. E. Zuelow, *A History of Modern Tourism*, 2016.

eighteenth centuries, it describes how the evolution of modes of transport, scientific thought, and art, packaged tours, guidebooks, political ideologies and the World Wars shaped and steered the ever-growing tourism industry. The book therefore showcases how travel evolved from a "geographically limited concern" and an activity reserved for the elite to an activity of universal importance, accessible to most.[65] Zeulow takes the reader on a Grand Tour of the modern tourism industry but omits an important stop on this tour – technology. Given that technology has shaped tourism into the modern technologically driven industry we know it to be today, and that the book was published in 2016, this would not have been beyond the scope of the book. Moreover, within the book's framework of socio-historical inquiry into the rise of the industry, including this aspect would have further emphasised the influence of industrial developments on an industry that is to a large extent also influenced by a multitude of socio-cultural developments. This would also have emphasised the correlation between industrial and socio-cultural developments. Nevertheless, it remains an invaluable resource on the history of the global tourism industry.

Moving onto more recent developments, Dimitrios Buhalis and Aditya Amaranggana focus on the concept of Smart Tourism Destinations which they contend emerged from Smart Cities. Buhalis and Aditya argue that

> the ultimate aim [of Smart Tourism Destinations] is to utilise the system to enhance the tourism experience and improve the effectiveness of resource management towards maximising both destination competitiveness and consumer satisfaction while also demonstrating sustainability over an extended timeframe.[66]

In the chapter 'Smart Tourism Destinations' Buhalis and Amarangana discuss the theoretical background of Smart Tourism Destinations and emphasise the importance of effective data collection and analysis, the involvement of local communities and Public-Private Partnerships (PPP).[67] It is argued that the best method of developing Smart Tourism Destinations, as well as keeping up with continued technological advancement, is through the use of "Living Labs". These simulated environments are

[65] E. G. E. Zuelow, 'An Introduction', *A History of Modern Tourism*, p. 13.
[66] D. Buhalis & A. Amaranggana, 'Smart Tourism Destinations', *in* Z. Xiang & I. Tussyadiah (eds.), *Information and Communication Technologies in Tourism*, 2014, p. 557.
[67] D. Buhalis & A. Amaranggana, 'Smart Tourism Destinations', *in* Z. Xiang & I. Tussyadiah (eds.), *Information and Communication Technologies in Tourism*, pp. 553-564.

used for training, testing new developments and research as well as fostering innovation among tourism stakeholders.[68] The authors conclude by stating that in the development of smart tourism destinations, the following needs to be prioritised:

> enhance tourists' travel experience; provide a more intelligent platform to both gather and distribute information within destinations; facilitate efficient allocation of tourism resources; integrate tourism suppliers at both micro and macro levels, aiming to ensure that benefits from this sector [are] well distributed to local [communities].[69]

Taking this focus further, António Loureiro identifies potential issues the travel and tourism industry could face because of technological advancements being made in the Fourth Industrial Revolution.[70] In the article 'There is a fourth industrial revolution: the digital revolution' he identifies five major types of technologies that will greatly influence the travel and tourism industry: Big Data; hybrid cloud; mobile; AI; and the Internet of Things (IoT).[71] He argues that the importance of social media should not be underestimated. The ever-increasing number of users and popularity of social media is beneficial to travel companies but also poses one of the biggest challenges – creating content that is appealing and stands out from the rest. Loureiro concludes that "ongoing technological innovation brings an innumerable range of opportunities to the travel industry…" and "industry players who want to survive in a highly competitive market should make innovation their touchstone".[72]

In another article 'Tourism and travel can effectively benefit from technologies associated with Industry 4.0' Vasile Mazilescu analyses how the 4IR, can "positively and consistently influence the development of tourism".[73] Mazilescu attempts to illustrate the connections and similarities between the tourism industry and Industry 4.0. According to Mazilescu "Industry 4.0, by its characteristics, also requires the

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[68] D. Buhalis & A. Amaranggana, 'Smart Tourism Destinations', *in* Z. Xiang & I. Tussyadiah (eds.), *Information and Communication Technologies in Tourism*, p. 560.
[69] D. Buhalis & A. Amaranggana, 'Smart Tourism Destinations', *in* Z. Xiang & I. Tussyadiah (eds.), *Information and Communication Technologies in Tourism*, p. 562.
[70] A. Loureiro, 'There is a fourth industrial revolution: the digital revolution', *Worldwide Hospitality and Tourism Themes* 10(6), 2018, pp. 740-744.
[71] A. Loureiro, 'There is a fourth industrial revolution: the digital revolution', *Worldwide Hospitality and Tourism Themes* 10(6), 2018, p. 740.
[72] A. Loureiro, 'There is a fourth industrial revolution: the digital revolution', *Worldwide Hospitality and Tourism Themes* 10(6), 2018, pp. 743-744.
[73] V. Mazilescu, 'Tourism and travel can effectively benefit from technologies associated with Industry 4.0', Conference paper – International Conference: risk in contemporary economy, 2019, Galati, Romania, p. 53.

tourism industry to have the same characteristics, thus obtaining Tourism 4.0".[74] Existing and emerging technologies used in the global tourism industry are discussed at length, these include: Machine Learning (ML); Global Distribution Systems (GDS); Artificial Intelligence (AI); Cloud Infrastructure; and the Semantic Web. It is concluded that these technologies have fundamentally altered the functioning of the global tourism industry over the last decade and if the true potential of the 4IR is to be realized in the tourism industry "companies need to plan for digital transformation" and they "need to understand the importance and urgency of digitalization".[75]

Technology, heritage preservation and tourism

Scholars have also turned their attention to case studies of the application of technologies of specific aspects of the broader tourism domain including education, museums, and heritage in general. In 2013 Muqeem Khan and Penny de Byl stated that "new media and emerging technologies have the potential to move heritage preservation beyond static displays, capturing in cinematic or narrative forms and revitalise the intangible aspects".[76] In 'Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH)', Khan and De Byl explore the use of AR in museums to enhance the user experience.[77] The article also discusses a range of digital user interactions and presents a prototype AR application for teaching Arabic calligraphy to children in the Arabian Peninsula. It is argued that in an increasingly digital world where information can be accessed in an instant, museums "must adopt more interactive information retrieval systems on their premises".[78] It is concluded that "the merging of interactive technologies and intangible cultural heritage content is

[74] V. Mazilescu, 'Tourism and travel can effectively benefit from technologies associated with Industry 4.0', Conference paper – International Conference: risk in contemporary econom*y*, Galati, Romania, p. 55.
[75] V. Mazilescu, 'Tourism and travel can effectively benefit from technologies associated with Industry 4.0', Conference paper – International Conference: risk in contemporary economy, Galati, Romania, p. 61.
[76] M. Khan & P. de Byl, 'Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH)', *International Journal of Knowledge Society Research* 4(2), 2013, p. 1.
[77] M. Khan & P. de Byl, 'Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH)', *International Journal of Knowledge Society Research* 4(2), pp. 1-8.
[78] M. Khan & P. de Byl, 'Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH)', *International Journal of Knowledge Society Research* 4(2), p. 3.

crucial for today's museum".[79] As museums and heritage are integral to tourism these technological developments are of relevance.

In another study on using new technologies for heritage preservation and education, it is argued that digital preservation of cultural heritage is of the utmost importance in a rapidly digitising world. In 'Digitization and Preservation of Cultural Heritage Products' Abdelhak Belhi, Sebti Foufou, Abdelaziz Bouras and Abdul H. Sadka present an overview of current practices in 3D imaging, discuss the concepts of Digital Heritage, digital obsolescence and long term digital preservation.[80] A case study of a project in Qatar that aims to digitally preserve Qatari cultural heritage objects in a cost-effective and future-proof manner is also presented. They conclude that cultural heritage is to be preserved for future generations at all costs, and because of its high value, digital preservation efforts have to be highly innovative.[81] This is also of significance in terms of tourism.

While most heritage practitioners welcome and advocate the use of digital technologies for preservation, education and dissemination, Antonina A. Nikonova and Marina V. Biryukova are not as optimistic about the use of technology for heritage preservation.[82] In 'The Role of Digital Technologies in the Preservation of Cultural Heritage', the authors present an overview of digital heritage preservation and discuss the loss of authenticity inherent in digital reconstructions. According to Nikonova and Biryukova "3D reconstruction is being developed in two directions, the creation of presentation (tourism and recreation) reconstructions … and research reconstruction".[83] It is concluded that this relegates cultural heritage that is of extreme

[79] M. Khan & P. de Byl, 'Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH)', *International Journal of Knowledge Society Research* 4(2), p. 8.
[80] A. Belhi, S. Foufou, A. Bouras & A. H. Sadka, 'Digitization and Preservation of Cultural Heritage Products', 2017, Conference paper – IFIP International Conference on Product Lifecycle Management, Seville, Spain, 10-12 July, 2017, pp. 241-253.
[81] A. Belhi, S. Foufou, A. Bouras & A. H. Sadka, 'Digitization and Preservation of Cultural Heritage Products', Conference paper – IFIP International Conference on Product Lifecycle Management, Seville, Spain, 10-12 July, 2017, p. 250.
[82] A. A. Nikonova & M. V. Biryukova, 'The Role of Digital Technologies in the Preservation of Cultural Heritage', *Museology and Cultural Heritage* 5(1), 2017, pp. 169-173.
[83] A. A. Nikonova & M. V. Biryukova, 'The Role of Digital Technologies in the Preservation of Cultural Heritage', *Museology and Cultural Heritage* 5(1), p. 171.

importance to some to the sphere of entertainment, causing the loss of the sacred importance of this heritage. The authors further state that

> there will be no reason to preserve authentic remnants or ruins of historical and cultural monuments, as different digital technologies of 3D reconstruction, and digital simulations of life-size monuments will be perceived in society not only as an adequate substitute for the original, but as the only possibility to its perception.[84]

This is perhaps somewhat far-fetched, possibly even a worst-case scenario, as it is widely recognised that heritage tourists travel to heritage sites and visit museums to view objects of cultural importance. They do this precisely because they seek authenticity and an escape from the day-to-day of a highly digitised world to 'simpler times'.[85]

Sustainability, the UN SDGs and tourism

This penultimate section of the literature review considers the UN SDGs and sustainability. In the opinion-piece 'Sustainable Development Goals: pandemic reset', Robin Naidoo and Brendan Fisher provide an overview of the impact of the Covid-19 pandemic on SDG progress and make suggestions as to what to do going forward.[86] The piece was published ahead of the 2020 virtual meeting of the UN High-Level Political Forum on Sustainable Development (HLPF). Naidoo and Fisher argue that a focus of the meeting should be to find a new pathway for the SDGs, stating that "Covid-19 is exposing the fragility of the goals…", that "the SDGs as currently conceived are not resilient to such global stressors".[87] Focusing on goals that can be achieved much quicker and with less funding (in light of the looming global economic crisis), include decoupling development and growth (letting go of the idea that sustained GDP growth means development) and redirecting funding away from the fossil fuel industry to more sustainable energy sources. These are some of the suggested measures to be taken to keep the SDGs on track post-pandemic. Naidoo and Fisher conclude that "every goal and target should be screened according to three points: is this a priority, post

[84] A. A. Nikonova & M. V. Biryukova, 'The Role of Digital Technologies in the Preservation of Cultural Heritage', *Museology and Cultural Heritage* 5(1), p. 172.
[85] B. S. Osbourne & J. F. Kovacs, 'Cultural Tourism: Seeking Authenticity, escaping into Fantasy, or expecting Reality', *Choice*, 2008, pp. 927-937; S. Cohen, 'Searching for escape, authenticity and identity: Experiences of "lifestyle travellers"', *in* M. Morgan, P. Lugosi & J. R. B. Ritchie (eds.), *The Tourism and Leisure Experience: Consumer and Managerial Perspectives*, 2010, pp. 27-42.
[86] R. Naidoo & B. Fisher, 'Sustainable Development Goals: pandemic reset', *Nature* 583, 2020, pp. 198-201.
[87] R. Naidoo & B. Fisher, 'Sustainable Development Goals: pandemic reset', *Nature* 583, p. 198.

Covid-19; is it about development not growth; and is the pathway to it resilient to global disruptions?".[88]

There is a distinct shortage of research on how the 4IR will impact on the SDGs. In light of this, Andrija Popović provides an overview of the potential implications of the 4IR for the SDGs and gives insight into issues that policymakers need to address when implementing policy with regards to both the 4IR and the SDGs.[89] In 'Implications of the Fourth Industrial Revolution on sustainable development', Popović also discusses the potential impacts the technologies of the 4IR could have on certain targets of the 17 SDGs.[90] It is argued that "responsible consumption and production (SDG 12) is probably the goal that Industry 4.0 [4IR] puts closest to completion", because of technologies such as Big Data and Cloud Computing.[91] Areas policymakers should address include development, monetary policies, education, and social security and retirement. Popović argues that while these new technologies could potentially lead to a more sustainable world, we do not yet know how disruptive a number of its potential consequences could be, which could then in turn impact negatively on the achievement of the SDGs.[92]

The UN's designation of 2017 as the "International Year of Sustainable Tourism for Development" aimed "to underline the key contribution of tourism to achieve the SDGs".[93] In an article by Giulio Pattanaro and Silvia Donato they look at the implementation of the SDGs in the tourism industry by focusing on the business opportunities this might entail by conducting a literature review and analysing practical examples of the implementation in tourism businesses.[94] They added that "the adoption of the SDGs in the tourism sector is either a very marginal phenomenon or it

[88] R. Naidoo & B. Fisher, 'Sustainable Development Goals: pandemic reset', *Nature* 583, p. 201.
[89] A. Popović, 'Implications of the Fourth Industrial Revolution on sustainable development', *Economics of Sustainable Development* 4(2), 2020, pp. 45-60.
[90] A. Popović, 'Implications of the Fourth Industrial Revolution on sustainable development', *Economics of Sustainable Development* 4(2), pp. 45-60.
[91] A. Popović, 'Implications of the Fourth Industrial Revolution on sustainable development', *Economics of Sustainable Development* 4(2), p. 55.
[92] A. Popović, 'Implications of the Fourth Industrial Revolution on sustainable development', *Economics of Sustainable Development* 4(2), pp. 55-57.
[93] G. Pattanaro & S. Donato, 'Sustainable development goals: a business opportunity for tourism companies?', *Economic Problems of Tourism* 3(43), 2018, p.21.
[94] G. Pattanaro & S. Donato, 'Sustainable development goals: a business opportunity for tourism companies?', *Economic Problems of Tourism* 3(43), p.22.

is something which is not adequately promoted and made visible, or a combination of both".[95] It is concluded that the "link between the adoption of the SDGs by tourism players and the generation of new business opportunities is still not evident".[96]

Karla A. Boluk, Christina T. Cavaliere and Freya Higgins-Desbiolles are however of the opinion that "the inherent relationship between sustainability and tourism has received increasing scholarly attention".[97] However, the SDGs "have received limited specific attention from tourism sustainability scholars which is surprising given the international applicability of the SDGs and their origin from a globally recognized intergovernmental organisation".[98] The authors identified six themes that serve as a conceptual framework through which they critique the SDGs in the context of sustainable tourism, as well as analyse the SDGs' potential to shape a more sustainable, equitable and just tourism industry. Through these six themes the authors provided tools to critically think through the potential of the SDGs to shape the tourism industry.

In another article, Freya Higgins-Desbiolles starts off her scathing review of the global tourism industry's lack of sustainability by stating that it "has a problem. It is addicted to growth and may need to be placed in a 12-step programme of recovery, much like those created by Alcoholics Anonymous" and "the first step is admitting the problem".[99] 'Sustainable tourism: Sustaining tourism or something more?' certainly points out several problems in the global tourism industry. The article critiques the moral deficiency evident in many forms of tourism, the perpetuation of the neoliberal growth agenda despite the fact that it is unsustainable, and the power imbalance caused by "powerful organisations, subservient governments and consumerized citizenry".[100]

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[95] G. Pattanaro & S. Donato, 'Sustainable development goals: a business opportunity for tourism companies?', *Economic Problems of Tourism* 3(43), p.24.
[96] G. Pattanaro & S. Donato, 'Sustainable development goals: a business opportunity for tourism companies?', *Economic Problems of Tourism* 3(43), p.26.
[97] K. A. Boluk, C. T. Cavalier & F. Higgins-Desbiolles, 'A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism', *Journal of Sustainable Tourism* 27(7), 2019, p. 847.
[98] K. A. Boluk, C. T. Cavalier & F. Higgins-Desbiolles, 'A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism', *Journal of Sustainable Tourism* 27(7), pp. 847-848.
[99] F. Higgins-Desbiolles, 'Sustainable tourism: Sustaining tourism or something more?', *Tourism Management Perspectives* 25, 2018, p. 157.
[100] F. Higgins-Desbiolles, 'Sustainable tourism: Sustaining tourism or something more?', *Tourism Management Perspectives* 25, p. 157.

Higgins-Desbiolles also criticizes the academic community for contributing to the failure of sustainable tourism. She argues that this is "the result of the corporatisation of universities" as they "are being weaned from the public purse and forced to seek grants for 'industry-relevant' research from the private sector as neoliberalism assaults our ivory towers".[101] The silencing of academics, scientists and the media in light of the emergence of "fake news" accusations is regarded by her as the biggest threat to sustainability. She concludes that "we must get real" because "sustaining tourism is not a sustainable form of tourism".[102]

Culture and sustainable tourism

The absence of cultural issues in sustainable tourism development theory and practice has also been a subject of criticism and debate since the 1980s. In 1995 Jennifer Craik argued that "the changes and consequences of tourism on the culture of destinations and on the culture of tourists should be central to debates about sustainable tourism development".[103] In the article 'Are there cultural limits to tourism?' Craik discusses the range of impacts the tourism industry has, both positive and negative, argues that the tourism industry can only be considered sustainable if these are managed effectively and proposes a set of cultural indicators for the identification and mitigation of tourism development.[104] The author concludes by stating that "by approaching tourism through a set of cultural indicators as part of a consultative stakeholder approach to tourism development, sustainable tourism has a greater chance of being achieved".[105]

In 1999 Mark Robinson stated that "the discourse of sustainable tourism is neglecting the cultural dimension".[106] He identifies three reasons for the scant attention paid to cultural aspects in sustainable tourism: culture is regarded as just another tradeable commodity; culture cannot be measured in the same way as economic or

[101] F. Higgins-Desbiolles, 'Sustainable tourism: Sustaining tourism or something more?', *Tourism Management Perspectives* 25, p. 158.
[102] F. Higgins-Desbiolles, 'Sustainable tourism: Sustaining tourism or something more?', *Tourism Management Perspectives* 25, p. 159.
[103] J. Craik, 'Are there cultural limits to tourism?', *Journal of Sustainable Tourism* 3(2), 1995, p. 87.
[104] J. Craik, 'Are there cultural limits to tourism?', *Journal of Sustainable Tourism* 3(2), pp. 87-98.
[105] J. Craik, 'Are there cultural limits to tourism?', *Journal of Sustainable Tourism* 3(2), p. 96.
[106] M. Robinson, 'Collaboration and Cultural Consent: Refocusing Sustainable Tourism', *Journal of Sustainable Tourism* 7 (3-4), 1999, p. 379.

environmental aspects; and the difficulty of articulating culture in policy terms. The article, 'Collaboration and Cultural Consent: Refocusing Sustainable Tourism', has three broad focus areas.[107] First, a review of the lack of appreciation for culture in the sustainable tourism discourse is conducted; followed by discussion on collaboration and partnerships as being not only a useful management mechanism, but also intrinsic to sustainable development policy. Lastly, Robinson argues that collaboration underpinned by cultural consent is the key to truly sustainable tourism and that without this consent "tourism will remain as a major catalyst in the erosion of cultural diversity".[108] It is then concluded that collaboration based on consent is a vital mechanism in the achievement of a truly sustainable tourism industry and that it should be recognised that communities have the right to say "no" to tourism and its adverse effects.[109]

As can be gathered from the above discussion of culture and sustainable tourism, it is widely recognised that tourism can have both positive and negative impacts on cultural heritage. In his keynote address at the UNESCO workshop on Culture, Heritage Management and Tourism in 2000, Walter Jamieson examined cultural heritage resource management, the fusion of cultural preservation and tourism as well as a number of challenges this could entail.[110] Jamieson discusses reasons why culture is maintained and preserved; the positive and negative impacts of tourism; cultural heritage tourism objectives and the challenges it faces; along with destination management for successful sustainable cultural heritage tourism. Some of the reasons why culture is preserved include: education, community renewal, tourism, profit and patriotism.[111] According to Jamieson "cultural tourism has a number of objectives that must be met within the context of sustainable development".[112] Jamieson concludes

[107] M. Robinson, 'Collaboration and Cultural Consent: Refocusing Sustainable Tourism', *Journal of Sustainable Tourism* 7 (3-4), pp. 379-397.
[108] M. Robinson, 'Collaboration and Cultural Consent: Refocusing Sustainable Tourism', *Journal of Sustainable Tourism* 7 (3-4), p. 389.
[109] M. Robinson, 'Collaboration and Cultural Consent: Refocusing Sustainable Tourism', *Journal of Sustainable Tourism* 7 (3-4), p. 393.
[110] W. Jamieson, 'The challenge of sustainable cultural heritage tourism', 2000, Conference paper – UNESCO Workshop on Culture, Heritage Management and Tourism, Bhaktapur, Nepal, 9 April 2000.
[111] W. Jamieson, 'The challenge of sustainable cultural heritage tourism', Conference paper – UNESCO Workshop on Culture, Heritage Management and Tourism, Bhaktapur, Nepal, 9 April 2000, p. 2.
[112] W. Jamieson, 'The challenge of sustainable cultural heritage tourism', Conference paper – UNESCO Workshop on Culture, Heritage Management and Tourism, Bhaktapur, Nepal, 9 April 2000, p. 5.

by stating that stopping tourism will not solve the problems and challenges faced by heritage preservation practitioners, but rather involving all stakeholders in the planning and management of cultural heritage tourism.[113]

In the article 'Sustainable natural and cultural heritage tourism in protected areas: case study' Armand Faganel and Anita Trnavčevič provide an overview of trends that affect protected area tourism planning, growth and diversification of the market.[114] Potential risks and benefits associated with merging tourism and natural and cultural heritage are also explored. The article uses Slovenia's largest salt evaporation pond, Sečovlje Salina Nature Park (SSNP), as a case study. The authors also discuss the sustainable development of natural heritage in combination with tourism development. In this regard they conducted a SWOT analysis of SSNP. They assert that "on the basis of positive features in the presented case study it is very likely that heritage protection and heritage tourism can coexist together in a protected area".[115]

Slovenia and the development of its tourism industry

The last section of this literature review considers the research related to Slovenia and its tourism industry. The accessible resources are surprisingly scarce and scattered. The 1994 book *Independent Slovenia: origins, movements, prospects* comprises eleven essays that explore the history of Slovenia – "the historical, cultural, political and economic origins of the drive for Slovene independence".[116] According to the editors of the book it is "neither history nor social science", but rather a study of Slovenia that means to "let the Slovenes tell their own story".[117] Dimitrij Ruper who was Slovenia's foreign minister when it gained independence is one of the many notable Slovenian authors featured in the book. The first section comprises four essays that deal with the history of Slovenia/Slovenes from the 7th century, Slovenia as part of Yugoslavia, the country's economic history and finally its culture and

[113] W. Jamieson, 'The challenge of sustainable cultural heritage tourism', Conference paper – UNESCO Workshop on Culture, Heritage Management and Tourism, Bhaktapur, Nepal, 9 April 2000, p. 10.
[114] A. Faganel & A. Trnavčevič, 'Sustainable natural and cultural heritage tourism in protected areas: case study', *Annals for Istrian and Mediterranean Studies* 22(2), 2012, pp. 589-597.
[115] A. Faganel & A. Trnavčevič, 'Sustainable natural and cultural heritage tourism in protected areas: case study', *Annals for Istrian and Mediterranean Studies* 22(2), p. 594.
[116] J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, movements, prospects*, 1994 p. xiii.
[117] J. Benderly & E. Kraft (eds.), 'Editor's introduction', *Independent Slovenia: origins, movements, prospects*, p. xiii.

politics.[118] The second section discusses social movements, politics, democracy and independence.[119] The third and last section of the book is about the prospects of independent Slovenia. The three essays comprising this last section look at Slovenia's shift from the Balkans to central Europe, its economy after independence and lastly privatization.[120] This general historical background is essential to the understanding of the dramatic changes undergone by the Slovenian tourism sector.

Further essential to the understanding of changes undergone by the Slovenian tourism sector is *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950-1980)*.[121] Published in 2010, the book comprises a collection of essays on developments in the Yugoslav tourism industry throughout the implementation of socialism. The essays discuss the politicisation of the Yugoslav tourism industry, its eventual popularisation, construction of holiday homes, the 1984 Sarajevo Winter Olympic Games and organised youth labour. Throughout the book emphasis is placed on the politics of socialist Yugoslavia as this had an immense impact on the development of the tourism industry and how tourism was dispersed among the republics. As the editors, Karin Taylor and Hannes Grandits, note in the introduction, most research on Yugoslavia has focused on war and destruction.[122] Through this publication they seek to fill the gap in knowledge of other areas of Yugoslav politics and industry that greatly affected the country's take on socialism.[123] Although the book focuses on Yugoslavia as a whole, it is extremely useful on the conceptualisation of the history of Slovenian tourism.

Igor Tchoukarine also seeks to address the gap on Yugoslav policy and its socialist management in the context of tourism. In the article, 'Yugoslavia's Open-Door Policy and Global Tourism in the 1950s and 1960s', he explores how the country's expulsion

[118] J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, movements, prospects*, pp. 3-90.
[119] J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, movements, prospects*, pp. 93-179.
[120] J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, movements, prospects*, pp. 183-249.
[121] H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010.
[122] K. Taylor & H. Grandits, 'Tourism and the Making of Socialist Yugoslavia: An Introduction', in H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010, p. 2.
[123] K. Taylor & H. Grandits, 'Tourism and the Making of Socialist Yugoslavia: An Introduction', in H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, p. 2.

from the Cominform resulted in it becoming somewhat of a paradox in terms of socialist management and mobility of both its citizens and foreigners.[124] Tchoukarine explores the political climate and presence of foreigners in the post-Stalin split, Yugoslavia's tourism marketing efforts in the 1950s, the gradual opening of borders, policies enacted to ease mobility and Yugoslav tourism on the global stage. He concludes that it is "unique in one key aspect: the country's open-door policy and the importance given to the presence of foreign tourists became a structural part of Yugoslavia's socio-political identity".[125]

In another article, 'Some characteristics of tourism in Slovenia' by Anton Gosar, the focus is specifically on the tourism industry in 1990s.[126] Gosar notes that "only in the 1980s did the [Tourist Association of Slovenia] and the central marketing enterprise … become aware of the heterogeneity of tourist advertising policies and began to market Slovenia … abroad under the slogan Slovenia on the Sunny Side of the Alps".[127] At the time 'transit tourism' was the dominant type of tourism in Slovenia. Up until then, tourists would stay a night or two in Slovenia on their way to another destination in Europe. Gosar argues this occurred because the country's tourism industry was faced with problems such as geographical disadvantages and "an inability to develop along the path of industrial tourism".[128] According to Gosar, "Slovenia [had] not yet succeeded in creating an image as a vacation area".[129]

In a 1995 article Janez Sirse argued that "tourism [was] one of the very few economic sectors in [the] Slovenian economy that [had] positive growth rates" during the transition from a republic of Yugoslavia to an independent nation state.[130] In this article, 'The new strategy for the development of tourism in Slovenia', Sirse provides a brief overview of the Slovenian tourism landscape, statistics and a brief history of Slovenian tourism when it was still part of Yugoslavia, as well as outlining some problems faced

[124] I. Tchoukarine, 'Yugoslavia's Open-Door Policy and Global Tourism in the 1950s and 1960s', *East European Politics and Societies and Cultures* 29(1), 2015, pp. 168-188.
[125] I. Tchoukarine, 'Yugoslavia's Open-Door Policy and Global Tourism in the 1950s and 1960s', *East European Politics and Societies and Cultures* 29(1), p. 182.
[126] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), 1990, pp. 33-42.
[127] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 35.
[128] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 40.
[129] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 40.
[130] J. Sirse, 'The new strategy for the development of tourism in Slovenia', *The Tourist Review*, 1995, p. 22.

by the country's tourism industry.[131] Sirse concludes that the development of a clear and focused strategy for the advancement of the Slovenian tourism industry was the country's priority post-independence.[132]

A. De Lena also argues that "tourism has been a major industry in the Republic of Slovenia since it became an independent nation in 1991", but is in agreement with Gosar that, 24 years later, the country does not have a unified image as a tourist destination.[133] In 'The road less travelled: prospects for tourism growth in Slovenia' De Lena conducts a situational analysis of Slovenia within the global tourism industry by also using the SWOT method.[134] De Lena concludes that the challenge for Slovenian tourism will be the implementation of unified and effective destination-image campaigns that will help to overcome the misconceptions about the country.[135]

In the chapter 'Geography of Tourism in Slovenia' Dejan Cigale and Anton Gosar provide an overview of Slovenia's top tourist locations, the country's protected areas as well as other factors related to tourism geography such as infrastructure, origin and distribution of tourists.[136] They argue that "the key importance for the development of tourism is the country's geopolitical [location] in relation to traffic conditions within Europe".[137] It is also noted that Slovenia's natural heritage is a far bigger attraction for foreign tourists than its cultural heritage, most of its cultural attractions receive predominantly domestic tourists. Despite the country's wide variety of tourism offerings "the coastal and alpine regions still remain, due to their cultural and in particular natural attractions, leaders in Slovenian tourism" but they conclude that the country "is a moderately developed tourist destination".[138]

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[131] J. Sirse, 'The new strategy for the development of tourism in Slovenia', *The Tourist Review*, pp. 18-22.
[132] J. Sirse, 'The new strategy for the development of tourism in Slovenia', *The Tourist Review*, p. 22.
[133] A. De Lena, 'The road less travelled: prospects for tourism growth in Slovenia', *Slovenia: challenges and opportunities*, 2014, p. 37.
[134] A. De Lena, 'The road less travelled: prospects for tourism growth in Slovenia', *Slovenia: challenges and opportunities*, pp. 37-46.
[135] A. De Lena, 'The road less travelled: prospects for tourism growth in Slovenia', *Slovenia: challenges and opportunities*, pp. 43-45.
[136] D. Cigale & A. Gosar, 'Geography of Tourism in Slovenia', *in* K. Widawski & J. Wyrzykowski, *The Geography of Tourism of Central and Eastern European Countries*, 2017, pp. 467-508.
[137] D. Cigale & A. Gosar, 'Geography of Tourism in Slovenia', *in* K. Widawski & J. Wyrzykowski, *The Geography of Tourism of Central and Eastern European Countries*, p. 471.
[138] D. Cigale & A. Gosar, 'Geography of Tourism in Slovenia', *in* K. Widawski & J. Wyrzykowski, *The Geography of Tourism of Central and Eastern European Countries*, pp. 481-503.

Cigale's 2017 article, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', discusses tourism within the country before and after it gained independence, its progress since then, some challenges it has faced as well as tourist flows.[139] He notes that even though Slovenia is regarded as a "moderately developed" destination when compared to the rest of Europe it has experienced major growth in its tourism sector since 2005.[140] He conducted a statistical analysis of the Slovenian tourism industry and points to the many difficulties experienced in the 1990s.[141] He argues that Slovenia joining the European Union (2004), adopting the Euro (2007), joining the Schengen Area (2009) and abolishing visa requirements for Montenegro, North Macedonia and Serbia (2010) have all contributed to the positive growth of its tourism industry. He concludes that despite this, 29 years since Gosar's article was published, Slovenia still remains a transit destination for many of its visitors.[142]

Saša Zupan Korže argues that "there is [sic] a wide range of ideas and activities put under the umbrella [term] of Tourism 4.0".[143] The article 'From Industry 4.0 to Tourism 4.0' traces the origins of Industry 4.0, its application to the tourism industry which then led to the emergence of Tourism 4.0, and lastly, what this term means in several countries in Europe and southeast Asia. The countries in Europe include Portugal (where the term is said to have emerged in 2016), Finland, Italy, Spain, Turkey and Slovenia. Southeast Asian countries include Thailand, Bali and Malaysia. Korže also discusses the use of the Internet, Big Data, VR, smartphones, AI and chatbots. He concludes that the lack of research on the new emerging paradigm of Tourism 4.0 "needs closer attention" as it is not yet clearly defined and delineated, and it is certainly gaining importance as we move to a more technologically advanced world.[144] As

[139] D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), 2019, pp. 4-13.
[140] D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), p. 4.
[141] D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), p. 6.
[142] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 40; D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), p. 8.
[143] S. Z. Korže, 'From Industry 4.0 to Tourism 4.0', *Innovative Issues and Approaches in Social Sciences* 12(3), 2019, p. 36.
[144] S. Z. Korže, 'From Industry 4.0 to Tourism 4.0', *Innovative Issues and Approaches in Social Sciences* 12(3), pp. 43-45.

regards the recent development of Tourism 4.0 in Slovenia, little to nothing has been published that is accessible in the English language in academia. Besides two book chapters written by the developers of this initiative, there appears to be nothing else besides Korže's article.

This literature review provides an overview of the state of research on a multitude of areas of relevance to this dissertation. There is an abundance of literature available on topics such as the Industrial Revolutions, the impacts of tourism (positive or negative), the SDGs in general and the SDGs and the tourism industry, and methods of cultural preservation. However, when it comes to Slovenia and its tourism industry there is, as is evident, a relative shortage of research and publications. The books and articles used in this literature review, which will also be used for the writing of the historical context of the case study, were the only publications that were available. This was the case with literature on the Slovenian tourism industry as well. There are very few publications on its development and most of these were written by Anton Gosar.[145] As such, other publications that could be acquired contain much the same information as they all use Gosar as a main source. Even those that did not use Gosar, also contain mostly the same information. It therefore seems that even in Slovenia there is a lack of accessible and abundant information on its tourism industry. It was also found that publications such as *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950-1980)*, although useful, focuses mainly on Croatia despite the fact that Slovenia was the second biggest tourism republic in the former socialist Yugoslavia.[146] There are of course others, but the language barrier proved to be quite significant, and translation was not effective as the context and argument literally got lost in the process. Ironically, language appears to be one of the key obstacles in

[145] See also: A. Gosar, 'Structural Impact of International Tourism in Yugoslavia', *GeoJournal* 19(3), 1989, pp. 277-283; A. Gosar, 'Second Homes in the Alpine Region of Yugoslavia', *Mountain Research and Development* 9(2), 1989, pp. 165-174; A. Gosar, 'International Tourism and its impact on the Slovenian Society and Landscape', GeoJournal 30(3), 1993, pp. 339-348; A. Gosar, 'Reconsidering tourism strategy as a consequence of the disintegration of Yugoslavia: the case of Slovenia', *Turizam* 47(1), 1999, pp. 67-73; A. Gosar, 'The recovery of tourism in Slovenia', in M. O. Adamič (ed.), *Slovenia: a geographical* overview, 2004, pp. 133-140; A. Gosar, 'Development characteristics and challenges of tourism in south-eastern Europe, with special emphasis on Slovenia', 2004, pp. 1-22; A. Gosar, 'Tourism in post-socialist countries of south-eastern Europe: Trends and Challenges', *in* C. H. C. Hsu & W. C. Gartner (eds.), *The Routledge Handbook of Tourism Research*, 2012, pp. 373-391.

[146] I. Duda, 'Workers into Tourists: Entitlements, Desires, and the Realities of Social Tourism under Yugoslav Socialism', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, pp. 35-49.

Slovenia's international tourism domain. Nevertheless, the amount of information extracted from the accessible resources proved to be extremely useful in writing about the development of the Slovenian tourism industry.

Overall, the literature also reflects that there is a growing interest in harnessing the power of technology in general, and now the technologies of the 4IR, to contribute to the move to a more personalised tourism offering and a more sustainable tourism industry. The lacuna apparent in the literature on Tourism 4.0 is addressed in this study as it considers the origin, development, and implications of Tourism 4.0 in the context of tourism more broadly. Despite there being gaps in the literature on certain areas of interest of this dissertation, and in particular the focus of this study, the literature will greatly assist in the assessment and appraisal of Slovenia's Tourism 4.0 as a potential best practice example.

CHAPTER 3: THE INDUSTRIAL REVOLUTIONS AND TOURISM

The First Industrial Revolution is arguably one of the most important events in human history, with each successive Industrial Revolution ushering in change on a global scale, infiltrating every aspect of human life. As mentioned, historians, however, tend to disagree on the nature of these Industrial Revolutions and how they differentiate from one another, with some arguing that there has only been one thus far. Other scholars also argue that the last two Industrial Revolutions were in fact Information and/or Technological Revolutions, further adding to the complexity of studying the Industrial Revolutions.[147] Regardless of these debates, the basic developments of each Industrial Revolution remain the same and there is at least some agreement on these, which will be discussed in this chapter.

It is of importance to note that tourism as we know it today would not exist were it not for the invention of modes of transport such as the train, ship, and airplane during the First and Second Industrial Revolutions, and the technologies emerging in the Third as well as the Fourth Industrial Revolutions. Technological innovation and the development of tourism work in tandem. The history and development of tourism will therefore also be discussed in alignment with the different industrial revolutions in this chapter.

The Industrial Revolutions

The First Industrial Revolution (1760-1860) commenced in Britain over two and a half centuries ago. Although it has proven difficult to identify a single determining factor in each Industrial Revolution, most historians are in agreement that the cotton industry played a central role in the onset of the First Industrial Revolution.[148] E. J. Hobsbawm aptly notes that "whoever says Industrial Revolution says cotton" but "the British Industrial Revolution was by no means only cotton or textiles".[149] The first invention to bring about changes to cotton manufacturing, considered by some to be the origin of

[147] J. T. Mathews, 'The Information Revolution', *Foreign Policy* 199, 2000, pp. 63-65; M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, 2010; G. W. Brock, *The Second Information Revolution*, 2013.
[148] P. N. Stearns, 'Britain's Revolution', *The Industrial Revolution in World History*, p. 28.
[149] E. J. Hobsbawm, 'The Industrial Revolution 1780-1840', *Industry and Empire: From 1750 to the present day*, 1999, p. 34.

the First Industrial Revolution, was the Spinning Jenny invented in 1764.[150] This was greatly improved by the water frame, patented in 1769, and the resultant spinning mule (1779) which further increased the quality and production of the cotton industry.[151] The construction of several mills (factories) throughout Britain marked the beginning of the Industrial Revolution as spinners, used to spinning in their homes with their families, sought work in Britain's new factories.[152]

Rapid urbanization resulted from the emergence of factories and this meant that more coal had to be produced than ever before, requiring technical innovation.[153] The steam engine, invented in 1712 to drain water from Britain's coal mines, greatly improved output as it enabled deeper mining than previously possible.[154] A series of inventions led to the rapid expansion of the industry, such as the puddling process along with the reverberating furnace which caused Britain's iron production to quadruple, and as such Britain remained Europe's superior iron producer until well after the early to mid-19th century.[155] Iron and coal had to be transported all over Britain however, and so the horse-drawn carriages were replaced by a series of canals in order to transport larger loads quicker over longer distances. The new production process and the application of the steam engine to water and rail transport further increased the supply of iron and coal to the rest of the country and industrialization spread throughout Britain.[156]

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[150] C. Zhang & J. Yang, 'The First Industrial Revolution', *A History of Mechanical Engineering*, 2020, p. 98.
[151] B. Duignan, 'Inventors and Inventions of the Industrial Revolution', n.d., <https://www.britannica.com/list/inventors-and-inventions-of-the-industrial-revolution>, access: 20 April 2020; A. Toynbee, 'The chief features of the Industrial Revolution, *The Industrial* Revolution, 1956, p. 63.
[152] C. Freeman & F. Louçã, 'The British Industrial Revolution: The Age of Cotton, Iron, and Water Power', *As Time Goes By: From the Industrial Revolutions to the Information Revolution*, pp. 155-158; B. Duignan, n.d., 'Inventors and Inventions of the Industrial Revolution', <https://www.britannica.com/list/inventors-and-inventions-of-the-industrial-revolution>, access: 20 April 2020.
[153] E. J. Hobsbawm, 'Origin of the Industrial Revolution', *Industry and Empire: From 1750 to the present day*, p. 29.
[154] J. Mokyr, 'Editor's Introduction', *The British Industrial Revolution: An Economic perspective*, 1999, p. 21.
[155] C. Freeman & F. Louçã, 'Successive Industrial Revolutions', *As time goes by: From the Industrial Revolutions to the Information Revolution*, p. 155; A. Tikkanen, 'Henry Cort', <https://www.britannica.com/biography/Henry-Cort>, 13 October 2006, access: 20 April 2020; C. Freeman & F. Louçã, 'Successive Industrial Revolutions', *As time goes by: From the Industrial Revolution*, pp. 159-160.
[156] C. Freeman & F. Louçã, 'The British Industrial Revolution: The Age of Cotton, Iron, and Water Power', *As Time Goes By: From the Industrial Revolution*, pp. 163-167.

Early railways were also pioneered in the British coal mines, and in 1804 steam engines were introduced.[157] Railway construction for public use only started in the 1830s, but "by 1850 the basic English railway network was already more or less in existence".[158] According to Hobsbawm this was far more revolutionary than the cotton industry "because it represented a far more advanced phase of industrialization" and railway "became a sort of synonym for ultra-modernity in the 1840s".[159] Peter N. Stearns is of the same opinion, stating that "the most dramatic extension of industrialisation in Britain after the initial decades occurred in the field of transportation".[160]

Initially, the telegraph developed because of military need. Not long after the development of the visual telegraph, inventors started experimenting with an electric telegraph to replace the somewhat complicated visual telegraph. In the 1830s the British telegraph system was developed for railroad signalling. Also invented in the 1830s was Morse code and by 1951 it had become the standard telegraph system in Europe.[161] According to David Mercer "one of the most ambitious technological projects of the nineteenth century" was undertaken in the 1850s - the establishment of the transatlantic telegraph line, christened the eighth wonder of the world.[162] Steamships, railways, and faster communications (telegraph) "truly revolutionised the conveyance of goods, people, and information" [163], as they did the tourism industry.

The industrialisation of the United States of America (USA) is generally regarded as the Second Industrial Revolution (1860-1950), starting in the mid-nineteenth century.

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[157] C. Freeman & F. Louçã, 'The British Industrial Revolution: The Age of Cotton, Iron, and Water Power', *As Time Goes By: From the Industrial Revolution*, pp. 163-167; E. J. Hobsbawm, 'The Industrial Revolution 1780-1840', *Industry and Empire: From 1750 to the present day*, p. 48; P. N. Stearns, 'Britain's Revolution', *The Industrial Revolution in World History*, pp. 31-38.
[158] E. J. Hobsbawm, 'Industrialization: The Second Phase 1840-95', *Industry and Empire: From 1750 to the present day*, p. 88; C. Freeman & F. Louçã, 'Successive Industrial Revolutions', *As time goes by: From the Industrial Revolution*, p. 164.
[159] E. J. Hobsbawm, 'Industrialization: The Second Phase 1840-95', *Industry and Empire: From 1750 to the present day*, p. 89.
[160] P. N. Stearns, 'Britain's Revolution', *The Industrial Revolution in World History*, p. 38.
[161] D. Mercer, 'The Invention and Development of the Telegraph, 1780-1870s', *The Telephone: The Life Story of a Technology*, 2006, pp. 8-14; History, 'Morse code and the telegraph', <https://www.history.com/topics/inventions/telegraph>, 09 November 2009, access: 20 April 2020.
[162] D. Mercer, 'The Invention and Development of the Telegraph, 1780-1870s', *The Telephone: The Life Story of a Technology*, 2006, p. 16.
[163] P. N. Stearns, 'Britain's Revolution', *The Industrial Revolution in World History*, p. 39.

In Europe, Germany was also regarded as a new industrial power.[164] Electricity and steel are widely regarded as the most important developments of this Second Industrial Revolution however, many scholars also regard the assembly line/mass production, the telephone, and aircraft as important developments of the Second Industrial Revolution, and for the evolution of tourism.[165]

Less than 30 years after the widespread adoption of the telegraph, the first telephone obtained a patent in the USA in 1876 and not long after telephone lines were installed between businesses, becoming the key to effective and efficient business operations.[166] Radio, as a means of communication, emerged in the late 19th century "as an alternative to wired communications" and was however first used in ships and airplanes.[167] Mobile telephony was also pioneered in the USA and by the 1940s fully functioning voice-based two-way systems were introduced.[168] Throughout the 1950s countries were scrambling to catch up to one another in the development of a mobile phone network.[169] Both telephone and radio were set to become key tools within the domain of tourism marketing. In 1866 the dynamo-electric principle was discovered and was described as "a pivot of great technical revolution which would make cheap and convenient electrical power available to industry everywhere" and eventually led to the replacement of steam engines with electric ones.[170]

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[164] P. N. Stearns, 'The Industrial Revolution in Western Society', *The Industrial Revolution in World History*, pp. 56-61.
[165] C. Freeman & F. Louçã, 'Successive Industrial Revolutions', *As time goes by: From the Industrial Revolution*, p. 220; P. N. Stearns, 'Britain's Revolution', *The Industrial Revolution in World History*, p. 39; C. Zhang & J. Yang, 'The Second Industrial Revolution', *A History of Mechanical Engineering*, 2020, p. 137.
[166] D. Mercer, 'Timeline', *The Telephone: The Life Story of a Technology*, 2006, p. xx.
[167] G. Klemens, 'Radio', *The Cellphone: The History and Technology of the Gadget that Changed the World*, 2010, p. 27.
[168] G. Klemens, 'Radio', *The Cellphone: The History and Technology of the Gadget that Changed the World*, pp. 42-43; J. Agar, 'Born in the USA', *Constant Touch: A Global History of the Mobile Phone*, 2004.
[169] J. Agar, 'Mob rule: competition and class in the UK', *Constant Touch: A Global History of the Mobile Phone*J. Agar, 'Born in the USA', *Constant Touch: A Global History of the Mobile Phone*.
[170] C. Freeman & F. Louçã, 'The Third Kondratiev Wave: The Age of Steel, Heavy Engineering, and Electrification', *As time goes by: From the Industrial Revolution*, p. 229; C. Zhang & J. Yang, 'The Second Industrial Revolution', *A History of Mechanical Engineering*, 2020, p. 141; Siemens, 'Werner von Siemens: a dynamic, visionary entrepreneur', <https://new.siemens.com/global/en/company/about/history/news/werner-von-siemens.html>, 2020, access: 20 April 2020.

As mentioned earlier, the automobile is regarded as one of the most important inventions of the Second Industrial Revolution. In 1856 the first successful internal combustion engine was produced and was followed by the invention of gas-powered engines.[171] The former was mounted onto a vehicle and "for the first time [it] was freed from the factory floor and adopted for potential use in a vehicle".[172] Experimentations of mounting an engine on a bicycle led to the world's first patent for a motor car being granted to Marcus Benz (to become Mercedes Benz) on 29 January 1886.[173] The French are also accredited with the invention of tyres as the Michelin brothers produced the first set of rubber wheels for a Peugeot in 1895.[174] In 1899 Henry Ford successfully manufactured a new cheaper, lighter and more reliable car and showcased the first true application of mass production techniques.[175] This development was yet another revolutionary contributor to the travel and tourism industry.

Turning to the air, the Wright brothers are regarded as the pioneers of flight.[176] They started their flying experiments with gliders in the early 1900s and turned to powered flight by designing numerous engines to mount on their gliders.[177] After the First World War, some advances were made leading to the first passenger services being conducted in 1919.[178] More experimentation after the Second World War led to the emergence of the global commercial flight industry,[179] another key development for tourism.

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[171] B. Duignan, 'Inventors and Inventions of the Industrial Revolution', <https://www.britannica.com/list/inventors-and-inventions-of-the-industrial-revolution>, n.d., access: 20 April 2020.
[172] L. Goldstone, 'Made in Germany', *Drive! Henry Ford, George Selden, and the race to invent the auto age*, 2016, p. 31.
[173] L. Goldstone, 'Made in Germany', *Drive! Henry Ford, George Selden, and the race to invent the auto age*, p. 34.
[174] L. Goldstone, 'Perfected in France', *Drive! Henry Ford, George Selden, and the race to invent the auto age*, p. 46.
[175] L. Goldstone, 'The self-created man', *Drive! Henry Ford, George Selden, and the race to invent the auto age*, p. 81; C. Freeman & F. Louçã, 'The Fourth Kondratiev Wave: The Great Depression in the Age of Oil, Automobiles, Motorization, and Mass Production', *As time goes by: From the Industrial Revolution*, p. 273.
[176] R. G. Grant, 'Age of the Pioneers: The Prehistory of Flight', *Flight: The Complete History of Aviation*, 2017, p. 15.
[177] R. G. Grant, 'Age of the Pioneers: Fight to be First', *Flight: The Complete History of Aviation*, p. 30.
[178] R. G. Grant, 'The Golden Age: The Shadow of War', *Flight: The Complete History of Aviation*, p. 166.
[179] R. G. Grant, *Flight: The Complete History of Aviation*.

The Internet and computers are regarded as two of the most important developments of the Third Industrial Revolution (1950-2000s). It was the Cold War and the need to decipher wartime codes that led to the development of electronic digital computers. The first general purpose programmable computer, the ENIAC (Electronic Numeric Integrator and Calculator), was made in 1946.[180] International Business Machines Corporation (IBM) also produced several of these first large computers throughout the mid-1900s. Microcomputers, according to M. Castells, caused "a revolution within a revolution", with the first microcomputer being developed in 1971 (Altair).[181] Apple, one of the biggest tech companies in the world, owes its existence to the unsuccessful Altair. The Apple II was the first commercially successful microcomputer and in response to it quickly acquiring a majority of the market share of microcomputers, IBM launched its Personal Computer (PC) in 1981.[182] This would also prove to be a revolution in the context of the tourism industry.

The Internet as we know it today originated as the US government's response to developments during the Cold War.[183] In 1962 what was called a "galactic network" between computers was created that would enable government officials to communicate even if there was an attack on the telephone system.[184] Various improvements were made to the "galactic network" throughout the 1970s and 1980s and in 1989 an application called the World Wide Web (WWW) was developed.[185] The WWW was conceived of to make it easier for universities and research institutes around the world to share information and "to merge the evolving technologies of computers, data networks and hypertext into a powerful and easy to use global information system".[186] The world's first website and webserver, info.cern.ch, provided

[180] R. Fox, 'History of Computers', *Information Technology: An Introduction for Today's Digital* World, 2013, p. 191.
[181] M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, p. 42.
[182] M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, pp. 42-43.
[183] History, 'The invention of the Internet', <https://www.history.com/topics/inventions/invention-of-the-internet>, 30 July 2010, access: 22 April 2020; M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, p. 45.
[184] History, 'The invention of the Internet', <https://www.history.com/topics/inventions/invention-of-the-internet>, access: 22 April 2020.
[185] M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, p. 50; CERN, 'A short history of the Web', <https://home.cern/science/computing/birth-web/short-history-web>, n.d., access: 22 April 2020.
[186] CERN, 'A short history of the Web', <https://home.cern/science/computing/birth-web/short-history-web>, access: 22 April 2020.

researchers with easy access to information from all around the world.[187] New technologies developed in leaps and bounds in the 1990s and enabled the Internet and the WWW to transition into mainstream use. Now that the WWW was available to everyone and easier to navigate, many more improvements were made to it throughout the 1990s and the early 2000s.[188] This was again pivotal to advances in the tourism sector.

The development and improvement of mobile networks continued from the Second Industrial Revolution into the Third and is still underway today. From the 1960s Nordic countries, the UK, Germany, Italy and France all developed their own cellular networks. The result was a highly disjointed cellular Europe, these networks worked well on their own, but could not work together.[189] This disjointed cellular network, and the fact that many of them were reaching their capacity and had poor voice transmission quality, prompted the assembly of the Groupe Spéciale Mobile (GSM). GSM consisted of engineers and administrators from eleven European countries with the goal of developing a universal digital cellular network that could work across borders in Europe. The outcome of this group was the Global System for Mobile Communications (GSM).[190] "Going digital created the opportunity to provide new services such as data transmission…" along with better quality voice transmission.[191] GSM was available commercially in 1992 and by 1996 a total of 103 countries had provided access to GSM networks.[192]

By 2001, not only were networks reaching capacity, but consumers also wanted more from their cell phones – voice, video, images, and Internet access. As such service providers began looking into a third generation (3G) of digital networks. 3G was launched in the USA by late 2001 and was followed by the emergence of what would

[187] CERN, 'A short history of the Web', <https://home.cern/science/computing/birth-web/short-history-web>, access: 22 April 2020.
[188] M. Castells, 'The Information Technology Revolution', *The Rise of the Network Society*, p. 50.
[189] G. Klemens, 'Radio', *The Cellphone: The History and Technology of the Gadget that Changed the World*, pp. 63-67; J. Agar, 'Born in the USA', *Constant Touch: A Global History of the Mobile Phone*, 2013.
[190] G. Klemens, 'Digital Standards', *The Cellphone: The History and Technology of the Gadget that Changed the World*, pp. 103-106; J. Agar, 'GSM: European Union', *Constant Touch: A Global History of the Mobile Phone*.
[191] J. Agar, 'GSM: European Union', *Constant Touch: A Global History of the Mobile Phone*.
[192] J. Agar, 'GSM: European Union', *Constant Touch: A Global History of the Mobile Phone*; J. Agar, 'Digital America Divided', *Constant Touch: A Global History of the Mobile Phone*.

become known as a smartphone – a microcomputer in your pocket capable of making video and voice calls, sending emails, taking photos, playing games and a range of other capabilities as time went on.[193] This again connected the world and hence the tourism domain.

The idea of the so-called 'Smart City' first emerged in the 1970s when the city of Los Angeles produced a policy report on the use of what we know today as 'Big Data' to efficiently manage the city. The city's Community Analysis Bureau collected and processed data on housing, traffic, crime, and poverty, for example, to more efficiently manage the city.[194] More than a decade after the world's first "computer city" emerged, Singapore marketed itself as "an Intelligent Island", referring to the city's use of fibre-optic cables which enabled its citizens to work from home as well as increased communications and the implementation of electronic payments.[195] By the 1990s the term 'Smart City' was popularised and was being used by a number of governments looking to implement similar agendas to simplify the management and functioning of large urban centres. According to Federico Cugurullo this also signified "the modernisation of the infrastructure of the city through the integration of ICT".[196]

In the midst of the 2008 global economic crisis, IBM made the first step towards developing what we know today as the 'Smart City'. The Smarter Planet project was launched to investigate "applying sensors, networks and analytics to urban issues".[197] IBM's CEO spoke of millions of connected 'things' across the world and the millions of bits of data they would create and how these connections and data can be used to make cities more efficient and responsive. IBM's Smarter Planet initiative "prompted forward-thinking leaders and citizens around the world to consider innovative ideas such as traveller-centric transportation and consumer-centric electric power".[198]

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[193] J. Agar, '3G: a cellular world made by standards', *Constant Touch: A Global History of the Mobile Phone*.
[194] F. Cugurullo, 'The origin of the smart city imaginary: From the dawn of humanity to the eclipse of reason', *in* C. Lindner & M. Meissner, *The Routledge Companion to Urban Imaginaries*, 2019, p. 118.
[195] F. Cugurullo, 'The origin of the smart city imaginary: From the dawn of humanity to the eclipse of reason', *in* C. Lindner & M. Meissner, *The Routledge Companion to Urban Imaginaries*, p. 118.
[196] F. Cugurullo, 'The origin of the smart city imaginary: From the dawn of humanity to the eclipse of reason', *in* C. Lindner & M. Meissner, *The Routledge Companion to Urban Imaginaries*, p. 118.
[197] Verdict, 'History of Smart Cities: Timeline', <https://www.verdict.co.uk/smart-cities-timeline/>, 06 July 2020, access: 09 June 2021.
[198] IBM, 'Icons of Progress: Smarter Planet', <https://www.ibm.com/ibm/history/ibm100/us/en/icons/smarterplanet/>, n.d., access: 09 June 2021.

In Europe, the EU Electricity Directive encouraged all member states to modernise their electricity distribution networks through the implementation of smart grids to encourage electricity efficiency.[199] Barcelona hosted the first Smart City Expo World Congress (SCEWC) in 2011 which was an "international summit of discussion about the link between urban reality and technological revolution".[200] Representatives from across the world gather at this annual Expo to share ideas, knowledge, and new developments in the Smart Cities sphere. Since these developments many cities around the world have declared themselves 'Smart Cities', such as Barcelona, Vienna, Amsterdam, London, Toronto, and Hong Kong, to name only a few.

Despite the seemingly widespread acceptance of the 'Smart City' and the importance of making cities more intelligent to manage their functioning effectively and even proactively, there is no universal definition of a 'Smart City'. The myriad Smart City definitions have greatly contributed to the unorganised implementation of the concept. Anders Lisdorf argues that the "development is done through scattered pilots, grants, and ad-hoc partnerships, inspired by political winds that blew favourably for one particular solution regardless of its merits to the city and its residents".[201] This further adds to the ambiguity of what exactly constitutes a Smart City. According to Michael R. Wade and Michel P. Pfäffli a Smart City is "an urban area that has become more efficient and/or more environmentally friendly and/or more socially inclusive through the use of digital technologies".[202]

To further complicate the matter, the concept of "Smart Sustainable Cities" emerged more recently. Rasha F. Elgazzar and Rania F. El-Gazzar attribute the emergence of the concept to the fact that there is no universally agreed on definition of a Smart City as well as the fact that the social aspects of the Smart City have been neglected by many initiatives because of a focus on using ICTs to address environmental concerns

[199] European Union, 'Article 27', *Directive 2009/72/EC of the European Parliament and of the Council concerning common rules for the internal market in electricity*, 2009.
[200] SCEWC, 'About us', <https://www.linkedin.com/company/smartcityexpoworldcongress>, 2021, access: 09 June 2021.
[201] A. Lisdorf, 'Introduction', *Demystifying Smart Cities: Practical perspectives on how cities can leverage the potential of new technologies*, 2020, p. 5.
[202] M. R. Wade & M. P. Pfäffli, 'What is a Smart City anyways?', <https://www.imd.org/research-knowledge/articles/what-is-a-smart-city-anyways/>, May 2016, access: 09 June 2021.

only.[203] The International Telecommunications Union (ITU) defines a Smart Sustainable City (SSC) as

> an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.[204]

The ITU further adds that:

> information and communication technologies (ICTs) are merged with traditional infrastructures. ICTs have a crucial role in [Smart Sustainable Cities] as it acts as the platform for the aggregation of information and data to help enable an improved understanding of how the city is functioning in terms of resource consumption and services. ICT based services in SSC include intelligent transport systems, which can significantly improve urban mobility.[205]

Various Smart Cities have been developed around the world with varying infrastructure and varying degrees of success. However, the Smart City concept remains relatively popular, and many Smart Cities are now also popular tourism destinations. The Smart City is also integral to the Tourism 4.0 initiative.

Tourism and the Industrial Revolutions

There are many factors that contributed to the rise of the modern tourism industry, but travel would not be possible without the advances made in modes of transport as well as other technologies evident in the various Industrial Revolutions discussed above. It can be argued that it was the transport revolution that contributed to the evolution of the tourism industry, perhaps more than anything else. This section will discuss how the development in modes of transport and other technologies made the emergence of the modern tourism industry possible. On another level, it was advances in Information and Communication Technologies (ICTs) that made it possible for tourism to further evolve into the global industry it is today. This section will therefore discuss

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[203] R. F. Elgazzar & R. F. El-Gazzar, 'Smart Cities, Sustainable Cities, or Both? A Critical Review and Synthesis of Success and Failure Factors', *Proceedings of the 6th International Conference on Smart Cities and Green ICT Systems (SMARTGREENS 2017)*, p. 253.
[204] ITU, 'Smart Sustainable Cities at a glance', <https://www.itu.int/en/ITU-T/ssc/Pages/info-ssc.aspx>, n.d., access: 09 June 2021.
[205] ITU, 'Smart Sustainable Cities at a glance', <https://www.itu.int/en/ITU-T/ssc/Pages/info-ssc.aspx>, access: 09 June 2021.

both transport and ICTs and their impact on the tourism industry, including steamships, railways, automobiles, air travel, the Internet, and related technologies.

It is a well-known fact that modern tourism started with the Grand Tour of the eighteenth century.[206] The Grand Tour however, was essentially the domain of wealthy middle-class men and women and the aristocracy because, as the name suggests, it was indeed a "grand" endeavour lasting several months or even years.[207] The Napoleonic Wars put an end to the Grand Tour as it became increasingly more dangerous to travel across continental Europe.[208] However, this did not mean that people did not travel in their own countries. Travel increasingly came to be seen as good for personal health, and doctors started promoting taking some time away from the smoke-filled industrial centres of Britain in the early 1800s, into the rural countryside.[209] After the Napoleonic Wars "travelling in groups was facilitated … by a change in transport".[210]

The use of steam power in ships occurred almost a decade before it was used for trains. By 1816 steamships were conveying passengers on all major rivers in the UK. Soon, the potential for recreational travel in these ships was realized. The steamship's speed and the ability to travel on deck and observe the passing scenery was part of the attraction of travelling on these for a day excursion. Passengers were also for the first time allowed to take refreshments with them while travelling. According to John Armstrong and David M. Williams "all such features encouraged a much wider public than ever before to view travel as a recreational activity".[211]

As indicated in the previous section, advances in the steam engine were primarily made to improve the transportation of coal. However, much to the surprise of railway companies, in the early years of the railways, passenger conveyance far exceeded

[206] E. G. E. Zuelow, 'Beginnings: The Grand Tour', *A History of Modern Tourism*, 2016, pp. 14-29.
[207] E. G. E. Zuelow, 'Beginnings: The Grand Tour', *A History of Modern Tourism*, pp. 15-16.
[208] E. G. E. Zuelow, 'Beginnings: The Grand Tour', *A History of Modern Tourism*, p. 29.
[209] E. G. E. Zuelow, 'Beginnings: The Grand Tour', *A History of Modern Tourism*, pp. 41-43.
[210] J. Simmons, 'Railways, Hotels, and Tourism in Great Britain 1839-1914', *Journal of Contemporary History* 19(201), 1984, p. 207.
[211] J. Armstrong & D. M. Weaver 'The Steamboat and Popular Tourism', *The Impact of Technological Change: The Early Steamship in Britain*, 2011, p. 79.

that of the conveyance of goods.[212] The railways afforded people much more mobility, and slightly more comfort and luxury, than the former horse-drawn carriages and coaches. But in their pioneering years, the railways were still only for those from the higher social classes and they only offered first and second-class carriages.[213] This gradually started to change as railway companies introduced third-class carriages, undoubtedly recognizing that they would have a much larger clientele-base in the working class who, from the mid-nineteenth century, also had increased leisure time.[214] It is not exactly clear who started promoting railway excursions first - the railway companies or individuals such as the acclaimed Thomas Cook. Thomas Cook (1808-1892) organised his first railway excursion in 1841, but according to Phillip Bagwell the Liverpool and Manchester Railway organised an excursion for 120 passengers already in 1831.[215] Regardless of who pioneered the railway excursion, they were extremely popular. As Jack Simmons notes, "the railways played an essential, here and there an originating, part in [tourism]".[216] This soon gave rise to hotels, some owned privately, and others owned by the railway companies. To further extend their business in tourism, railway companies hired their own travel agents and published guidebooks for all their excursions, trips, and tours.[217]

As indicated, the earliest automobiles were essentially bicycles fitted with an engine, and thus it is fitting to briefly consider the bicycle and tourism before discussing the effect of the automobile on tourism. Eric Zuelow points out that bicycles "allowed everyone from the top of the social pyramid to the bottom to venture into the countryside, to ride to adjacent towns and to participate in cycling clubs that organized regular group outings as well as more extended excursions to significant sites/sights".[218] Britain, as Bagwell notes, "lagged behind Germany, France and the

[212] J. Simmons, 'Railways, Hotels, and Tourism in Great Britain 1839-1914', *Journal of Contemporary History* 19(201), p. 201; P. Bagwell, 'The Economic and Social Effects of Railways', *The Transport Revolution, 1770-1985*, 1989, p. 95.
[213] P. Bagwell, 'The Economic and Social Effects of Railways', *The Transport Revolution, 1770-1985*, p. 96.
[214] E. G. E. Zuelow, 'The Age of Steam', *A History of Modern Tourism*, p. 54; P. Bagwell, 'The Economic and Social Effects of Railways', *The Transport Revolution, 1770-1985*, p. 96.
[215] P. Bagwell, 'The Economic and Social Effects of Railways', *The Transport Revolution, 1770-1985*, p. 115.
[216] J. Simmons, 'Railways, Hotels, and Tourism in Great Britain 1839-1914', *Journal of Contemporary History* 19(201), p. 207.
[217] J. Simmons, 'Railways, Hotels, and Tourism in Great Britain 1839-1914', *Journal of Contemporary History* 19(201), pp. 201-222.
[218] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, p. 113.

[USA] in the development of motor transport".[219] British tourism only started to change in the mid-twentieth century when car production became standardized and cars became more affordable.[220] Just as the steamships and railway companies before them, motor clubs and associations produced guidebooks for all the "must-see sites" in the country and very quickly "the English Sunday became much less an occasion for church going and more an opportunity for a drive out of the smoky cities into the open country or down by the sea".[221] For those who could not afford a car there were frequent bus services to all the major locations and as more and more people travelled, more and more attractions, resorts, hotels and road-side cafés were developed.[222]

The American tourism industry was altered by the car much earlier than the British tourism industry. Some argue it was as early as 1913 with the mass production of Henry Ford's Model T, that Ford was "responsible for the radical change of the whole concept of personal transportation".[223] Motor clubs and associations in the USA also published guidebooks and manuals for motorists on the "ought to be seen" attractions, recommended accommodation and routes to be taken.[224] Motorists would camp on the roadside and make frequent stops at the roadside diners that seemed to appear overnight to cater to the ever-increasing number of cars on the road. Roads in national parks were also constructed with the car in mind, "carefully designed to frame the views seen by motorists".[225]

In France, the Michelin brothers also produced guidebooks for motorists. The image of France as a "foodie destination" can be owed to these two brothers as their guidebooks told motorists where to find the best cuisine in the country.[226] It was first published in 1900 primarily to market Michelin tyres, but soon turned into an essential

[219] P. Bagwell, 'The Development of Motor Transport 1885-1939', *The Transport Revolution, 1770-1985*, p. 187.
[220] P. Bagwell, 'The Development of Motor Transport 1885-1939', *The Transport Revolution, 1770-1985*, pp. 204-219.
[221] P. Bagwell, 'The Development of Motor Transport 1885-1939', *The Transport Revolution, 1770-1985*, p. 219.
[222] P. Bagwell, 'The Development of Motor Transport 1885-1939', *The Transport Revolution, 1770-1985*, pp. 219-220.
[223] A. Hjalager, '100 Innovations that transformed tourism', *Journal of Travel Research* 54(1), 2015, p. 10.
[224] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, pp. 123-126.
[225] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, p. 121.
[226] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, p. 123.

tourist product. They also used stars to rate hotels and inns as well as a range of other symbols for various other amenities. The guides were so popular that it is said that when the Allies arrived on the beaches of Normandy, they were carrying the Michelin guidebooks because they were "assured that they were the best available to help navigate the newly liberated France".[227] Regardless of when and where cars were introduced into everyday life, they afforded people much more mobility and freedom, further increasing the range of activities and attractions developed purely for consumption by tourists.

In 1914, Claude Graham White said that "…what railways have done for nations, airways will do for the world".[228] Today, the airline industry is one of the biggest industries in the world, but this was not always the case as early airplanes were quite uncomfortable to travel in as they were merely converted aircraft.[229] In Europe, the first passenger airplane service of the post-First World War era was conducted by the German airline *Deutsche Luft-Reederei* (*Lufthansa* from 1934) in 1919.[230] Not long after, the first daily international flights took place between London and Paris. According to Zuelow, in just two months about 10 000 tourists were flown to Blackpool, the popular English seaside resort.[231] Air travel continued even with the outbreak of the Second World War. The Cold War necessitated more advances in airplane design and navigation which also gave rise to improved and expanded commercial aviation. By the late twentieth century "more people were crossing the Atlantic by plane than by boat" and "people made journeys they would never previously have made to places they would have never visited", bringing the world within reach to anyone who could afford a plane ticket.[232] This in itself was a huge boost to travel and tourism.

Prior to the automated booking systems used today, it could take up to an hour to book a flight when the first passenger flights were made available in the early to mid-1900s. The first reservation systems were operated manually by reservations agents, there were, however, frequent inconsistencies and more often than not flights were both

[227] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, p. 124.
[228] R. G. Grant, 'Passengers now Boarding', *Flight: The Complete History of Aviation*, p. 135.
[229] R. G. Grant, 'Passengers now Boarding', *Flight: The Complete History of Aviation*, p. 135.
[230] R. G. Grant, 'The Golden Age: Passengers Now Boarding', *Flight: The Complete History of Aviation*, p. 134.
[231] E. G. E. Zuelow, 'Bicycles, automobiles, and aircraft', *A History of Modern Tourism*, p. 129.
[232] R. G. Grant, 'Passengers now Boarding', *Flight: The Complete History of Aviation*, p. 135.

over- and under booked.[233] It was only in the 1950s that companies such as American Airlines and IBM started exploring the possibility of an automated booking system that would link a passenger's name to a seat booking. The first digital booking system, SABER (Semi-Automatic Business Environment Research) was launched in 1961 and was later renamed SABRE (Semi-Automatic Business Research Environment) and by the end of the 1980s SABRE was operated in over 130 000 travel agencies world-wide, making it one of the first Computer Reservation Systems (CRS). SABRE separated from American Airlines in 2000 to become Sabre Holdings, an independent public company. Today, Sabre is described as "the leading technology company powering the travel industry".[234] Multiple European CRS, eventually Global Distributions Systems (GDS), also developed throughout the 1960s to 1980s. Amadeus absorbed multiple smaller GDS that emerged in an effort to combat the monopolization of the market by larger systems, this led to Amadeus becoming the largest GDS in the world in 1993.[235]

In the 1980s Sabre released easySabre which granted consumers direct access to the Sabre system via their personal computers, the first online travel reservation system. easySabre provided consumers with information on airline, hotel and car rental information.[236] The widespread use of the Internet in the 1990s meant that GDS and travel agencies could now be operated online which then prompted the emergence of Online Travel Agencies (OTAs). OTAs enabled tourists to book flights from their personal computers and also enabled the creation of electronic tickets. Sabre launched Travelocity in 1996, not long after Microsoft launched Expedia, the second biggest OTA in the world today. Throughout the 2000s multiple other OTAs, such as Priceline, Booking.com and Worldspan, emerged. With the emergence of

[233] D. G. Copeland & J. L. McKenny, 'Airline Reservations Systems: Lessons from History', *MIS Quarterly* 12(3), 1988, p. 354.
[234] AltexSoft, 'History of flight booking: CRSs, GDS Distribution, travel agencies, and online reservations', <https://www.altexsoft.com/blog/travel/history-of-flight-booking-crss-gds-distribution-travel-agencies-and-online-reservations/>, 12 April 2019, access: 30 April 2020; D. G. Copeland & J. L. McKenny, 'Airline Reservations Systems: Lessons from History', *MIS Quarterly* 12(3), p. 361; Sabre, *The Sabre Story*, n.d.
[235] Altexsoft, 'History of flight booking: CRSs, GDS Distribution, travel agencies, and online reservations', <https://www.altexsoft.com/blog/travel/history-of-flight-booking-crss-gds-distribution-travel-agencies-and-online-reservations/>, access: 30 April 2020.
[236] Sabre, *The Sabre Story*, n.d; M. Gast, 'Travelocity.com: A Glimpse through History', <https://www.breakingtravelnews.com/news/article/btn20031222221110443/>, 23 December 2003, access: 04 November 2020.

smartphones and 3G, OTAs launched smartphone friendly websites and applications (apps), further enabling personalisation of the booking process.[237] It did not take long before "travel providers quickly recognised the immense value the Internet and the web provide to connect with travellers all over the globe".[238] The Internet provides global dissemination of information, integration of websites and databases, customised offerings, enables interactive communication between tourists and travel providers, the ability to make bookings themselves (fully online) and it cuts out intermediaries. It therefore made the booking process less time consuming, easier, and much more customisable,[239] eventually revolutionising the tourism sector.

In 2013 Dan Wang and Daniel R. Fesenmaier argued that "mobile technology such as smartphones has the potential to transform the travel experience in many ways", and they certainly have.[240] Smartphones have evolved exponentially since 2013. Their reliable fast mobile access to the Internet (e.g., 4G and 5G), high quality locations services and cameras that support other technologies such as Augmented Reality (AR) have made travel easier in many ways. Tourists are now able to translate something by just pointing their phones at text (AR and other apps), services such as Google Maps make navigating a strange city significantly easier and smartphones' advanced location services mean that apps can make personalised recommendations with pinpoint accuracy to the tourist's location.[241]

Social historian John K. Walton notes that "just as factory industry, steam power, modern means of transport and other innovations of the Industrial Revolution era trace their origins to developments in Britain … so modern tourism is another familiar set of

[237] Sabre, *The Sabre Story*, n.d; Altexsoft, 'History of flight booking: CRSs, GDS Distribution, travel agencies, and online reservations', <https://www.altexsoft.com/blog/travel/history-of-flight-booking-crss-gds-distribution-travel-agencies-and-online-reservations/>, access: 30 April 2020.
[238] P. J. Benckendorff, P. J. Sheldon & D. R. Fesenmaier, 'The Internet and the Tourist', *Tourism Information Technology*, 2014, p. 94.
[239] P. J. Benckendorff, P. J. Sheldon & D. R. Fesenmaier, 'The Internet and the Tourist', *Tourism Information Technology*, pp. 94-99.
[240] D. Wang & D. R. Fesenmaier, 'Transforming the Travel Experience: The Use of Smartphones for Travel', *in* L. Cantoni & Z. Xiang (eds.), *Information and Communication Technologies in Tourism 2013: Proceedings of the International Conference in Innsbruck, Austria, January 22-25, 2013*, 2013, p. 59.
[241] Business Insider, 'The Mobile Tourist: How Smartphones are Shaking Up the Travel Market', <https://www.businessinsider.com/the-mobile-tourist-how-smartphones-are-shaking-up-the-travel-market-2013-2?IR=T>, 16 February 2013, access: 04 November 2020; Japan Today, 'Smartphones have transformed tourist experience', <https://japantoday.com/category/features/travel/smartphones-have-transformed-tourist-experience>, 24 February 2016, access: 04 November 2020.

phenomena that, for better and worse, the British gave to the world".[242] Regardless of whether it was an Industrial Revolution, Information Revolution or Technology Revolution, the inventions that emerged over the last two and a half centuries brought about unprecedented change, quite literally revolutionising the way we work, communicate and travel. Further revolutionising the way we work, communicate and travel is the emerging Fourth Industrial Revolution (4IR). This Industrial Revolution and its impact on the tourism industry is discussed in a separate section of this chapter as this is one of the main focus areas of this dissertation.

The Fourth Industrial Revolution (4IR)

While some may like to accredit founder and executive chairman of the World Economic Forum (WEForum), Klaus Schwab, with coining the term Fourth Industrial Revolution, it can rather be traced to a German professor. In 2011 Professor Wolfgang Wahlster used the term "Industrie 4.0" in his opening address of the Hannover Fair.[243] Industry 4.0 is described as "the coming together of cyber and physical networks with the goal to create truly autonomous systems".[244] Many regard Industry 4.0 as another Industrial Revolution that will completely alter the way we work, live and travel. When the term "Industrie 4.0" was introduced in 2011 it referred to the German government's manufacturing strategy which "aims to drive digital manufacturing forward by increasing digitisation and the interconnection of products, value chains and business models".[245] In recent years it has been more commonly referred to as the 4IR and is now synonymous with Artificial Intelligence (AI), Virtual Reality (VR) and Augmented Reality (AR), Blockchain, Big Data, the Internet of Things (IoT), High-Performance Computing (HPC) and Cloud Computing as its enabling technologies.[246]

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[242] J. K. Walton, 'The seaside resort: a British cultural export', <https://archives.history.ac.uk/history-in-focus/Sea/articles/walton.html>, 2005, access: 29 April 2020.
[243] B. Lydon, 'The 4th Industrial Revolution, Industry 4.0, unfolding at Hannover Messe 2014', <https://www.automation.com/en-us/articles/2014-1/the-4th-industrial-revolution-industry-40-unfoldin>, 19 February 2014, access: 14 September 2020.
[244] i4.0today, 'The Digital Revolution: An Insight into Industry 4.0', <http://i40today.com/why-industry-4-0/>, 2020, access: 14 September 2020.
[245] D. Klitou, J. Conrades & M. Rasmussen, 'A strategic initiative for pushing forward digital transformation', *Digital Transformation Monitor – Germany: Industrie 4.0*, 2017, p. 3.
[246] S. Z. Korže, 'From Industry 4.0 to Tourism 4.0', *Innovative Issues and Approaches in Social Sciences* 12(3), 2019, pp. 29-45; J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, 2020, pp. 229-253.

The IoT is the most ubiquitous of these enabling technologies. Although it is regarded as the main driver of the 4IR, it has been in use since 1999. The entrepreneur Kevin Ashton coined the term in a presentation on connecting devices by using radio-frequency identification (RFID) tags. Since then, the definition of the term has changed multiple times, so much so that there is no agreed upon universal definition of the IoT.[247] The term generally refers to devices and physical objects that are connected through the Internet to exchange data with other devices and objects.[248] Just as its definition has changed and expanded, so has its uses. Today, the IoT is used in manufacturing, homes, energy applications, health care and cities (Smart Cities).[249]

AI is enabled by and works in unison with the IoT. AI was invented in 1950 by Alan Turing who is widely regarded as one of the founding fathers of computer science. Turing's "famous 'Turing test' is still used as a benchmark for examining whether a machine can be considered to be thinking".[250] Owing to technology not being advanced enough at the time of Turing's research, AI did not truly develop until the mid-2000s. AI is a "wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence".[251] In recent years AI has become much more prevalent and is used much wider than people realise. AI is used for Smart Assistants, such as Apple's Siri, robots, chatbots on websites and even for recommendations on what to watch or listen to on Netflix and Spotify.[252]

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[247] SAS Institute, 'The Internet of Things (IoT): What it is and why it matters', <https://www.sas.com/en_za/insights/big-data/internet-of-things.html>, 2020, access: 14 September 2020; F. Wortmann & K. Flüchter, 'Internet of Things: Technology and Value Added', *Business Information Systems Engineering* 57(3), 2015, pp. 221-224.

[248] Oracle South Africa, 'What is the Internet of Things?', <https://www.oracle.com/za/internet-of-things/what-is-iot.html>, n.d., access: 14 September 2020.

[249] F. Wortmann & K. Flüchter, 'Internet of Things: Technology and Value Added', *Business Information Systems Engineering* 57(3), pp. 221-224; Oracle South Africa, 'What is the Internet of Things?', <https://www.oracle.com/za/internet-of-things/what-is-iot.html>, access: 14 September 2020.

[250] K. Adam, 'Britain honours computer scientist Alan Turing as the face of their new bank note', <https://www.sciencealert.com/a-founder-of-computer-science-alan-turing-now-graces-the-british-50-pound-note>, 16 July 2019, access: 14 September 2020.

[251] Builtin, 'Artificial Intelligence', <https://builtin.com/artificial-intelligence>, n.d., access: 23 January 2020.

[252] Builtin, 'Artificial Intelligence', <https://builtin.com/artificial-intelligence>, access: 23 January 2020; SAS Institute, 'Artificial Intelligence: what it is and why it matters', <http://www.sas.com/en_za/insights/analytics/what-is-artificial-intelligence.html>, n.d., access: 23 January 2020.

Further supported by the IoT and AI is Blockchain technology and Big Data. Blockchain is a "time-stamped series of immutable records of data that is managed by a cluster of computers not owned by any single entity".[253] The name is derived from the fact that the data is stored in blocks and connected to the block before and after it, thereby creating a chain of blocks. Blockchain technology anonymises and encrypts all data it processes, this along with the fact that no one owns this data is what makes Blockchain so attractive to many companies and users.[254] It has a multitude of uses such as insurance claims processing, Internet payments, health care, supply chain management and passports,[255] all of which impact on the travel and tourism industry.

Big Data on the other hand are large data sets that cannot be processed by traditional data-processing equipment and software.[256] Big Data started to take shape around 2005 when it was realised how much data people produce on a daily basis by simply using social media or making online purchases. A range of service providers were founded for the sole purpose of processing these huge amounts of data for those companies that were unable to do so. The IoT, ML and AI also contribute to this mass amount of data by collecting usage patterns and then using this to personalise customer experiences. Processing Big Data therefore requires HPC and more recently, Cloud Computing.[257] HPC refers to the aggregation of computer power to perform tasks traditional computers, such as a desktop computer, would not be able to do.[258] According to Microsoft, Cloud Computing is

> the delivery of computing services – including servers, storage, databases, networking, software, analytics, and intelligence – over the

[253] R. Mitra, 'Complete Guide to Big Data and Blockchain', <https://blockgeeks.com/guides/bid-data-and-blockchain/>, 24 April 2020, access: 23 January 2020.
[254] R. Mitra, 'Complete Guide to Big Data and Blockchain', <https://blockgeeks.com/guides/bid-data-and-blockchain/>, access: 23 January 2020; Oracle South Africa, 'What is Blockchain?', <https://www.oracle.com/za/blockchain/what-is-blockchain.html>, n.d., access: 14 September 2020.
[255] A. Rosic, '17 Blockchain applications that are transforming society', <https://blockgeeks.com/guides/blockchain-applications/>, 13 August 2020, access: 14 September 2020.
[256] Oracle South Africa, 'What is Big Data', <https://www.oracle.com/za/big-data/what-is-big-data.html>, n.d., access: 14 September 2020.
[257] Oracle South Africa, 'What is Big Data', <https://www.oracle.com/za/big-data/what-is-big-data.html>, access: 14 September 2020.
[258] The National Institute for Computational Sciences, 'What is HPC?', <https://www.nics.tennessee.edu/computing-resources/what-is-hpc>, n.d., access: 14 September 2020; United States Geological Survey, 'What is High Performance Computing?', <https://www.usgs.gov/core-science-systems/sas/arc/about/what-high-performance-computing>, n.d., access: 14 September 2020.

> Internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale.[259]

There are many advantages to Cloud Computing. It eliminates the cost of having to set up a data centre, operates on a global scale, and the data is instantly accessible, reliable and secure.[260] Again, the impact of this on the way tourism operates is phenomenal.

Although the technology behind modern AR has only been developed in recent years, the idea of reality being enhanced by digitally augmented elements dates back to the early twentieth century. It was first referred to in a sci-fi novel in 1901, the British used it in their military aircraft during WWII and the term AR was coined in 1990.[261] In 2000 "ARQuake", the first outdoor mobile AR game, was launched at the International Symposium on Wearable Computers. The first known AR tourism application, "Wikitude AR Travel Guide", was launched in 2008.[262]

Similar to AR, the idea of VR was explored in a sci-fi novel in the 1930s. The term VR was coined in 1987 and throughout the 1980s and early 1990s multiple VR products were developed. However, most of these were not commercially successful due to software difficulties and poor user experience.[263] Just as AR, VR is also used in medicine, retail, real estate, architecture, education and many more fields including tourism.[264] In between AR and VR is another digitally mediated reality known as Mixed Reality (MR). (See figure 1) Microsoft defines MR as "a blend of physical and digital

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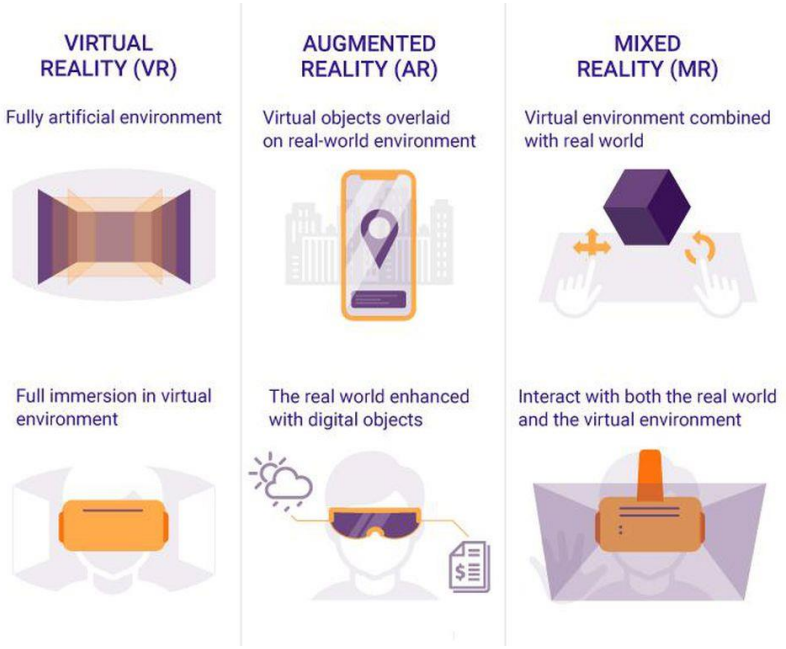
[259] Microsoft Azure, 'What is Cloud Computing?: A beginner's guide', <https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/>, n.d., access: 15 September 2020.
[260] Microsoft Azure, 'What is Cloud Computing?: A beginner's guide', <https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/>, access: 15 September 2020.
[261] D. R. Berryman, 'Augmented Reality: A Review', *Medical Reference Services Quarterly* 31(2), 2012, pp. 213-214; J. Carmigniani & B. Fuhrt, 'Augmented Reality: An Overview', *in* B. Fuhrt (ed.), *Handbook of Augmented Reality*, 2011, p. 3; R. Corps, 'A brief history of Augmented Reality', <http://adsreality.com/history-of-augmented-reality-infographic/>, 2017, access: 16 January 2021.
[262] J. Carmigniani & B. Fuhrt, 'Augmented Reality: An Overview', *in* B. Fuhrt (ed.), *Handbook of Augmented Reality*, p. 4; D. R. Berryman, 'Augmented Reality: A Review', *Medical Reference Services Quarterly* 31(2), p. 214; C. Yianni, 'Infographic: History of Augmented Reality', <https://www.blippar.com/blog/2018/06/08/history-augmented-reality>, 08 June 2018, access: 16 January 2021.
[263] Virtual Reality Society, 'History of Virtual Reality', <https://www.vrs.org.uk/virtual-reality/history.html>, n.d., access: 16 January 2021; The Franklin Institute, 'History of Virtual Reality', <https://www.fi.edu/virtual-reality/history-of-virtual-reality>, n.d., access: 16 January 2021; S. Thompson, 'VR applications: 21 Industries already using Virtual Reality', <https://virtualspeech.com/blog/vr-applications>, 2020, access: 16 January 2021.
[264] S. Thompson, 'VR applications: 21 Industries already using Virtual Reality', <https://virtualspeech.com/blog/vr-applications>, 11 December 2020, access: 16 January 2021.

worlds, unlocking the links between human, computer, and environment interaction".[265] Intel further explains MR as the fusion of digital elements with the physical environment enabling you to interact with both the digital elements and elements of the physical environment.[266] According to Julia Tokareva there are two types of MR: one "that starts with the real world" and one "that starts with the virtual world".[267] The first is similar to AR in that it combines the real world with virtual elements, but different from AR in that the user can interact with these virtual elements. The second type of MR is similar to VR, a virtual world is anchored to and replaces the real world, but the user is still able to interact with both worlds. Just as with VR, MR also works with an HMD, an example being Microsoft's HoloLens. The HoloLens enables users to place, manipulate and interact with virtual objects in any environment.[268] Some may refer to Extended Reality (XR) when discussing the use of AR, VR or MR which has led to some confusion. XR "is the umbrella term used for VR, AR and MR as well as all future realities such technology might bring [and] covers the full spectrum of real and virtual environments".[269] As the technologies that could potentially enable these future realities are still in development, the term XR still remains somewhat within the realm of science fiction.

[265] Microsoft, 'What is Mixed Reality?', <https://docs.microsoft.com/en-us/windows/mixed-reality/discover/mixed-reality>, 26 August 2020, access: 10 February 2021.
[266] Intel, 'Demystifying the Virtual Reality landscape'. <https://www.intel.com/content/www/us/en/tech-tips-and-tricks/virtual-reality-vs-augmented-reality.html>, n.d., access: 10 February 2021.
[267] J. Tokareva, 'The difference between Virtual Reality, Augmented Reality and Mixed Reality', <https://www.forbes.com/sites/quora/2018/02/02/the-difference-between-virtual-reality-augmented-reality-and-mixed-reality/?sh=3160d61d2d07>, 2018, access: 10 February 2021.
[268] J. Scribani, 'What is Extended Reality (XR)?', <https://www.visualcapitalist.com/extended-reality-xr/>, 16 January 2019, access: 10 February 2021; B. Marr, 'What is Extended Reality technology? A simple explanation for anyone', <https://www.forbes.com/sites/bernardmarr/2019/08/12/what-is-extended-reality-technology-a-simple-explanation-for-anyone/?sh=48e9c8f97249>, 12 August 2019, access: 10 February 2021.
[269] J. Scribani, 'What is Extended Reality (XR)?', <https://www.visualcapitalist.com/extended-reality-xr/>, access: 10 February 2021.

Figure 1: Digitally mediated realities[270]



Taking technologies to another level is the introduction of Smart Cities. According to the 2014 report, *Mapping Smart Cities in the EU*, the countries with the highest number of Smart Cities are the UK, Spain, Italy, Austria, Denmark, Sweden, Finland, Estonia, and Slovenia.[271] The EU states that:

> a Smart City goes beyond the use of [ICT] for better resource use and less emissions. It means smarter urban transport networks, upgraded water supply and waste disposal facilities and more efficient ways to light and heat buildings. It also means a more interactive and responsive city administration, safer public spaces and meeting the needs of an ageing population.[272]

Based on a study conducted by the European Parliament's in-house think tank, most Smart Cities make use of technology for energy efficiency, pollution, and improvement of public transport by redirecting traffic and lessening commuting time.[273] According to the think tank there are 240 Smart Cities in the EU and almost all cities in the Nordic States are Smart Cities. Regardless of which cities are the EU's leading Smart Cities,

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[270] J. Tokareva, 'The difference between Virtual Reality, Augmented Reality and Mixed Reality', <https://www.forbes.com/sites/quora/2018/02/02/the-difference-between-virtual-reality-augmented-reality-and-mixed-reality/?sh=3160d61d2d07>, access: 10 February 2021.
[271] C. Manville, G. Cochrane, J. Cave, J. Millard, J. K, Pederson, R. K. Thaarup, A. Liebe, M. Wissner, R. Massink & B. Kotterink, 'Mapping Smart Cities of Europe', *Mapping Smart Cities in the EU*, 2014, p. 18.
[272] EU, 'Smart Cities', <https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en>, n.d., access: 10 June 2021.
[273] EURACTIVE, *How many Smart Cities are there in Europe?*, n.d., access: 18 June 2021.

all are also regarded as top tourist cities. In 2016, the ITU Telecommunications Standardisation Sector's (ITU-T) director, Chaesub Lee, argued that "Smart Sustainable Cities will contribute to the achievement of the [SDGs] by leveraging information and communication technologies [ICT] to set cities on a development course characterized by environmental sustainability, resilience, and equitable social and economic growth".[274]

The combination of all these technologies form the driving force of this new and emerging Fourth Industrial Revolution. The ultimate goal is to utilise these technologies, specifically the IoT, AI, HPC and Cloud Computing, to make industry more efficient. However, with this promise of increased efficiency comes the concern of increased threat to security of jobs and personal information. The digitalisation and automation of many industries means that millions of jobs could potentially be rendered redundant.[275] It has been predicted that as many as 800 million jobs in over 42 countries could be displaced.[276] However, just as in the First Industrial Revolution home weavers and spinners had to find work in factories because of the relative automation of the cotton industry, so too will many employees of today find new employment opportunities. The WEForum's 2016 *The Future of Jobs* report states that "65% of children entering primary school today will ultimately end up working in completely new job types that do not yet exist".[277]

In line with this, Klaus Schwab says the 4IR has the power to completely disrupt society, stating that "the scale and breadth of the unfolding technological revolution

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[274] C. Lee, 'Foreword', *Shaping smarter and more sustainable cities: Striving for Sustainable Development Goals*, 2016, p. v.

[275] K. Schwab & R. Samans, 'Preface', *in* T. A. Leopold, V. Ratcheva & S. Zahidi, *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, 2016, p. v; J. Menon, 'Why the Fourth Industrial Revolution could spell more jobs – not fewer', <https://www.weforum.org/agenda/2019/09/fourth-industrial-revolution-jobs/>, 17 September 2019, access: 03 February 2021; MIT Technology Review, 'The promise of the Fourth Industrial Revolution', <https://www.technologyreview.com/2020/11/19/1012165/the-promise-of-the-fourth-industrial-revolution/>, 19 November 2020, access: 03 February 2021; Business & Innovation Magazine, 'Jobs of the Future: The impact of the Fourth Industrial Revolution on employment', <https://www.businessinnovationmag.co.uk/jobs-of-the-future-the-impact-of-the-fourth-industrial-revolution-on-employment/>, 31 January 2020, access: 03 February 2021.

[276] J. Menon, 'Why the Fourth Industrial Revolution could spell more jobs – not fewer', <https://www.weforum.org/agenda/2019/09/fourth-industrial-revolution-jobs/>, access: 03 February 2021.

[277] T. A. Leopold, V. Ratcheva & S. Zahidi, 'The Future of Jobs and Skills', *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, p. 3.

will usher in economic, social and cultural changes of such phenomenal proportions that they are almost impossible to envisage".[278] Given this projected scale of disruption it is important that the world be "proactive in shaping this technology and disruption" which "requires global cooperation and a shared view of how technology is reshaping our economic, social, cultural, and individual lives" [279], as well as the tourism domain. Because the 4IR is still unfolding, we do not know its full scale and true impact and as such, many experts have urged employees to adapt their skill sets for this new digital era to remain employable and prevent job loss or displacement.[280]

The Fourth Industrial Revolution and tourism

As is evident, the modern tourism industry is built on technology and innovation, it has therefore, since its inception, been one of the first industries to adopt the new and developing technologies. The enabling technologies of the 4IR have been in use in the tourism industry for a number of years. According to the UNTWO

> the use of technologies including the [IoT], location-based services, [AI], [AR and VR], and blockchain technology … has resulted in a tourism offer that is more attractive, efficient, inclusive, and economically, socially and environmentally sustainable than its predecessor. It has also facilitated innovation and rethinking of processes, with a view to tackling challenges such as seasonality and overcrowding and developing smarter destinations.[281]

The IoT has a number of uses in the travel and tourism industry, these include personalisation, automation, maintenance, smart energy saving and location-based information services.[282] London City Airport is said to have been the first airport to make use of the IoT to streamline the airport experience. Launched in 2013, its

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[278] K. Schwab, 'Impact', *The Fourth Industrial Revolution*, p. 28.
[279] B. Marr, 'The 4th Industrial Revolution is here – are you ready?', <https://www.forbes.com/sites/bernardmarr/2018/08/13/the-4th-industrial-revolution-is-here-are-you-ready/?sh=3549d9bb628b>, 13 August 2018, access: 02 February 2021.
[280] K. Schwab & R. Samans, 'Preface', *in* T. A. Leopold, V. Ratcheva & S. Zahidi, *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, p. v; J. Menon, 'Why the Fourth Industrial Revolution could spell more jobs – not fewer', <https://www.weforum.org/agenda/2019/09/fourth-industrial-revolution-jobs/>, access: 03 February 2021; Business & Innovation Magazine, 'Jobs of the Future: The impact of the Fourth Industrial Revolution on employment', <https://www.businessinnovationmag.co.uk/jobs-of-the-future-the-impact-of-the-fourth-industrial-revolution-on-employment/>, access: 03 February 2021.
[281] UNWTO, 'Digital transformation', <https://www.unwto.org/digital-transformation>, n.d., access: 04 February 2021.
[282] Revfine, 'How the Internet of Things (IoT) can Benefit the Travel Industry', <https://www.revfine.com/internet-of-things-travel-industry/>, 2020, access: 06 February 2021.

network of sensors is used to track passenger arrival and movement, to provide personalised shopping experiences as well as for facial recognition to "predict and prevent queues".[283] Various airlines also use the IoT to track performance and maintenance across their fleets.[284] In the hotel industry the IoT is rapidly advancing the management of accommodation establishments. Through the use of the IoT hotels can provide guests with electronic key cards and automatically adjust room temperature and lighting according to occupancy and outdoor temperature and light, thereby saving electricity (smart energy saving). It is also used to notify housekeeping when a room is vacated, enabling a more efficient turnaround in housekeeping operations.[285]

AI has found widespread application in the tourism industry with the most common applications being chatbots and online customer services platforms, robots and gathering and processing data for more efficient and personalised service delivery.[286] Cathal McGloin of ServisBOT argues that "travel chatbots provide enormous potential for travel and tourism, as one of the most dynamic customer-facing global industries".[287] A chatbot is an AI programme that "conduct[s] conversations with humans through chat interfaces".[288] Most chatbots make use of both AI and ML to better understand language and learn by itself from more than just preprogramed frequently asked questions. Chatbots can therefore answer frequently asked

[283] D. Carrington, 'London to create airport of the future with 'Internet of Things'', <https://edition.cnn.com/travel/article/london-city-airport-internet-of-things/index.html>, 03 May 2013, access: 06 February 2021; A. Crowley, '5 things to know about London City Airport's Internet of Things project', <https://www.cbronline.com/it-network/5-things-you-should-about-the-london-citys-airport-internet-of-things-project-4256537/>, 01 May 2014, access: 06 February 2021; Internet of Business, '10 stellar real-life examples of IoT taking flight in aviation', <https://internetofbusiness.com/10-real-life-examples-iot-aviation/>, n.d., access: 06 February 2021.
[284] Internet of Business, '10 stellar real-life examples of IoT taking flight in aviation', <https://internetofbusiness.com/10-real-life-examples-iot-aviation/>, access: 06 February 2021.
[285] J. DePinto, '7 trends of the Internet of Things in Hospitality', <https://www.hotel-online.com/press_releases/release/7-trends-for-the-internet-of-things-in-hospitality/>, 24 August 2016, access: 06 February 2021; Hotel Tech Report, 'What is the Internet of Things? IoT devices and the Hotel Industry'. <https://hoteltechreport.com/news/internet-of-things-iot>, 2020, access: 06 February 2021.
[286] Revfine, 'How Artificial Intelligence is changing the Travel Industry', <https://www.revfine.com/artificial-intelligence-travel-industry/>, n.d., access: 06 February 2021.
[287] C. McGloin, 'Travel Chatbots: 5 Superb use cases take Customer Experience to new heights', <https://servisbot.com/travel-chatbots/>, n.d., access: 06 February 2021.
[288] B. White, 'Chatbots and the Travel and Tourism Industry', <https://www.mytravelresearch.com/chatbots-and-the-travel-tourism-industry/>, 2017, access: 06 February 2021.

questions as well as assist with bookings and cancellations, update travellers on changes to the itinerary and make recommendations based on the existing itinerary.[289]

The tourism industry is an information intensive industry with millions of bits of data created every minute by tourists through the use of booking services, social media activity, connecting to Wi-Fi on airports and at destinations, and writing online reviews, among other things. The global tourism industry is therefore one of the major generators of Big Data. According to Anca Yallop and Hugues Seraphine, Big Data in tourism is used mainly for revenue management, market research, strategic marketing campaigns and customer experience and reputation management.[290] The data used for these activities are gathered from occupancy rates, travel routes, social media, online reviews, and customer surveys.[291] Big Data, therefore, is the new tool that can be used to retain a competitive advantage in a highly volatile and rapidly digitalising tourism industry.

As mentioned above, AR has been in use in the tourism industry since 2008 however, the AR applications of today are much more advanced. The technology has developed in leaps and bounds and is used for a range of services in the industry, from interactive maps and games to translation software.[292] In 2020 the Belfast-based company, Yellow Design, launched the AR360 app. The idea for the app came about because of a challenge set by the Belfast City Council to find new ways to use smart technology

[289] Tomahawk, 'Chatbots: The Future of Travel', <https://www.tomahawktourism.com/blog/post-126>, 04 December 2017, access: 06 February 2021; B. White, 'Chatbots and the Travel and Tourism Industry', <https://www.mytravelresearch.com/chatbots-and-the-travel-tourism-industry/>, access: 06 February 2021; WotNot, 'Are Chatbots Revolutionising the Travel Industry?', <https://medium.com/swlh/are-chatbots-revolutionizing-the-travel-industry-12c195b63fb5>, 13 April 2019, access: 06 February 2021; Revfine, 'AI Chatbot: What are the Advantages for the Travel Industry?', <https://www.revfine.com/ai-chatbot/#what-is-an-ai-chatbot>, n.d., access: 06 February 2021.

[290] A. Yallop & H. Seraphin, 'Big data and analytics in tourism and hospitality: opportunities and risks', *Journal of Tourism Studies* 6(3), 2020, pp. 258-259.

[291] A. Yallop & H. Seraphin, 'Big data and analytics in tourism and hospitality: opportunities and risks', *Journal of Tourism Studies* 6(3), pp. 258-259.

[292] M. Shah, 'How Augmented Reality (AR) is Changing the Travel and Tourism Industry', <https://towardsdatascience.com/how-augmented-reality-ar-is-changing-the-travel-tourism-industry-239931f3120c>, 21 August 2019, access: 07 February 2021; Cultural Daily, 'Augmented Reality in Tourism: It's Transforming the Travel Industry', <https://www.culturalweekly.com/augmented-reality-tourism-transforming-travel-industry/>, 19 September 2019, access: access: 07 February 2021; Travel Blue, 'Augmented Reality (AR) in Tourism', <http://travel-blue.com/magazine/augmented-reality-ar-in-tourism/>, 09 April 2020, access: 07 February 2021.

to “boost infrastructure, health, economic growth and tourism”.[293] However, as the app was being developed and Yellow Design preparing to launch it, the Covid-19 pandemic hit the global tourism industry. Yellow Design recognised the need to rebuild the industry in a smarter, safer, and more sustainable way and therefore made some adjustments to the app to contribute to this goal. The app is multilingual and can be adapted to multiple cities. AR360 “can also make tailored recommendations for other places to visit and provide location-based marketing offers to encourage visitors to support the local economy”.[294] Visitors can use the app at the Belfast Peace Walls to walk through the virtual timeline of the Northern Ireland conflict and as Belfast is the homeport of the Titanic, the app also enables the user to view the ship in port in full scale as well as to walk the decks of the ship.[295]

VR is used in a very similar manner in the tourism industry. However, in some cases it goes one step further by allowing tourists to ‘handle’ historical artefacts. One example of this is the London Natural History Museum’s “Hold the World” app.[296] The app, launched in 2018, enables a person to view some of the museum’s most valuable artefacts while being guided by the world’s most renowned natural historian, Sir David Attenborough. Through the app, users have access to areas of the museum that are usually closed to the public as well as being able to ‘handle’ rare objects.[297] “Hold the World” works with an HMD and a controller to enable the user to handle objects and navigate spaces. According to Sir David Attenborough “it is really one of the most convincing and bewitching experiences that the world of technology has yet produced”.[298]

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[293] Creative Industries Clusters Programme, ‘AR360: Augmented Reality for Tourism’, <https://creativeindustriesclusters.com/ar360-augmented-reality-for-tourism/>, 15 October 2020, access: 07 February 2021.
[294] Creative Industries Clusters Programme, ‘AR360: Augmented Reality for Tourism’, <https://creativeindustriesclusters.com/ar360-augmented-reality-for-tourism/>, access: 07 February 2021.
[295] Creative Industries Clusters Programme, ‘AR360: Augmented Reality for Tourism’, <https://creativeindustriesclusters.com/ar360-augmented-reality-for-tourism/>, access: 07 February 2021.
[296] K. Pavid, ‘Explore the Museum’s collection with Sir David Attenborough’, <https://www.nhm.ac.uk/discover/news/2018/march/explore-the-museum-with-sir-david-attenborough.html>, 16 March 2018, access: 07 February 2021.
[297] K. Pavid, ‘Explore the Museum’s collection with Sir David Attenborough’, <https://www.nhm.ac.uk/discover/news/2018/march/explore-the-museum-with-sir-david-attenborough.html>, access: 07 February 2021.
[298] K. Pavid, ‘Explore the Museum’s collection with Sir David Attenborough’, <https://www.nhm.ac.uk/discover/news/2018/march/explore-the-museum-with-sir-david-attenborough.html>, access: 07 February 2021.

In light of the Covid-19 pandemic, VR tourism has been heralded as the saviour of the global tourism industry as it enables people to 'visit' destinations from the comfort of their own homes, as discussed in Chapter 1.[299] Deemed by some as the new 'alternative tourism', VR tourism is taking off as parts of the world remain in lockdown a little over a year since the Corona virus outbreak was declared a global health crisis by the WHO.[300] In 2020 the Thailand Tourism Authority launched virtual tours of Bangkok, Chiang Mai, Surat Thani and Phuket. The tours take viewers through Thailand's royal residences, ancient temples, and monuments, and provide insights into each building. Viewers can 'walk' through each building to view it in detail but can also navigate by using the dollhouse map of the floorplan.[301]

As discussed in Chapter 2, Smart Tourism Destinations emerged from Smart Cities.[302] A Smart Tourism Destination, as defined by the European Capital of Smart Tourism Initiative, is a destination that

> [facilitates] access to tourism and hospitality products, services, spaces, and experiences through ICT-based tools. It is a healthy social and cultural environment, which can be found through a focus on the city's social and human capital. It also implements innovative, intelligent solutions and fosters the development of entrepreneurial businesses and their interconnectedness.[303]

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[299] D. Jones, '12 historic sites you can virtually tour from the couch during the coronavirus outbreak', <https://www.washingtonpost.com/travel/2020/03/18/these-historic-sites-attractions-are-offering-virtual-tours-during-coronavirus-pandemic/>, 18 March 2020, access: 01 November 2020; L. B. Bloom, 'Ranked: The world's 15 best virtual tours to take during coronavirus', <https://www.forbes.com/sites/laurabegleybloom/2020/04/27/ranked-worlds-15-best-virtual-tours-coronavirus/?sh=20db4c4c6709>, 27 April 2020, access: 01 November 2020; B. Debusmann, 'Coronavirus: Is virtual reality tourism about to take off?', <https://www.bbc.com/news/business-54658147>, 31 October 2020, access: 01 November 2020.

[300] S. Rogers, 'How Virtual Reality can help the Travel & Tourism Industry in the aftermath of the Coronavirus outbreak', <https://www.forbes.com/sites/solrogers/2020/03/18/virtual-reality-and-tourism-whats-already-happening-is-it-the-future/?sh=6788e84128a6>, 18 March 2020, access: 07 February 2021; WHO, 'Timeline: WHO's COVID-19 response', <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline/#!>, 2021, access: 07 February 2021; C. Davies, 'Virtual Reality tourism ready for takeoff as travellers remain grounded', <https://www.theguardian.com/technology/2021/feb/06/virtual-reality-tourism-ready-for-takeoff-as-travellers-remain-grounded>, 06 February 2021, access: 07 February 2021.

[301] Tourism Thailand, 'Stay tuned to our Virtual Tours to 4 Destinations in Thailand', <https://www.tourismthailand.org/Articles/virtual-tours>, 25 September 2020, access: 07 February 2021; A. Supateerawanitt, 'You can now take a virtual walk through historical attractions around the country', <https://www.timeout.com/bangkok/news/you-can-now-take-a-virtual-walk-through-historical-attractions-around-the-country-020421>, 04 February 2021, access: 07 February 2021.

[302] D. Buhalis & A. Amaranggana, 'Smart Tourism Destinations', *in* Z. Xiang & I. Tussyadiah (eds.), *Information and Communication Technologies in Tourism*, 2014, p. 557.

[303] Celevercity, '9 European Smart Tourism Destinations to watch and learn from', <https://www.cleverciti.com/en/resources/blog/9-european-smart-tourism-destinations-to-watch-and-learn-from>, n.d., access: 18 June 2021.

In 2018 the EU launched its European Capital of Smart Tourism Initiative with the aim of promoting Smart Tourism in the EU, share best practices and to recognise the achievements of EU cities in sustainability, accessibility, digitalisation, and cultural heritage and creativity.[304]

The various examples discussed above provide insight into the potential disruptive power of these technologies. To answer the call for the rethinking of the way we do tourism, the structure of the global tourism industry and the power of its most dominant players needs to be disrupted. These technologies are enabling smaller more innovative start-ups to enter the industry, in some cases form partnerships with other start-ups, and provide more efficient and personalised services. One important thing that should be taken from this discussion is that not only is the 4IR geared toward automation and efficiency, but also personalisation. Personalisation has grown increasingly important in tourism, an industry that has come to offer its consumers so many choices that are hardly distinguishable from one another, making it harder for them to purchase an offer that best suits them. The advantage of smaller start-ups is that they are more inclined to sustainable and ethical business practices than existing multinational corporations that were founded during the golden age of mass tourism when the status quo was simply more – more flights, more hotel and more car rental bookings, more tourists and in the end, more revenue. The use of these technologies on their own has in many cases made the tourism industry more efficient, and by extension somewhat more sustainable.

This then leads to the question of whether the combination and concentration of these technologies can lead to an overall more sustainable tourism industry which also contributes to the UN SDGs as is proposed by the creators of Tourism 4.0? This question will be explored in Chapters 6 and 7.

[304] European Commission, 'European Capitals of Smart Tourism: An initiative to reward innovative and smart tourism practices in European cities', <https://smart-tourism-capital.ec.europa.eu/index_en>, n.d., access: 18 June 2021.

CHAPTER 4: TOURISM, THE UNITED NATIONS AND SUSTAINABILITY

Environmental disasters, species die-offs and infectious disease outbreaks are all occurring more frequently as a result of increased unsustainable use, or abuse, of finite natural resources. Scientists are calling for a drastic change in human behaviour and our relationship with the environment, warning that the abovementioned events will occur even more frequently and their impacts will be even more severe if we do not make this change.[305] Tourism, as one of the largest and fastest-growing industries in the world, is unfortunately contributing a great deal to the damage caused not only to natural, but cultural resources as well.[306] Environmental disasters and pandemics also have a direct, and in some cases devastating, impact on the tourism industry and those whose livelihoods depend on it.[307] This phenomenon has become very apparent as a result of Covid-19. As such, many experts, practitioners and local communities both before and after the pandemic have been calling for more sustainable tourism practices.[308] This chapter will discuss the origin and development of sustainability as well as its critical relevance and application to the tourism industry. It will also discuss the lesser known role culture plays in the broader concept of sustainability. There are many methods of assessment and evaluation to determine a country or organisation's level of sustainability, these, with specific reference to the tourism industry, will also be discussed. This chapter will focus specifically on the UN and its Sustainable Development Goals (SDGs) as this has become the predominant universal indicator of sustainability and sustainable development since 2015.

[305] F. Armstrong, A. Capon & R, McFarlane, 'Coronavirus is a wakeup call: our war with the environment is leading to pandemics', <https://theconversation.com/coronavirus-is-a-wake-up-call-our-war-with-the-environment-is-leading-to-pandemics-135023>, 30 March 2020, access: 18 May 2020; J. Watts, 'Earth Day: Greta Thunberg calls for "new path" after pandemic', <https://www.theguardian.com/environment/2020/apr/22/earth-day-greta-thunberg-calls-for-new-path-after-pandemic>, 22 April 2020, access: 18 May 2020.

[306] C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, 'Introduction', *Tourism and the Sustainable Development Goals – Journey to 2030*, 2018, p. 18.

[307] For example, the current Covid-19 pandemic has all but shut down the global tourism sector. See also: UNWTO, 'Secretary-General's Policy Brief on Tourism and COVID-19', <https://www.unwto.org/tourism-and-covid-19-unprecedented-economic-impacts>, 25 August 2020, access: 10 February 2021.

[308] A. Steiner, 'Foreword' *in* C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, *Tourism and the Sustainable Development Goals – Journey to 2030*, p. 9.

Origin and development of the concept of sustainability

The concept of sustainability gained popularity in the 1980s with the publishing of the World Commission on Environment and Development's (WCED) *Our Common Future* report, colloquially known as the *Brundtland Report*.[309] The WCED was an independent special commission created to formulate "a global agenda for change".[310] The United Nations General Assembly (UNGA) tasked the Commission with publishing a report that would "propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond".[311] The report would also enable greater cooperation between countries in different stages of development, recommend ways to better deal with environmental concerns and efficient means of dealing with problems faced with regards to environmental protection.[312] The *Brundtland Report* clearly illustrated that there is a pressing need for more sustainable means of development and brought this fact to everyone's attention. It was the catalyst for the politicising and popularising of the concept of "sustainable development". Today, the most widely used definition of sustainable development is the one set out in the *Brundtland Report* – "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[313] Since 1987 the UN has published multiple reports and policy recommendations on sustainability and sustainable development.

The adoption of *Transforming our World: The 2030 Agenda for Sustainable Development* in 2015 by the UN was an unprecedented occurrence as "never before had world leaders pledged common action across such a broad and universal policy agenda".[314] The *Agenda* is based entirely on the three (interconnected) pillars of sustainability – social, economic, and environmental aspects. The SDGs are "a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere".[315] (See figure 2) The 17 Goals have 169 targets

[309] G. H. Brundtland, *Our Common Future*, 1987.
[310] G. H. Brundtland, 'Chairman's Foreword', *Our Common Future*, p. ix.
[311] G. H. Brundtland, 'Chairman's Foreword', *Our Common Future*, p. ix.
[312] G. H. Brundtland, 'Chairman's Foreword', *Our Common Future*, p. ix.
[313] G. H. Brundtland, 'From one Earth to one World', *Our Common Future*, p.8.
[314] B. Omilola, S. Renner, A. Fernandez & D. Iyer, 'Executive Summary', *in* UNDP, *From the MDGs to Sustainable Development for all: Lessons from 15 years of practice*, 2016, p. 2.
[315] UN, 'The Sustainable Development Agenda', <https://www.un.org/sustainabledevelopment/development-agenda/>, n.d., access: 07 May 2020.

and 231 indicators. The targets are "aspirational and global, with each government having to set its own national targets guided by the global level of ambition but also taking into account national circumstances".[316]

Figure 2: The 17 SDGs as set forward in the 2030 Agenda[317]

The SDGs can be divided into 5 interrelated categories. The first category is people, consisting of Goals 1 to 6 which build on the Millennium Development Goals (MDGs). The second category, prosperity, consists of Goals 7 to 11 which concern economic development. Goals 12 to 15 make up the third category, planet, which emphasises environmental sustainability. According to Lindiwe Dlamini, "a truly innovative element of the new global development agenda is the goal on peaceful and inclusive societies and responsive institutions".[318] SDG 16 is the only goal in the fourth category of peace. The last category is about partnerships, SDG 17 builds on the 8th MDG and calls on all signatories to the agenda to renew those partnerships originally formed for the MDGs for sustainable development, and to be actively involved in the development and implementation of those measures necessary to implement the new agenda.[319] The SDGs are therefore much more encompassing than the MDGs.

[316] L. Dlamini, '2030 Agenda', <http://www.un.org.za/sdgs/2030-agenda/>, n.d., access: 07 May 2020.
[317] Sustainable Development Goals Knowledge Platform, <https://sustainabledevelopment.un.org/sdgs>, access: 07 May 2020.
[318] L. Dlamini, '2030 Agenda', <http://www.un.org.za/sdgs/2030-agenda/>, n.d., access: 07 May 2020.
[319] L. Dlamini, '2030 Agenda', <http://www.un.org.za/sdgs/2030-agenda/>, n.d., access: 07 May 2020.

The UN reviews and monitors country progress through Voluntary National Reviews (VNRs) which are overseen by the UN High-Level Political Forum on Sustainable Development (HLPF). The VNRs were conceived of to track progress, identify achievements, challenges and gaps and to support the development of efficient policies and partnerships.[320] These reviews will be

> rigorous and based on evidence, informed by country-led evaluations and data which is high-quality, accessible, timely, reliable and disaggregated by income, sex, age, race, ethnicity, migration status, disability and geographic location and other characteristics relevant in national contexts.[321]

A set of global indicators will be used in each review, indicators specific to each country and or region will then be used to complement these. To this effect, the Global Indicator Framework for the Sustainable Development Goals was launched in 2017 with 247 indicators, building on the original 231 indicators. It was argued that amendments and refinements to the indicators will be made annually according to overall progress made.[322]

In an article for the Boston Consulting Group (BCG), David Young and Wendy Woods argued that "innovation is the only way to win the SDG race".[323] They are of the opinion that global funding alone will not fast track progress towards the SDG, but that increased innovation in combination with funding will.[324] Alex Amouyel, executive director of MIT Solve, is of the same opinion, arguing that "we will not achieve the [SDGs] with the solutions we have today, no matter how much money we throw at them".[325] According to Amouyel, we need to close the innovation gap to achieve the SDGs. He argues that

> we need to fundamentally rethink how we design and fund research, technology, and innovation if we are to solve world challenges and achieve

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[320] UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*, p. 31.
[321] UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*, p. 31.
[322] UNDESA Statistics Division, 'SDG Indicators', <https://unstats.un.org/sdgs/indicators/indicators-list/>, n.d., access: 25 May 2020.
[323] D. Young & W. Woods, 'Innovation is the only way to win the SDG race', <https://www.bcg.com/publications/2019/innovation-win-sdg-race>, 02 May 2019, access: 09 November 2020.
[324] D. Young & W. Woods, 'Innovation is the only way to win the SDG race', <https://www.bcg.com/publications/2019/innovation-win-sdg-race>, 2019, access: 09 November 2020.
[325] A. Amouyel, 'We must close the Innovation Gap to achieve the UN Sustainable Development Goals', <https://solve.mit.edu/articles/we-must-close-the-innovation-gap-to-achieve-the-un-sustainable-development-goals>, 17 September 2019, access: 09 November 2020.

> the SDGs, tapping into the talent and ingenuity of the people who experience these challenges every day.[326]

In recent years, there has been increased recognition of the potential of not only technology in general, but the technologies of the 4IR specifically, to achieve the SDGs.[327] However, at the 2018 HLPF on Sustainable Development, UN Secretary-General Antonio Guterres stated that "technology has great potential to help deliver the SDGs, but it can also be the root of exclusion and inequality. We need to harness the benefits of advanced technologies for all".[328]

Many agree that "culture is a key dimension of people-centred sustainable development".[329] Yet, it is barely considered in most international development policies and programmes. In 1988, at the inauguration of the World Decade for Cultural Development, the then UN Secretary-General Javier Pérez de Cuéllar stated that "development efforts had often failed because the importance of the human factor – the complex web of relationships and beliefs, values and motivations, which lie at the very heart of a culture – had been underestimated in many development projects".[330] Even with the myriad conventions, reports and declarations published and enacted by all its specialized agencies concerned with both culture and development, the UN has neglected culture in its international development agendas.

The 1982 World Conference on Cultural Policies and its outcome document, the *Mexico City Declaration on Cultural Policies*, and the 1996 *Our Creative Diversity Report* by the World Commission for Culture and Development (WCCD) acknowledged culture's role in development policies. At the 1982 Conference, delegates recognised "that the notion of cultural identity was central to the whole

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[326] A. Amouyel, 'We must close the Innovation Gap to achieve the UN Sustainable Development Goals', <https://solve.mit.edu/articles/we-must-close-the-innovation-gap-to-achieve-the-un-sustainable-development-goals>, access: 09 November 2020.
[327] WIPO, 'The impact of innovation', <https://www.wipo.int/sdgs/en/story.html>, n.d., access: 09 November 2020; C. Herweijer & D. K. N. Waughray, 'How technology can fast-track the global goals', <https://www.weforum.org/agenda/2019/09/technology-global-goals-sustainable-development-sdgs/>, 24 September 2019, access: 09 November 2020.
[328] B. R. Jacobson, 'Digital technology for the Sustainable Development Goals', <https://www.diplomacy.edu/blog/digital-technology-sdgs>, 31 July 2018, access: 09 November 2020.
[329] Agenda 21 for Culture, <http://www.agenda21culture.net/home>, access: 18 March 2021.
[330] J. P. de Cuéllar, 'President's Foreword', *in* WCCD, *Our Creative Diversity*, 1996, p. 7.

question of development".[331] The designation of the WCCD was inspired by the belief that "the time had come to do for 'culture and development' what had been achieved for 'environment and development'", following the *Brundtland Report* and the Rio Summit.[332] UNESCO's 1996 *Action Plan on Cultural Policies for Development* recalled that "the World Decade for Cultural Development [1988-1997] stressed the importance of acknowledging the cultural dimension of development" and was "conscious of the efforts needed to face the challenges of cultural development and preservation of the diversity of cultures as expressed in 'Our Creative Diversity'".[333] It further recognised that "sustainable development and the flourishing of culture are interdependent" and affirmed that "cultural policy, as one of the main components of endogenous and sustainable development policy, should be implemented in co-ordination with policy in other social areas".[334]

At the first world public meeting on culture, hosted in 2002 in Brazil, the notion that culture is integral to sustainable development and should therefore be included in development policies was a key focus area. In 2003 a draft document, entitled *Agenda 21 for culture*, was presented to the European Forum of Local Authorities. The following year, the Global Network of Cities, Local and Regional Governments, also known as United Cities and Local Governments (UCLG), agreed on *Agenda 21 for culture* at the first Universal Forum of Cultures held in Barcelona. The *Agenda* consists of 67 articles that can be divided into three sections – principles, undertakings, and recommendations. Principles, consisting of 16 articles, deals with culture, human rights, diversity, sustainability, participatory democracy, and peace. The next 29 articles make up undertakings. This section describes the scope of the responsibilities of local governments and emphasises the importance of cultural policies in local governance. The recommendations section's 22 articles advocate for the recognition of culture in "programmes, budgets and organisational charts of various government levels … and by international organisations".[335] Although specifically concerned with the role of local governments in cultural development, *Agenda 21 for culture* is a step

[331] UNESCO, *World Conference on Cultural Policies*, 1982, p. 10.
[332] J. P. de Cuéllar, 'President's Foreword', *in* WCCD, *Our Creative Diversity*, p. 8.
[333] UNESCO, 'Preamble', *Action Plan on Cultural Policies for Development*, 1998, p. 1.
[334] UNESCO, 'Preamble', *Action Plan on Cultural Policies for Development*, p. 2.
[335] UCLG, 'The contents of Agenda 21 for culture', *Agenda 21 for culture*, 2004, p.5.

in the right direction in the recognition of culture's central role in all development activities, and its importance in sustainability planning.

UNESCO's *Convention on the Protection and Promotion of the Diversity of Cultural Expressions* (2005) also recognised that culture is "a mainspring for sustainable development for communities, peoples and nations".[336] As such, one of its guiding principles is sustainable development and Article 13 states that all signatories are to

> endeavour to integrate culture in their development policies at all levels for the creation of conditions conducive to sustainable development and, within this framework, foster aspects relating to the protection and promotion of the diversity of cultural expressions.[337]

Furthermore, Article 14c states that

> parties shall endeavour to support cooperation for sustainable development … in order to foster the emergence of a dynamic cultural sector by, *inter alia*, the following means: … technology transfer through the introduction of appropriate incentive measures for the transfer of technology and know-how, especially in the areas of cultural industries and enterprises.[338]

Throughout the mid- to late-2000s the UNGA adopted multiple resolutions on culture and development. These resolutions all call on the UN's member states, organisations in the UN system, intergovernmental and relevant non-governmental organisations to implement measures of (tangible and intangible) cultural heritage protection and promotion, to increase access to and use of new technologies in this mission, to raise awareness of the importance of the inclusion of culture in sustainable development initiatives and to promote capacity-building.[339] The UCLG, on the other hand, in its own efforts in advocating for the inclusion of culture in development policies created a Commission of Culture in 2005 to disseminate and promote the enacting of *Agenda 21 for culture*. In 2009 the Commission published a report on the "links between culture, development strategies and local governments and the central role that culture should play in these local development strategies targeted at fulfilling the Millennium

[336] UNESCO, 'Preamble', *Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, 2005, p. 1.
[337] UNESCO, 'Rights and obligations of parties: Article 13', *Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, p. 23.
[338] UNESCO, 'Rights and obligations of parties: Article 14', *Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, pp. 23 -24.
[339] Resolution adopted by the UNGA, 57/249, 2003; Resolution adopted by the UNGA, 65/166, 2011; Resolution adopted by the UNGA, 66/208, 2012; Resolution adopted by the UNGA, 68/223, 2014.

targets and goals".[340] In the report it is noted that culture is noticeably absent from the MDGs and that its integral role in development was yet to be recognised, as was local government's role in fostering cultural development. The report further argued that "creativity, diversity and heritage are values which are intrinsic to culture and nowadays are basic building blocks in any development strategy".[341]

In 2010 the UCLG released *Culture: Fourth Pillar of Sustainable Development*, a policy recommendation that called on government bodies to integrate culture into development policies, all public policies, sustainable development programmes and to promote, internationally, the idea of culture as the fourth pillar of sustainability. This was done because the UCLG was of the opinion that the three existing pillars of sustainability were no longer sufficient in dealing with the complex problems the world is facing.[342] In the lead up to the adoption of the SDGs in 2015, the UCLG Commission of Culture, along with other global networks, produced four documents advocating for an SDG specifically dedicated to culture and targets and indicators dedicated to cultural development. This campaign was known as #culture2015goal. According to UNESCO, its "advocacy efforts for the culture and development approach over the last decade resulted in three milestone Resolutions being adopted by the United Nations General Assembly (2010, 2011 and 2013) which acknowledge the role of culture as an enabler and a driver of sustainable development".[343] However, despite UNESCO, the UCLG and other cultural institutions' advocacy efforts culture is, once again, underrepresented in a major UN development agenda. *Agenda 2030* merely states that

> [all signatories to the *Agenda*] pledge to foster intercultural understanding, tolerance, mutual respect and an ethic of global citizenship and shared responsibility. [All signatories] acknowledge the natural and cultural diversity of the world and recognise that all cultures and civilisations can contribute to, and are crucial enablers, of sustainable development.[344]

[340] Agenda 21 for Culture, <http://www.agenda21culture.net/home>, access: 18 March 2021.
[341] J. Martí, 'Introduction', *in* UCLG Committee on Culture, *Agenda 21 for Culture: Culture, local governments and Millennium Development Goals*, 2009, p. 5.
[342] UCLG, *Culture: Fourth Pillar of Sustainable Development*, 2010.
[343] UNESCO, 'Culture 2030 Indicators', <https://whc.unesco.org/en/culture2030indicators/>, n.d., access: 24 March 2021.
[344] UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*, 2015.

Furthermore, culture is only mentioned five times throughout the *Agenda*. Target 4.7 states that it should be ensured that by 2030 "all learners acquire the skills needed to promote sustainable development, including, among other things, through … global citizenship and appreciation for cultural diversity and of culture's contribution to sustainable development".[345] Target 8.9 states that by 2030, policies that promote sustainable tourism, job creation and the promotion of local culture and products should be implemented. Similarly, Target 12.8b states that "tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products" should also be implemented by 2030.[346] Because of the relative absence of culture in *Agenda 2030*, the #culture2015goal evolved into the #culture2030goal campaign.[347]

On the 21st of May 2020, the Culture 2030 Goal coalition released the 'Ensuring Culture Fulfils its Potential in Responding to the Covid-19 Pandemic' statement. This was endorsed by the President of the UNGA, who called on all UN agencies, governments, and all relevant stakeholders to take action in recognising the role culture can play and including it in their Covid-19 response and recovery plans.[348] According to the statement

> alongside [frontline workers], artists, creators and culture professionals, as well as organisations in the culture sector, have a fundamental role in promoting well-being and resilience in individuals and communities, guaranteeing access to information, and encouraging awareness and tolerance. Arts and culture have played a unique and vital role during the crisis, and this role should be enhanced beyond the pandemic: building community, reducing anxieties, and also using art's unique sense making ability to build capacities to imagine a new future.[349]

As the UN's specialised agency concerned with the promotion and facilitation of the protection and sustainable use of cultural heritage, UNESCO has published several frameworks of cultural indicators for development. The first of these, the Framework for Cultural Statistics (FCS), was published in 1986. The statistics generated through

[345] UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*.
[346] UN, *Transforming Our World: The 2030 Agenda for Sustainable Development*.
[347] Culture 2030 Goal, '#culture2030goal statement on culture and the Covid-19 pandemic', <http://culture2030goal.net/>, 2020, access: 20 March 2021.
[348] Culture 2030 Goal, *Ensuring Culture Fulfils its Potential in Responding to the Covid-19 Pandemic*, 2020; Tijjani Mohammad-Bande, UNGA President, 18 June 2020.
[349] Culture 2030 Goal, *Ensuring Culture Fulfils its Potential in Responding to the Covid-19 Pandemic*, 2020.

the FCS are meant to provide a standardised presentation of public financing of the cultural domain of each of the UN's member states.[350] Indicators for each category include registration and/or protection and/or preservation, creation and/or production, communication and/or diffusion, transmission and/or dissemination, consumption, and production. The FCS was proposed to be adopted by several countries in Europe and North America, these included Belgium, France, Italy, Romania, Hungary, the then USSR, Yugoslavia, and Canada and the USA. In total 19 countries were selected for the trial phase of the FCS.[351] The FCS was updated in 2009 in line with the emergence of new concepts relating to cultural activities (specifically in terms of technology) and increased recognition of culture's role in development policies and agendas. The revised FCS, "provides the conceptual foundations for evaluating the economic and social contributions of cultures".[352]

The 2009 FCS assessment matrix is based on the five stages of the culture cycle model. The five stages are creation, production, dissemination, exhibition and/or reception and/or transmission, and consumption/participation. According to UNESCO the culture cycle

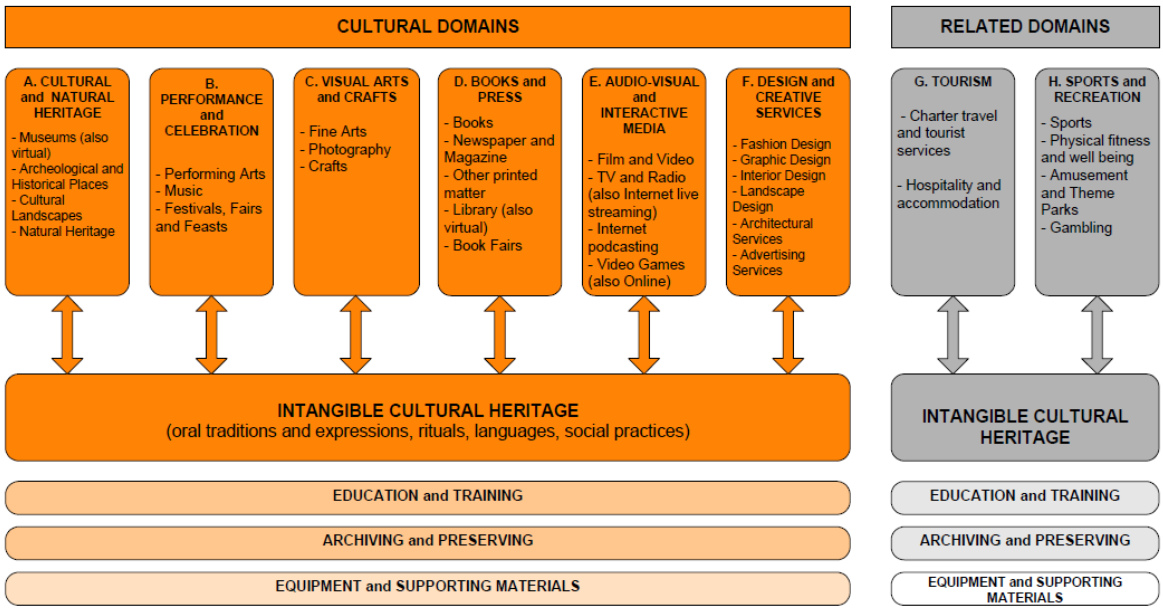
> lays out in five stages or linkages all the processes required to produce, disseminate and highlight cultural expressions, as well as to receive, use and understand them … It is a flexible model. [It] shows that a great number of stakeholders, from market and non-market sectors, are involved throughout the value chain of cultural expressions: creators, producers, distributors, public institutions, professional organizations, etc.[353]

The FCS has six cultural domains, four transversal domains and two related domains (Sport and Recreation and Tourism). (See Figure 3) It is argued that while these two domains are not regarded as cultural activities, "they do contain cultural elements" and

[350] UNESCO Office of Statistics, *The UNESCO Framework for Cultural Statistics (FCS)*, 13 February 1986.
[351] UNESCO Office of Statistics, *The UNESCO Framework for Cultural Statistics (FCS)*, Annex 1.
[352] J. Pessoa & L. Deloumeaux, 'Introduction', *The 2009 UNESCO Framework for Cultural Statistics (FCS)*, p. 11.
[353] UNESCO, 'Global Alliance for Cultural Diversity: Culture Cycle', <http://www.unesco.org/new/en/culture/themes/cultural-diversity/cultural-expressions/programmes/global-alliance-for-cultural-diversity/culture-cycle/>, 2017, access: 25 March 2021.

should therefore be considered when gathering and analysing data on cultural activities.[354]

Figure 3: 2009 FCS domains[355]



The UNESCO Culture for Development Indicators (CDIS) are the result of a four-year (2009 – 2013) international research project funded by the Spanish Agency of International Cooperation for Development (AECID). Two test phases in 11 countries were conducted from 2011 to 2013 and the results, a *CDIS Methodology Manual* and *Implementation Toolkit* and a global database were published in 2014.[356] The CDIS were conceived of to further emphasize culture's critical role in sustainable development through empirical data. According to UNESCO the CDIS "encourages an inclusive vision of culture's interactions with development extending beyond economic benefits to explore more intangible benefits such as social cohesion, tolerance and inclusion".[357] The CDIS also contributes to the implementation of the 2005 *Convention on the Protection and Promotion of the Diversity of Cultural Expressions* as well as multiple Culture and Development Resolutions adopted by the

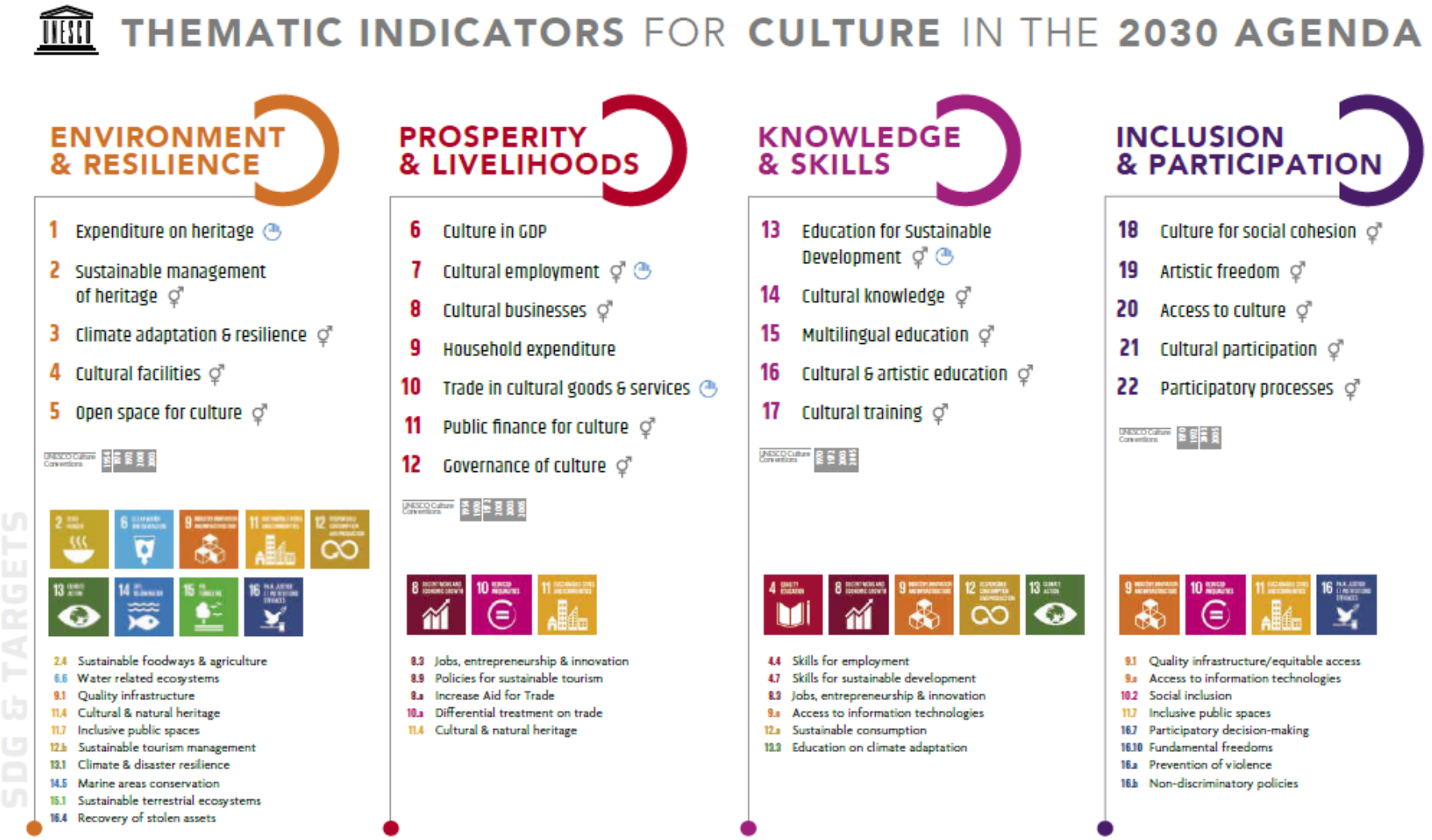
[354] J. Pessoa & L. Deloumeaux, 'The framework for cultural statistics: concepts and structure', *The 2009 UNESCO Framework for Cultural Statistics (FCS)*, p. 30.
[355] J. Pessoa & L. Deloumeaux, 'The framework for cultural statistics: concepts and structure', *The 2009 UNESCO Framework for Cultural Statistics (FCS)*, p. 24.
[356] G. Alonso & M. Medici, 'Introduction', *UNESCO Culture for Development Indicators: Implementation Toolkit*, 2014, p. 1.
[357] A. P. de Armiñán, 'Introduction', *in* G. Alonso & M. Medici (eds.), UNESCO *Culture for Development Indicators: Methodology Manual*, 2014, p. 5.

UNGA since the early 2000s.[358] The CDIS has 22 indicators for its seven policy dimensions that are mapped on a matrix which is then used to create a Culture for Development DNA infographic which, according to UNESCO, displays the results of each study in a simple manner that is still indicative of the complex, interrelated and everchanging relationship between culture and development.[359]

UNESCO's most recent set of thematic indicators for culture and (sustainable) development, the Culture|2030 Indicators build on and enhance the FCS and CDIS. The Culture|2030 Indicators were created in an effort to demonstrate culture's role in and contribution to the achievement of the SDGs, they also serve to advocate culture's role in the SDGs. The Culture|2030 Indicators are "intended to support and complement" existing indicators for the SDGs.[360] UNESCO initiated the process of developing a new cultural indicator framework specifically for *Agenda 2030* in 2017 and published the final thematic framework in 2019. Following two expert workshops in 2017 and 2018, a framework of 22 indicators that are grouped in four thematic dimensions was developed.[361] (See figure 4) The framework aims to make culture's contribution to sustainable development more visible, inform policy and agendas and to monitor culture's contribution to the SDGs. It is argued that "evidence of change over time in the same place is a fundamental step in enhancing advocacy on the role of culture for sustainable development and placing culture at the core of sustainable development policies and actions".[362] As culture is an integral component of tourism its sustainability is pivotal to the sector's success.

[358] I. Bokova, 'Foreword', *in* G. Alonso & M. Medici (eds.), UNESCO *Culture for Development Indicators: Methodology Manual*, p. 3.
[359] G. Alonso & M. Medici, 'Analytical Framework', *UNESCO Culture for Development Indicators: Methodology Manual*, p. 14.
[360] J. Hosagrahar (ed.), 'A Brief Overview', *Culture|2030 Indicators*, 2019, p. 10.
[361] J. Hosagrahar (ed.), 'A Brief Overview', *Culture|2030 Indicators*, p. 11.
[362] J. Hosagrahar (ed.), 'Conclusion', *Culture|2030 Indicators*, p. 94.

Figure 4: Culture 2030 Thematic Indicators[363]



[363] UNESCO, 'Thematic Indicators for Culture in the 2030 Agenda', *Culture|2030 Indicators*, 2019.

Sustainable tourism development

It is widely recognized that tourism is one of the largest industries in the world, a driver for economic development, and creates millions of jobs each year as it continues to expand.[364] However, as mentioned tourism (unfortunately) has far-reaching negative impacts which increase in severity when not managed properly. This section will discuss the origins of sustainable tourism and the use of tourism to advance progress towards achieving the SDGs.

According to Richard Sharpley and David J. Telfer, "by the early 2000s the concept of sustainable tourism had assumed the position as the dominant tourism development paradigm, widely considered to be the most appropriate means of optimising the benefits of tourism to the destination, the tourism 'industry' and tourists themselves".[365] Sustainable tourism, as defined by the UN World Tourism Organisation (UNWTO), is tourism that "takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities".[366] Tourism was classified as a mega industry as early as the 1980s with international tourist arrivals totalling 278 million, yet the *Brundtland Report* made no mention of tourism. Even with a 42% increase in international tourist arrivals by 1992, *Agenda 21* also neglected (sustainable) tourism.[367] According to David Weaver, explicit use of the term sustainable tourism first emerged amongst tourism academics in the 1990s.[368] The *Journal of Sustainable Tourism*, a journal which "advances critical understanding of the relationships between tourism and sustainable development", was inaugurated in 1993.[369] However, research on sustainable tourism

[364] C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, 'Introduction', *Tourism and the Sustainable Development Goals – Journey to 2030*, p. 4.
[365] R. Sharpley & D. J. Telfer, 'Tourism and Development: A Decade of Change', *Tourism and Development: Concepts and Issues*, pp. xi-xii.
[366] UNWTO, 'Sustainable tourism', <https://sustainabledevelopment.un.org/topics/sustainabletourism>, n.d., access: 12 May 2020.
[367] M. Roser, 'Tourism', <https://ourworldindata.org/tourism>, 2017, access: 11 May 2020; D. Weaver, 'The emergence of Sustainable Tourism', *Sustainable Tourism: Theory and Practice*, 2006, p. 10.
[368] D. Weaver, 'The emergence of Sustainable Tourism', *Sustainable Tourism: Theory and Practice*, p. 10.
[369] Anon, 'Journal of Sustainable Tourism – Aims and Scope', <https://www.tandfonline.com/action/journalInformation?show=aimsScope&journalCode=rsus20> , 2020, access: 11 May 2020.

was published as early as 1985, two years before the publishing of the *Brundtland Report*.[370]

The 1995 World Conference on Sustainable Tourism, held in Spain, was the first of its kind. The outcome of the conference was the *Charter for Sustainable Tourism* which called on all UN member states to ensure that tourism development will, among other things, be based on the three pillars of sustainability and contribute to sustainable development.[371] The *World Charter for Sustainable Tourism +20* was the outcome of the second World Summit on Sustainable Tourism (ST+20 Summit), held in Spain in 2015.[372] The charter called on governments and international organisations; local communities; the tourism industry; consumers (tourists); researchers, developers and trainers; networks and NGOs to reinvigorate the movement towards a more sustainable and equitable tourism industry.[373] The summit concluded that preserving heritage, protecting biodiversity, innovation and empowering local communities are all key components of a more sustainable global tourism industry.[374]

As a result of the abovementioned events international organisations, tourism practitioners and local communities have been implementing measures to make the global tourism industry more sustainable, even more so since it was recognised that tourism can contribute to the SDGs. Tourism is explicitly mentioned in and said to contribute directly to SDG 8 (decent work and economic growth), SDG 12 (responsible consumption and production) and SDG 14 (life below water). However, because of its size, interconnectedness and multiplier effect, the tourism industry can contribute more broadly to all 17 SDGs.[375] (See figure 5) The UNGA's designation of 2017 as the International Year of Sustainable Tourism for Development (IY2017) marked all member countries' dedication to a more sustainable tourism industry. IY2017 had five pillars: (1) sustainable economic growth; (2) social inclusiveness; (3) resource

[370] D. Weaver, 'The emergence of Sustainable Tourism', *Sustainable Tourism: Theory and Practice*, p. 10.
[371] UNWTO, *Charter for Sustainable Tourism*, 1995, pp. 1-15.
[372] World Summit on Sustainable Tourism, *World Charter for Sustainable Tourism +20*, 2015.
[373] World Summit on Sustainable Tourism, *World Charter for Sustainable Tourism +20*, pp. 10-13.
[374] World Summit on Sustainable Tourism, 'Sustainable Tourism Futures', *World Charter for Sustainable Tourism +20*, pp. 19-24.
[375] T. Rifai, 'Foreword' *in* C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, *Tourism and the Sustainable Development Goals – Journey to 2030*, p. 6.

efficiency, environmental protection, and climate change; (4) cultural values, diversity, and change; and (5) mutual understanding, peace and security. Each of the five pillars were linked to corresponding SDGs.[376] The UNGA's aim of the designation was to "support a change in policies, business practices and consumer behaviour towards a more sustainable tourism sector that can contribute effectively to the SDGs".[377]

According to the authors of *Tourism and the Sustainable Development Goals – Journey to 2030*, "policy makers recognise tourism's contribution to the SDGs" but "few tourism policymakers … seem to be currently involved in national SDG planning, which leads to missed opportunities".[378] As such, both the UN and UNWTO are calling for more concerted efforts to implement *Agenda 2030*. Thus, innovative solutions are needed for a more sustainable tourism industry and to take on ever evolving issues of sustainability.

[376] UNWTO, 'Executive summary', *Tourism for Development – Volume I: Key Areas for Action*, 2018, p. 12.
[377] UNWTO, '2017 International Year of Sustainable Tourism for Development', <https://www.unwto.org/archive/global/press-release/2017-01-03/2017-international-year-sustainable-tourism-development>, 03 January 2017, access: 18 May 2020.
[378] C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, 'Executive summary', *Tourism and the Sustainable Development Goals – Journey to 2030*, p. 11.

Figure 5: Tourism's potential contribution to the SDGs[379]

SDG 1 – End poverty in all its forms everywhere

Tourism provides income through job creation at local and community levels. It can be linked with national poverty reduction strategies and entrepreneurship. Low skills requirement and local recruitment can empower less favoured groups, particularly youth and women.

SDG 2 – End hunger, achieve food security and nutrition, promote sustainable agriculture

Tourism can spur sustainable agricultural by promoting the production and supplies to hotels, and sales of local products to tourists. Agro-tourism can generate additional income while enhancing the value of the tourism experience.

SDG 3 – Ensure healthy lives and promote well-being for all at all ages

Tax income generated from tourism can be reinvested in health care and services, improving maternal health, reduce child mortality and preventing diseases. Visitors fees collected in protected areas can as well contribute to health services.

SDG 4 – Ensure inclusive and equitable quality education and promote lifelong learning for all

Tourism has the potential to promote inclusiveness. A skilful workforce is crucial for tourism to prosper. The tourism sector provides opportunities for direct and indirect jobs for youth, women, and those with special needs, who should benefit through educational means.

SDG 5 – Achieve gender equality and empower all women and girls

Tourism can empower women, particularly through the provision of direct jobs and income-generation from MMEs in tourism and hospitality related enterprises. Tourism can be a tool for women to become fully engaged and lead in every aspect of society.

SDG 6 – Ensure availability and sustainable management of water and sanitation for all

Tourism investment requirement for providing utilities can play a critical role in achieving water access and security, as well as hygiene and sanitation for all. The efficient use of water in tourism, pollution control and technology efficiency can be key to safeguarding our most precious resource.

SDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

As a sector, which is energy intensive, tourism can accelerate the shift towards increased renewable energy shares in the global energy mix. By promoting investments in clean energy sources, tourism can help to reduce green house gases, mitigate climate change and contribute to access of energy for all.

SDG 8 – Promote sustained, inclusive and sustainable economic growth, employment and decent work for all

Tourism, as services trade, is one of the top four export earners globally, currently providing one in ten jobs worldwide. Decent work opportunities in tourism, particularly for youth and women, and policies that favour better diversification through tourism value chains can enhance tourism positive socio-economic impacts.

SDG 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Tourism development relies on good public and private infrastructure. The sector can influence public policy for infrastructure upgrade and retrofit, making them more sustainable, innovative and resource-efficient and moving towards low carbon growth, thus attracting tourists and other sources of foreign investment.

SDG 10 – Reduce inequality within and among countries

Tourism can be a powerful tool for reducing inequalities if it engages local populations and all key stakeholders in its development. Tourism can contribute to urban renewal and rural development by giving people the opportunity to prosper in their place of origin. Tourism is an effective means for economic integration and diversification.

SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable

Tourism can advance urban infrastructure and accessibility, promote regeneration and preserve cultural and natural heritage, assets on which tourism depends. Investment in green infrastructure (more efficient transport, reduced air pollution) should result in smarter and greener cities for, not only residents but also tourists.

SDG 12 – Ensure sustainable consumption and production patterns

The tourism sector needs to adopt sustainable consumption and production (SCP) modes, accelerating the shift towards sustainability. Tools to monitor sustainable development impacts for tourism including for energy, water, waste, biodiversity and job creation will result in enhanced economic, social and environmental outcomes.

SDG 13 – Take urgent action to combat climate change and its impacts

Tourism contributes to and is affected by climate change. Tourism stakeholders should play a leading role in the global response to climate change. By reducing its carbon footprint, in the transport and accommodation sector, tourism can benefit from low carbon growth and help tackle one of the most pressing challenges of our time.

SDG 14 – Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Coastal and maritime tourism rely on healthy marine ecosystems. Tourism development must be a part of Integrated Coastal Zone Management in order to help conserve and preserve fragile marine ecosystems and serve as a vehicle to promote a blue economy, contributing to the sustainable use of marine resources.

SDG 15 – Protect, restore and promote sustainable use of terrestrial ecosystems and halt biodiversity loss

Rich biodiversity and natural heritage are often the main reasons why tourists visit a destination. Tourism can play a major role if sustainably managed in fragile zones, not only in conserving and preserving biodiversity, but also in generating revenue as an alternative livelihood to local communities.

SDG 16 – Promote peaceful and inclusive societies, provide access to justice for all and build inclusive institutions

As tourism revolves around billions of encounters between people of diverse cultural backgrounds, the sector can foster multicultural and inter-faith tolerance and understanding, laying the foundation for more peaceful societies. Tourism, which benefits and engages local communities, can also consolidate peace in post-conflict societies.

SDG 17 – Strengthen the means of implementation and revitalize the global partnership for sustainable development

Due to its cross-sectoral nature, tourism has the ability to strengthen private/public partnerships and engage multiple stakeholders – international, national, regional and local – to work together to achieve the SDGs and other common goals. Public policy and innovative financing are at the core for achieving the 2030 Agenda.

[379] Adapted from *Tourism for Development, Volume II: Good Practices*, 2018.

Culture is, rather paradoxically, absent from most definitions and discussions of sustainable tourism as well. As discussed above, the UNWTO defines sustainable tourism as "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and the host community".[380] The *Ramsar Convention on Wetlands* (1975) which, as the name states, is concerned with the conservation of *natural* resources, provides a much more encompassing definition of sustainable tourism. It defines sustainable tourism as "tourism that meets economic and social needs while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems" and "in this sense [it] is not a type of tourism but all forms of tourism that make an effort to adhere to sustainable development principles".[381] Lozano-Oyola, Blancas, González and Caballero are of the same opinion, arguing that it is "as such not a specific form of tourism but more an approach that can be used to make all types of tourism more environmentally, socially and economically beneficial".[382] Tourism, often promoted as a catalyst for development and now geared towards the achievement of the SDGs, therefore, also cannot ignore culture.

As has been stated multiple times throughout this dissertation, culture, whether tangible or intangible, is almost always used in the tourism industry. It is therefore only logical that culture not only be included or merely be 'taken account of', but explicitly mentioned in the definition of sustainable tourism. There should not be a need for a separate definition for sustainable cultural tourism, as provided in 2018 by the EU's Sustainable Cultural Tourism Open Method of Coordination working group (SCT OMC). The SCT OMC defined sustainable cultural tourism as

> the integrated management of cultural heritage and tourism activities in conjunction with the local community creating social, environmental, and economic benefits for all stakeholders, to achieve tangible and intangible cultural heritage conservation and sustainable tourism development.[383]

[380] UNWTO, 'Sustainable Development', <https://www.unwto.org/sustainable-development>, n.d., access: 31 October 2020.
[381] Ramsar, 'Integration of Cultural Heritage in Sustainable Tourism', <https://www.ramsar.org/integration-of-cultural-heritage-in-sustainable-tourism>, 2014, access: 12 February 2021.
[382] M. Lozano-Oyola, F. J. Blancas, M. González & R. Caballero, 'Sustainable tourism indicators as planning tools in cultural destinations', *Ecological Indicators* 18, 2012, p. 659.
[383] SCT OMC, *Sustainable Cultural Tourism Recommendations*, 2018, p.1.

Although the need for sustainability in the use of cultures in the tourism industry is recognised by both the UNWTO and UNESCO and is in this day and age an implied responsibility, the inclusion of culture in the sustainable tourism definition will further emphasize the importance thereof. Furthermore, the lack of consolidated definitions has caused much ambiguity thereby creating a barrier to the effective implementation of, in the context of this discussion, a sustainable approach to cultural tourism.

Evaluation and assessment in the tourism industry

The tourism industry is continually evaluated and assessed to determine its contribution to and effect on the global economy, local communities, tangible and intangible heritage, to forecast its growth, potential future impacts and for quality assessment. Identification of best practice, benchmarking, and certification and or accreditation are some of the most well-known and frequently used methods of evaluating tourism. Although tourism destinations are not only evaluated in terms of sustainability this has become increasingly important in the last two decades. This section will therefore discuss these methods with particular reference to sustainability.

Although best practice identification has its origins in business organisation, planning and management, it has become increasingly popular in the tourism industry.[384] According to Rich Harrill, "a best practice exemplifies initiative and innovation and represents a significant improvement over traditional practices".[385] Charles Burke argues that a best practice is identified as such when it

> produces superior results, is clearly a new or innovative use of manpower or technology, recognised by at least three different references as a best practice, has received external award, is recognised by customers or suppliers, recognised by an industry expert and it leads to exceptional performance.[386]

Best practice, according to J. Issaverdis, is a set of practices that are the most efficient at the time of evaluation.[387] Issaverdis states that commitment to continuous

[384] J. J. Pigram, 'Best Practice Environmental Management and the Tourism Industry', *Progress in Tourism and Hospitality Research* 2, 1996, pp. 261-271.
[385] R. Harrill, 'Introduction', *Guide to Best Practices in Tourism and Destination Management*, 2003, p. xv.
[386] C. J. Burke, '10 Steps to Best-Practices Benchmarking', <https://www.qualitydigest.com/feb/bench.html>, 1995, access: 09 November 2020.
[387] J. P. Issaverdis, 'The Pursuit of Excellence: Benchmarking, Accreditation, Best Practice and Auditing', *in* D. Weaver (ed.), *The Encyclopedia of Ecotourism*, 2001, p. 587.

improvement, having a highly skilled workforce, adopting innovative technologies, making use of performance measurement systems and conducting benchmarking are some principles that are associated with businesses, or destinations, that achieve best practice.[388] Many organisations conduct best practice benchmarking (BPB) to determine which 'best practices' would be suitable to be implemented.[389]

In terms of tourism for the SDGs, it is argued that "sharing knowledge and good practices between governments, the private sector, the UN system, the donor community, academia and civil society will be vital for tourism to unlock its full potential towards achieving the SDGs".[390] In 2018 the UNWTO published a report of good practices in working towards achieving the SDGs. *Tourism for Development – Volume II: Good Practices*, structured around the five pillars of IY2017, consists of 23 good practice case studies which are said to be "exemplary practices from all regions of the world and represent initiatives from the public and private sectors, as well as from local communities" and "highlight tourism's contribution to sustainable development".[391] The report is meant to provide insight to innovative actions taken to further SDG progress which can then be adapted to different locations around the world.[392]

Benchmarking, "a buzzword of the last decade of the 20th century", also has its origins in business management.[393] Karl Wöber states that

> the objective of benchmarking is the promotion of process or product improvement by the identification of a recognized standard and of the related actions required. Insights gained from benchmarking provide an organisation with a foundation for building operational plans to meet and surpass the standard and promote an overall awareness of business improvement opportunities.[394]

[388] J. P. Issaverdis, 'The Pursuit of Excellence: Benchmarking, Accreditation, Best Practice and Auditing', *in* D. Weaver (ed.), *The Encyclopedia of Ecotourism*, 2001, p. 587.
[389] P. A. Wight, 'Tourism Ecolabelling: Certification and Promotion of Sustainable Management', *in* X. Font & R. C. Buckley, *Tourism Ecolabelling: Certification and Promotion of Sustainable Management*, 2001, pp. 153-154.
[390] C. Lisboa, M. Riva, L. Bernal, D. Ermen & A. Binder, 'Executive summary', *Tourism and the Sustainable Development Goals – Journey to 2030*.
[391] UWTO, *Tourism for Development – Volume II: Good Practices*, 2018, p.6.
[392] UWTO, *Tourism for Development – Volume II: Good Practices*, 2018, p.6.
[393] K. W. Wöber, 'Introduction', *Benchmarking in Tourism and Hospitality Industries: The Selection of Benchmarking Partners*, 2002, p. 1.
[394] K. W. Wöber, 'Introduction', *Benchmarking in Tourism and Hospitality Industries: The Selection of Benchmarking Partners*, p. 2.

In the tourism industry, according to Metin Kozak, benchmarking can take the form of organisation benchmarking or destination benchmarking.[395] Organisation benchmarking deals with a specific organisation such as a hotel, restaurant, or conference facility whereas destination benchmarking deals with all the components that make up a destination. These include transportation infrastructure (airports, roads, railway networks, water transportation), accommodation, food and beverage and leisure and recreation facilities.[396] Wöber goes even further and states that there are three principle areas of benchmarking in tourism: benchmarking of profit-oriented businesses (accommodation, restaurants, airlines); benchmarking of non-profit orientated businesses or organisations (tourist boards, museums, galleries); and lastly, destination benchmarking.[397] Kozak defines destination benchmarking as

> the continuous measurement of the performance of tourist destinations (strengths and weaknesses) not only against itself or other destinations in the same or in a different country but also against national/international quality grading systems by assessing both primary and secondary data for the purpose of establishing priorities, setting targets and gaining improvements in order to gain competitive advantage.[398]

In 2004 Kozak stated that "destination benchmarking has been neglected from both the practical and academic perspective" and this is still true today.[399] A search on the *Journal of Quality Assurance in Hospitality and Tourism*'s homepage provides 82 articles that deal specifically with benchmarking. The articles range from benchmarking accommodation facilities, conference facilities, restaurants, guest satisfaction, developing benchmarking tools, and benchmarking benchmarks. The majority of the articles, ranging from 2008 to 2019, deal with benchmarking hotels (organisation benchmarking) and none with destination benchmarking.[400] A similar search on the *Annals of Tourism Research* website results in 172 articles, book

[395] M. Kozak, 'Towards Destination Benchmarking', *Destination Benchmarking: Concepts, Practices and Operations*, 2004, pp. 21-27.
[396] M. Kozak, 'Towards Destination Benchmarking', *Destination Benchmarking: Concepts, Practices and Operations*, pp. 21-27.
[397] K. W. Wöber, 'Benchmarking Studies in the Tourism and Hospitality Industries', *Benchmarking in Tourism and Hospitality Industries: The Selection of Benchmarking Partners*, p. 12.
[398] M. Kozak, 'Towards Destination Benchmarking', *Destination Benchmarking: Concepts, Practices and Operations*, p. 41.
[399] M. Kozak, 'Towards Destination Benchmarking', *Destination Benchmarking: Concepts, Practices and Operations*, p. 41.
[400] 'Benchmark', *Journal of Quality Assurance in Hospitality and Tourism*, <https://www.tandfonline.com/action/doSearch?AllField=Benchmark&SeriesKey=wqah20&sortBy=Earliest&pageSize=10&subjectTitle=&startPage=1>, 2020, access: 29 May 2020.

reviews and discussions ranging from 1996 to 2020. The majority of these deal with forecasting rather than benchmarking, with one article by Kozak specifically dealing with destination benchmarking.[401] When deciding on a destination, tourists make the decision based on the destination as a whole and not only by looking at hotels or restaurants, for example. Destination benchmarking is therefore extremely important to either maintain or improve current competitive advantage. Benchmarking can be conducted by the destination itself (internal benchmarking) or by an organisation outside the destination (external benchmarking).

The UNWTO encourages destinations to conduct benchmarking and provides guidelines to do so. In its *A Practical Guide to Tourism Destination Management* it states that "benchmarking is an essential element of measuring your destination's progress and performance".[402] It encourages benchmarking to report on progress in the development of a responsible and sustainable tourism plan, to assess the destination's position relative to its competitors and to benchmark its marketing and online business activities.[403] The guide also suggests potential measurements to be used when benchmarking. These include the number of tourists and tourist spending, market share of key sources of tourists, annual average growth compared to competitors, accommodation growth and occupancy rates, and lastly, seasonality and geographical spread.[404]

The WEForum's *Travel and Tourism Competitiveness Report*, published biannually since 2007, "benchmarks the travel and tourism competitiveness of 140 economies and measures the set of factors and policies that enable the sustainable development of the Travel and Tourism (T&T) sector, which in turn, contributes to the development and competitiveness of a country".[405] Its Travel and Tourism Competitiveness Index

[401] 'Benchmark', *Annals of Tourism Research*, <https://www.scienciedirect.com/search?qs=Benchmark&pub=Annals%20of%20Tourism%20Reasearch%cid=2171796>, 2020, access: 31 May 2020.
[402] UNWTO, 'The Strategic Foundations: Assessing the Situation and Setting a Vision, Goals and Objectives', *A Practical Guide to Tourism Destination Management*, 2007, p.34.
[403] UNWTO, *A Practical Guide to Tourism Destination Management*, pp. 14-132.
[404] UNWTO, 'The Strategic Foundations: Assessing the Situation and Setting a Vision, Goals and Objectives', *A Practical Guide to Tourism Destination Management*, 2007, p.34.
[405] World Economic Forum, 'About the Travel and Tourism Competitiveness Report', <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/about-the-ttcr/>, 2020, access: 29 May 2020.

(TTCI) has 4 sub-indexes, 14 pillars and 90 individual indicators that are used in assessing each country.[406] (See figure 6) The data used in the report is gathered from international organisations such as UNESCO, the World Bank, the UNWTO and the World Trade Organisation (WTO), among others. The report presents the data in the form of regional dashboards which comprise the Americas, Asia-Pacific, Europe and Eurasia, Middle East and North Africa, and Sub-Saharan Africa. Each of the 140 countries in these 5 regions has a country profile and report on each of the 14 pillars with its overall TTCI score.[407]

Figure 6: 2019 TTCI framework [408]

There are several international and regional organisations and agencies that provide sustainability criteria and indicators, and in some cases certification and accreditation for compliance with these, to destinations and tourism businesses. Sustainability indicators and Sustainable Tourism Indicators (STI) can be seen as a form of benchmarking as they are broad enough to be applied to any context, yet specific enough to encourage, ensure and measure sustainable development. According to Heather Zeppel, “Sustainable Tourism Indicators (STI) have been developed and

[406] World Economic Forum, ‘About the Travel and Tourism Competitiveness Report’, <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/about-the-ttcr/>, access: 29 May 2020.
[407] World Economic Forum, ‘About the Travel and Tourism Competitiveness Report’, <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/about-the-ttcr/>, access: 29 May 2020.
[408] World Economic Forum, <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/about-the-ttcr/>, access: 29 May 2020.

applied since the early 1990s".[409] These indicators "underpin tourism planning and regulations, certification schemes and standards" and "aim to minimize negative environmental impacts and maximize benefits from tourism".[410] A select few organisations and agencies will be discussed to provide an overview of the general framework of STI: UNWTO, European Tourism Indicator System, the Global Sustainable Tourism Council (GSTC) and Green Globe

The aforementioned UNWTO guidebook argues that indicators are a "key building block for sustainable tourism and [are] tools which respond to the issues most important to managers of tourism destinations".[411] On the sustainable development of tourism, it is stated that

> achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventative and/or corrective measures whenever necessary [benchmarking].[412]

The guidebook proposes a set of baseline indicators as the minimum standards destinations should comply with, these can also be used for benchmarking. The baseline indicators deal with local community satisfaction, social benefits associated with tourism, number of return visitors, level of visitor satisfaction, perceived value for money and occupancy rates, among other things.[413]

The European Tourism Indicator System (ETIS), launched in 2013 by the EU, is aimed at "helping destinations to monitor and measure their sustainable tourism performance, by using a common comparable approach".[414] After its revision, the ETIS's destination management, social and cultural impact, economic value and environmental impact categories collectively comprise 43 core and supplementary indicators. Indicator criteria cover aspects such as sustainable tourism policy,

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[409] H. Zeppel, 'Environmental Indicators and Benchmarking for Sustainable Tourism', *in* C. M. Hall. S. Gössling & D. Scott (eds.), *The Routledge Handbook of Tourism and Sustainability*, p. 187.
[410] H. Zeppel, 'Environmental Indicators and Benchmarking for Sustainable Tourism', *in* C. M. Hall. S. Gössling & D. Scott (eds.), *The Routledge Handbook of Tourism and Sustainability*, p. 187.
[411] UNWTO, 'Introduction', *Indicators of Sustainable Development for Tourism Destinations: A Guidebook*, 2004, p. 7.
[412] UNWTO, 'Introduction', *Indicators of Sustainable Development for Tourism Destinations: A Guidebook*, p. 7.
[413] UNWTO, 'Sustainability Issues and Indicators in Tourism', *Indicators of Sustainable Development for Tourism Destinations: A Guidebook*, pp. 55-245.
[414] European Commission, 'Introduction', *The European Tourism Indicator System: ETIS toolkit for sustainable destination management*, 2016, p. 3.

community or social impact and gender equality, protecting and enhancing cultural heritage, climate change and landscape, and biodiversity protection.[415] Minimum requirements and certification are not provided through the ETIS, it is simply a voluntary management tool to be implemented by destinations through self-assessment, collection of data and analysis of the results.[416] It is argued that "an important added value of the system is that destinations can themselves choose the most relevant indicators they wish to adopt and monitor in order to meet the needs of the destinations, the interest of local stakeholders and the specific sustainability issues that the destination faces".[417]

The Global Sustainable Tourism Council's (GSTC) Sustainable Tourism Criteria "serve as the global baseline standards for sustainability in travel and tourism".[418] The criteria are used in measurement, evaluation and certification of tourism organisations and consist of four pillars: sustainable management; socioeconomic impacts; cultural impacts; and lastly, environmental impacts. According to the GSTC, the criteria are "the minimum, not the maximum, which businesses, governments, and destinations should achieve to approach social, environmental, cultural and economic sustainability".[419] In line with organizational benchmarking and destination benchmarking, the GSTC has two different sets of criteria for the industry (hotels and tour operators) and destinations. The destination criteria (GSTC-D) can be used to serve as basic guidelines for destinations, a starting point for developing sustainable tourism requirements and assist consumers in identifying sustainable tourism destinations.[420] The GSTC-D has a number of corresponding performance indicators which "provide a suggested list of circumstances, factors, evidence and actions to be looked for in a destination in assessing compliance with the criteria".[421] Meeting these

[415] European Commission, 'The core and supplementary indicators', *The European Tourism Indicator System: ETIS toolkit for sustainable destination management*, pp. 20-24.
[416] European Commission, 'Introduction', *The European Tourism Indicator System: ETIS toolkit for sustainable destination management*, p.3.
[417] European Commission, 'Why implement the European Tourism Indicator System?', *The European Tourism Indicator System: ETIS toolkit for sustainable destination management*, p.12.
[418] GSTC, 'GSTC Criteria Overview', <https://www.gstcouncil.org/gstc-criteria/>, n.d., 27 May 2020.
[419] GSTC, 'GSTC Criteria Overview', <https://www.gstcouncil.org/gstc-criteria/>, 27 May 2020.
[420] GSTC, 'GSTC Criteria Overview', <https://www.gstcouncil.org/gstc-criteria/>, 27 May 2020.
[421] GSTC, 'Performance indicators and SDGs', *GSTC Destination Criteria*, 2019, p. 2.

criteria will assist destinations in contributing to the SDGs either directly or indirectly, to this effect each criterion is linked to a corresponding SDG.[422]

Green Globe is an international organization that provides certification to businesses and destinations. Its Green Globe Program was established two years after the 1992 UN Earth Summit. Green Globe's certification "is a structured assessment of the sustainability performance of travel and tourism businesses and their supply chain partners".[423] Certification is based on 44 criteria which are supported by more than 380 indicators, these indicators depend on geographic location as well as the local context. All criteria and indicators are harmonized with those of other certification programs such as the GSTC as well as with *Agenda 21* and *Agenda 2030*.[424] According to Green Globe, its standard is "the highest standard for sustainability world wide".[425] Green Globe integrated the SDGs into its criteria "because of their linkage to Agenda 21", to which it owes its existence.[426] In order to assist its members in the implementation of potential measures to work towards the SDGs, Green Globe identified several of its indicators that could contribute to the SDGs. In accordance with the UN's focus on Goals 8, 12 and 14, said to be crucial to the sustainability of tourism, Green Globe also places special focus on these three Goals.[427]

José-Carlos García-Rosell and Jukka Mäkinen argue that "the assessment of sustainability in the context of tourism cannot only be viewed as a destination-level, top-down effort".[428] They further state that a multi-stakeholder approach

> helps tourism organisations not only to deal constructively with their differences but also contribute to the sustainability of their own

[422] GSTC, 'Performance indicators and SDGs', *GSTC Destination Criteria*, p. 2.
[423] Green Globe, 'Green Globe Certification', <https://greenglobe.com/green-globe-certification/>, n.d., access: 31 May 2020.
[424] Green Globe, 'Green Globe Certification', <https://greenglobe.com/green-globe-certification/>, access: 31 May 2020.
[425] Green Globe, 'Certification Levels', <https://greenglobe.com/certification-levels/>, n.d., access: 31 May 2020.
[426] Green Globe, 'SDGs Building on Global Successes in Sustainability', <https://greenglobe.com/latest-news/sdgs-building-on-global-successes-in-sustainability/>, 04 October 2017, access: 01 June 2020.
[427] Green Globe, 'Green Globe Certification Identifies United Nations Sustainable Development Goals', <https://greenglobe.com/latest-news/green-globe-certification-identifies-united-nations-sustainable-development-goals/>, 02 October 2018, access: 01 June 2020.
[428] J. C. García-Rosell & J. Mäkinen, 'An integrative framework for sustainability evaluation in tourism: applying the framework to tourism product development in Finnish Lapland', *Journal of Sustainable Tourism* 21(3), 2013, p. 397.

> destinations by defining sustainability goals that are attuned to the interests and perceptions of their stakeholders.[429]

This chapter provided an overview of the concept of sustainability, culture's role in sustainability as well as the application of both of these to the tourism industry and ways in which to evaluate progress made. The events and organisations discussed above have institutionalized sustainability and the sustainable development of the tourism industry. Through these methods of evaluation and assessment, progress towards a more sustainable tourism industry can potentially be fast-tracked if all stakeholders take part in these actions. This will require adaptability and high levels of (technological) innovation. The various methods discussed in this chapter will be critical in the assessment of Slovenia's technological innovations for a more sustainable tourism industry.

[429] J. C. García-Rosell & J. Mäkinen, 'An integrative framework for sustainability evaluation in tourism: applying the framework to tourism product development in Finnish Lapland', *Journal of Sustainable Tourism* 21(3), p. 397.

CHAPTER 5: "FEEL" SLOVENIA

This chapter presents an overview of the complex history of Slovenia in order to contextualise and discuss the development of tourism in the country and the recent introduction of Tourism 4.0. It also focuses on the natural and cultural domain of Slovenia as a tourist destination.

History of Slovenia

Eastern and Central Europe are characterized by centuries of shifting boundaries of authority and as such, centuries of conflict. Ethnic diversity has been both an advantage and disadvantage in these regions. One of the smallest nations to emerge in Central Europe towards the end of the twentieth century is Slovenia. Even though it has a small coastline on the Adriatic coast (46km), in a sense it was landlocked until it gained independence for the first time just on two decades ago.[430] Slovenia therefore has a very complex history intertwined with that of most of Eastern and Central Europe. As such, writing about the origins of the Slovenes is no easy task. There are many contradictory viewpoints on how and from where exactly they originated, most likely because much like the rest of the region the area today known as Slovenia was part of many tribal polities, duchies, empires, kingdoms, federations, and republics. Many of these overlapped at times. This section thus takes into account the discrepancies found in multiple sources used and first presents a brief overview of these, before discussing the history of Slovenia. This is of distinct relevance in the context of the development of Slovenia's tourism industry as well as the nature of the Slovenian tourism product, and ultimately the development of Tourism 4.0.

There are those who argue that Slovenes originated from Carantania (a region in present-day southern Austria), while others argue that they originate from Carniola (a region in present-day Slovenia).[431] (See maps 1 and 2) It is interesting to note that Slovene authors and the Slovenian government, however, trace their origins to Carantania.[432] Some may claim that this stance was only taken to justify a move

[430] Think Slovenia, 'Piran and Adriatic', <https://www.thinkslovenia.com/slovenia-information-piran-adriatic>, 2006, access: 03 April 2020.
[431] O. Luthar (ed.), 'The early Middle Ages', *The Land Between*, 2008, p. 86.
[432] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 4; P. Prešeren & D. Golab, 'Our Past', *I Feel Slovenia*, 2016, pp. 8-9.

towards independence and to ensure their exit from the Balkans and inclusion in Central Europe.[433] However, as this is a history about Slovenia and the development of tourism in Slovenia, the Slovenian position on the matter will be taken into account.

Map 1: Balkans and East Central Europe: 7th to 8th centuries[434]

[433] Z. Isakovic, 'Slovenia', *Identity and security in former Yugoslavia*, p. 16; N. Lindstrom (ed.), 'Slovenia: from the Balkans to Europe (and back again)', *The politics of Europeanization and post-socialist transformations*, 2015. p. 27.
[434] R. Bideleux & I. Jeffries, 'The Byzantine ascendancy', *A history of eastern Europe: crisis and change*, 1998, p. 47.

Map 2: Balkans and East Central Europe: early medieval kingdoms in the second half of the 11th century[435]

[435] R. Bideleux & I. Jeffries, 'The Crusades, the emergence of South Slav polities and the decline of Byzantium, 1095-1453', *A history of eastern Europe: crisis and change*, p. 62.

As mentioned above, the region of modern-day Slovenia was part of various empires, kingdoms and duchies throughout its history. These include the Roman and Frankish empires, and the dual monarchy (Austro-Hungarian Empire).[436] Prior to the First World War, the Slovenes, aware that they were by far the minority, partnered with the Croats and Serbs for a united South Slav peoples, espousing the idea of Yugoslavism.[437] The Slovenes' sentiment was not always reciprocated by the Croats and Serbs as both were acutely aware that Slovenia was of geopolitical importance to Austria and Germany and would thus not become part of Yugoslavia without a war. The assassination of Austrian Archduke Francis Ferdinand on 28 June 1914 in Sarajevo and the resulting First World War marked the start of almost a century of the Slovenes' struggle for a united Slovenia.[438] Serbia and Austria-Hungary engaged in a battle that lasted four years. Many of the Empire's Slovenes, Croats and Serbs "were conscripted into the Austro-Hungarian army to fight Serbia".[439]

The War resulted in the collapse of the Austro-Hungarian Empire in 1918. The newly formed National Council, which spoke for the Empire's South Slavs, declared the establishment of a South Slav state that would be totally independent on the 29th of October 1918. This new state joined with Serbia and Montenegro on the 24th of November that same year, and on the 1st of December it became known as the Kingdom of Serbs, Croats and Slovenes (KSCS).[440] After a failed plebiscite held in 1920, upon insistence of the Allies (Britain, France, Russia, Italy, Japan and the USA), the coastal areas of Slovenia were awarded to Italy and southern Carinthia remained

[436] O. Luthar (ed.), 'The Celts: the great conquerors', *The Land Between*, p. 29-48; R. Bideleux & I. Jeffries, 'The Byzantine ascendancy', *A history of eastern Europe: crisis and change*, p. 135; R. Bideleux & I. Jeffries, 'Chronology of East Central European history', *A history of eastern Europe: crisis and change*; V. G. Liulevicius, 'Formative migrations: Mongols to Germans', *A history of Eastern Europe: course guidebook*, p.12; Travel Slovenia, 2007, 'History', <https://travel-slovenia.si/history-of-slovenia/>, access: 01 April 2020; M. Barker, A. Ham & J. Lee, 'History', *Lonely Planet Slovenia*, p. 241; C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 5.
[437] J. K. Cox, 'The Slovene lands and people to 1918', *Slovenia: Evolving loyalties*, 2005, p. 26. C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 11.
[438] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, pp. 11-14.
[439] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 12.
[440] J. K. Cox, 'The Slovene lands and people to 1918', *Slovenia: Evolving loyalties*, pp. 28-29; O. Luthar (ed.), 'From Monarchy to Kingdom', *The Land Between*, p. 373.

within Austria, leaving quite a few Slovene speakers outside of the boundaries of Slovenia.[441]

By the early twentieth century "Slovenia's railway, telegraph, and telephone network had achieved an enviable level of development by Yugoslav standards" and "electrification rapidly expanded immediately after World War I…".[442] As such Slovenia, as the most developed and wealthiest 'province' in the Kingdom, was heavily taxed.[443] However, multiple ineffectual governments ruled between 1921 and 1929, making the kingdom extremely unstable which resulted in King Alexander declaring a royal dictatorship on 6 January 1929. He changed the kingdom's name to Yugoslavia, divided it into nine administrative units and nullified the 1921 constitution in an attempt to maintain Serbian hegemony and deemphasize national units.[444] This was the first Yugoslavia. The declaration of a royal dictatorship only radicalized politics, especially that of the Croats who "collaborated with violent and revisionist elements in neighbouring states to undermine Serb rule in Belgrade".[445] These radicalized, violent revisionist elements assassinated the King in Marseilles in 1934.[446] This was, however, not the state's biggest threat as Italy and Germany were encouraging Yugoslavia's neighbours to lay claim to and invade Yugoslav lands. Yugoslavia was invaded in April of 1941 because "it refused to adhere to the Axis tripartite pact".[447] It took only 12 days to dismember the state. Croatia became a German-Italian client state and Slovene lands were annexed by Italy, Hungary and Germany. They conducted arrests, torture, executions and deportations to concentration camps to "de-Slovenize" their newly acquired lands.[448]

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[441] O. Luthar (ed.), 'From Monarchy to Kingdom', *The Land Between*, p. 378; K. Lavrencic, J. B. Allcock & T. M. Barker, 2020, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, 28 July 1999, access: 23 February 2020.
[442] O. Luthar (ed.), 'From Monarchy to Kingdom', *The Land Between*, p. 393.
[443] J. K. Cox, 'Slovenia in the two Yugoslav states', *Slovenia: Evolving loyalties*, p. 34; K. Lavrencic, J. B. Allcock & T. M. Barker, 2020, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020.
[444] J. K. Cox, 'Slovenia in the two Yugoslav states', *Slovenia: Evolving loyalties*, p. 32-38.
[445] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 17.
[446] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 17; O. Luthar (ed.), 'From Monarchy to Kingdom', *The Land Between*, pp. 416-418.
[447] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 17.
[448] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 17; J. K. Cox, 'Slovenia in the two Yugoslave States', *Slovenia: Evolving loyalties*, pp. 42-43.

However, the Liberation Front (Josip Broz Tito's communist liberation army) "received decisive backing and arms from the Allies after 1943".[449] At the end of the Second World War Slovenian territory was substantially enlarged, they were awarded the Istrian Peninsula which reincorporated many Slovenes into Slovenia as well as a few Italians.[450] This was "one of the very few territorial adjustments coming out of the war" and "was approved by the Paris Peace Conference in 1946".[451] The second Yugoslavia came into existence in 1945. Its first elections took place in November that same year, with Tito's Liberation Front being the only candidates on the list.[452] While Tito's communist party "faithfully copied the post-war Soviet system" and adhered to the party line, they challenged Joseph Stalin's monopoly of control in the communist bloc.[453] Tito's partisans defeated the Germans with very little help during World War II, granting them more independence in their home country.[454] Stalin viewed this independence as a challenge to his authority and made several demands that Tito refused to obey, causing Moscow to recall its advisors from Yugoslavia.[455] After this, Yugoslavia found itself isolated from the West and the East. This meant that "the newly formed state had to look for its own ways to modernize, to open to the West, but to remain Communist".[456] This came to be known as 'socialist self-management' and through this situation Slovenia achieved much greater economic prosperity than the other republics.[457]

Many reforms, such as the relaxation of political oppression, were implemented but Yugoslavia faced avid criticism for its new economic policies. Yugoslav

[449] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, pp. 18-19.
[450] K. Lavrencic, J. B. Allcock & T. M. Barker, 2020, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020.
[451] C. Rogel, 'In the beginning: the Slovenes from the seventh century to 1945' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 19.
[452] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 35.
[453] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 35.
[454] J. K. Cox, 'Slovenia in the two Yugoslave States', *Slovenia: Evolving loyalties*, pp. 42-44.
[455] V. G. Liulevicius, 'Behind the Iron Curtain, 1945-1953', *A history of Eastern Europe: course guidebook*, pp. 116-117.
[456] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, pp. 35-36; O. Luthar (ed.), 'Slovenia after the Liberation', *The Land Between*, p. 457.
[457] J. K. Cox, 'Slovenia in the two Yugoslav states', *Slovenia: Evolving loyalties*, p.55 ; K. Lavrencic, J. B. Allcock & T. M. Barker, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020.

industrialisation policy called for all industrialised regions to actively support those regions "left behind in their social and economic development".[458] Slovenia, as one of the more developed regions, would then be obligated to help other regions. The dinar (Yugoslav currency) suffered a devaluation of 30% and the entire country experienced shortages of items such as oil, sugar, coffee and detergent. As such, every republic was called on to help repay the debt, regardless of how much of the debt each republic incurred individually. This decree signified a "great burden for successful, export-oriented enterprises, especially in Croatia and Slovenia and it caused loud dissatisfaction in both these republics".[459] By the mid-1980s, Yugoslavia consisted of the centralist bloc in the east and the autonomous bloc in the west, and Serbia began accusing Croatia and Slovenia of trying to break up the state.[460]

In 1990, Slovenia had its first multiparty election after which the Assembly "passed constitutional amendments increasing the republic's autonomy and nullifying federal laws".[461] Croatia, Macedonia and Bosnia-Hercegovina followed suit. In Slovenia, a referendum indicated that over 90% of the population of just under two million favoured being independent.[462] Slovenia declared independence on the 26th of June 1991 and the final blow to Yugoslavia was dealt when the Yugoslav People's Army (JNA) invaded the country the next day.[463] The result was the Ten-Day War which quickly spilled over into Croatia and Bosnia-Hercegovina. Slovenia won the war with minimal loss of life by adopting tactics that were "originally intended to defend Yugoslavia against invading Soviet tanks".[464] The European and international community was also quickly made aware that the "smooth restoration of law and order had rapidly grown into a serious military conflict".[465] The foreign ministers of Italy, Luxembourg and the

[458] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 36.
[459] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 40.
[460] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 40.
[461] L. Plut-Pregelj & C. Rogel (eds.), *The A to Z of Slovenia*, 'Introduction', 2010, p. ii.
[462] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 43; K. Lavrencic, J. B. Allcock & T. M. Barker, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020.
[463] P. Vodopivec, 'Seven decades of unconfronted incongruities: the Slovenes and Yugoslavia' *in* J. Benderly & E. Kraft (eds.), *Independent Slovenia: origins, prospects and movements*, p. 43.
[464] K. Lavrencic, J. B. Allcock & T. M. Barker, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020.
[465] O. Luthar (ed.), 'Slovenia after the liberation', *The Land Between*, p. 509.

Netherlands were sent to Yugoslavia as observers to the adoption of a three month moratorium on all actions taken to finalise independence. This came to be known as the Brioni Declaration. The moratorium expired in October of 1991 and on the 23rd of December that year Slovenia adopted its first democratic constitution. In the decade after it declared independence, Slovenia's economy grew rapidly, most likely because for the first time in its history it experienced political stability.[466]

Less than six months after declaring independence, Slovenia became the 176th member of the United Nations on the 22nd of May 1992 and, on the 30th of September that year the Slovenian Tolar was put into circulation by the Bank of Slovenia. Slovenia became a full member of the Council of Europe in 1993, a member of the World Trade Organisation (WTO) in 1995, a member of the Central European Free Trade Agreement (CEFTA) in 1996, joined the North Atlantic Treaty Organisation (NATO), became a member of the European Union (EU) in 2004, and entered the Euro zone in 2007.[467]

Map 3: Present-day Slovenia[468]

[466] K. Lavrencic, J. B. Allcock & T. M. Barker, 'Slovenia: History', <https://www.britannica.com/place/Slovenia>, access: 23 February 2020; Republic of Slovenia, '15 years of Slovenian state', <http://www.15years.gov.si/15-years/chronology/>, 2006, access: 27 March 2020.
[467] Republic of Slovenia, '15 years of Slovenian state', <http://www.15years.gov.si/15-years/chronology/>, access: 27 March 2020.
[468] Operation World, 'Slovenia', <https://www.operationworld.org/country/slvn/owtext.html>, n.d., access: 10 April 2021.

Tourism in Slovenia

This section will provide a brief overview of tourism in the former Socialist Republic of Yugoslavia as well as tourism in Slovenia pre- and post-independence. In the former Socialist Republic of Yugoslavia tourism, as in many other countries, was used to bolster the country's political and economic stance on the world stage.[469] Domestically, giving citizens 'a taste of the good life' through state-organised holidays was used to propagate Tito's idea of 'Brotherhood in Unity'.[470] Tourism became increasingly important as a political tool as the country's economy crippled under mounting foreign debt. Marketing campaigns focused on "sun, sea and sand". Croatia, as the republic with the longest coastline on the Adriatic and the largest share of resorts, therefore benefitted greatly from this and soon became the country's largest tourism republic. Slovenia, along with other republics, had to develop its own marketing campaigns to attract foreign tourists not only to its share of the Adriatic Coast, but to its Alpine and health resorts as well.[471]

Tourism contributed substantially to Yugoslavia's economy as early as the mid-1930s with the emergence of the Dalmatian coast as a major European tourist destination. By 1936, "earnings from tourism represented the second largest non-goods item" of the Kingdom of Yugoslavia's economy.[472] Yet post World War II the new Yugoslav communist government paid little attention to the reconstruction of the previously lucrative tourism industry, because in the framework of socialist consolidation "its 'unproductive' nature disqualified it as an industry".[473] However, in an effort to construct a national consciousness and to give its citizens a taste of "the good life",

[469] I. Tchoukarine, 'Yugoslavia's Open-Door Policy and Global Tourism in the 1950s and 1960s', *East European Politics and Societies and Cultures* 29(1), 2015, pp. 168-188.
[470] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010, pp. 69-105.
[471] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, pp. 69-105; I. Tchoukarine, 'The Yugoslav Road to International Tourism: Opening, Decentralisation, and Propaganda in the early 1950s', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010, pp. 108-138.
[472] J. B. Allcock, 'The "First Yugoslavia" and the problems of modernisation', *Explaining Yugoslavia*, 2000, p. 57.
[473] K. Taylor & H. Grandits, 'Tourism and the Making of Socialist Yugoslavia: An Introduction', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010, p. 8.

the Yugoslav government introduced two weeks annual paid leave in 1946.[474] National trade unions in collaboration with federal governments and the state-run travel agency, Putnik, issued travel certificates to millions of workers each year. As part of the new social tourism programme, workers would receive between 25% and 60% discount on transport and accommodation, respectively. Another part of the programme was the construction of holiday centres in several republics. By 1958 Yugoslavia had 16 810 holiday centre beds, this number increased to 72 783 by 1965. In the 1980s 23.6% of all holiday centre beds were in Slovenia, the second largest tourism republic after Croatia.[475]

The renewed focus on international tourism post-1948 had both political and economic purposes. Following the Tito-Stalin split and the expulsion of Yugoslavia from the Cominform, the communist states of Eastern Europe suspended political and (much needed) economic relations.[476] Yugoslavia turned to international tourism to dispel the myth propagated by Moscow that it was a "bloody fascist dictatorship" and to make up for its loss of foreign revenue.[477] The 1949 – 1950 "Come and see the Truth" campaign was directed at Moscow and was an attempt to counteract Yugoslavia's media coverage deficit. From the perspective of the Western world "… Tito's Yugoslavia remained an unknown – and communist – country, therefore the presence of foreigners in the country would be an adequate means of proving to the world that Soviet criticism was pure fiction".[478] Thus, the marketing focus quickly shifted to "sun,

[474] I. Duda, 'Workers into Tourists: Entitlements, Desires, and the Realities of Social Tourism under Yugoslav Socialism', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, 2010, p. 35.
[475] I. Duda, 'Workers into Tourists: Entitlements, Desires, and the Realities of Social Tourism under Yugoslav Socialism', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, pp. 35-49.
[476] The Cominform was the Information Bureau of the Communist and Workers' Parties, founded in 1947. See also: Britannica, 'Cominform', <https://www.britannica.com/topic/Cominform>, 21 November 2011, access: 26 August 2020.
[477] I. Tchoukarine, 'Yugoslavia's Open-Door Policy and Global Tourism in the 1950s and 1960s', *East European Politics and Societies and Cultures* 29(1), p. 171; I. Tchoukarine, 'The Yugoslav Road to International Tourism: Opening, Decentralisation, and Propaganda in the early 1950s', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, pp. 108-138.
[478] I. Tchoukarine, 'The Yugoslav Road to International Tourism: Opening, Decentralisation, and Propaganda in the early 1950s', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, p. 114.

sea, youth, modernity and good times".[479]

These marketing campaigns were predominantly directed towards the Croatian Adriatic Coast, comparing it to the French Riviera, Amalfi Coast and even to Long Beach in California and the Copacabana.[480] The fervent marketing campaigns paid off, attracting increasing numbers of foreign tourists and celebrities to the "exotic" Eastern European coast. However, the Yugoslav tourism industry was woefully unprepared. Foreigners often complained about the costs, the lack of entertainment and organised excursions, and even that the resorts had become "too Westernised".[481] Untrained staff also presented a major barrier to satisfactory visits. Yugoslav citizens also voiced discontent with increased prices enacted in an attempt to increase foreign currency revenue.[482] Despite these complaints, international tourist arrivals continued to increase. As early as the 1960s, 10% of all foreign currency was earned through the tourism industry which "developed into the strongest branch in foreign trade and simultaneously benefitted numerous other industries".[483] In the 1980s Yugoslavia "was among the 10 most visited countries in the world", with the coasts of Slovenia, Croatia and Montenegro experiencing "extreme growth".[484] Almost 10 million tourists visited the coastal resorts by the end of the 1980s.[485]

As far as can be ascertained, tourism in the region of modern-day Slovenia started as early as the fourteenth century with visits to its natural spas and world famous caves.[486] Yet "Slovenian tourism played a major middleman role in distributing foreign

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[479] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, p. 89.
[480] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, p. 91.
[481] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, p. 91.
[482] R. Yeomans, 'From Comrades to Consumers: Holidays, Leisure Time, and Ideology in Communist Yugoslavia', *in* H. Grandits & K. Taylor (eds.), *Yugoslavia's Sunny Side: A History of Tourism in Socialism (1950s-1980s)*, pp. 89-95.
[483] M. Calic, 'The 1960s: Transition to an Industrial Society', *A History of Yugoslavia*, 2019, p. 201.
[484] A. Gosar, 'The Recovery of Tourism in Slovenia', *in* M. O. Adamič (ed.), *Slovenia: A Geographical Overview*, 2004, pp. 133-134.
[485] M. Calic, 'The 1960s: Transition to an Industrial Society', *A History of Yugoslavia*, 2019, p. 201.
[486] J. Sirse & T. Mihalic, 'Slovenian tourism and tourism policy – a case study', *The Tourist Review* (3), 1999, p. 34.

visitors to the Adriatic (mostly Croatian) seaside resorts".[487] It was therefore a transit destination, receiving only 10% of all foreign tourists in Yugoslavia.[488] However, of the total number of tourists who visited Slovenia, 39.1% were foreign tourists.[489] From the 1980s Slovenia marketed itself abroad using the slogan "Slovenia on the Sunny Side of the Alps", domestically using the slogan "Slovenia my homeland".[490] Many tourism experts in the country criticised the dual destination brand and argued that it was the reason behind Slovenia still being a transit destination two decades after the country's borders were opened for tourism.[491] Nevertheless, in 1986 the country registered 2.8 million tourist arrivals of which 1.05 million were foreign tourists, and Slovenian travel agencies had a 43% share of all package tours on the northern Adriatic Coast.[492] Tourism therefore played an important role in the Slovenian economy. However, Slovenia did experience a sharp decline in international tourist arrivals in 1991 as the 10-Day War and violence in Bosnia-Herzegovina discouraged many to travel to the region. In 1992 Slovenia recorded only 616 000 foreign visitors.[493] But by 1998 the country's tourism industry was well on its way to recovery only to drastically decline again in 1999 as a result of NATO's military activities in Serbia.[494] It took 24 years for the country to surpass the 1986 tourist arrivals, recording 2.9 million tourist arrivals in 2010.[495]

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[487] D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), 2019, p. 6.
[488] J. Sirse, 'The new strategy for the development of tourism in Slovenia', *The Tourist Review* 50(1), 1995, pp. 18-22; A Gosar, 'The Recovery of Tourism in Slovenia', *in* M. O. Adamič (ed.), *Slovenia: A Geographical Overview*, p. 134; J. Sirse & T. Mihalic, 'Slovenian tourism and tourism policy – a case study', *The Tourist Review* (3), p. 35; D. Cigale, 'Some changes in the spatial characteristics of tourism in Slovenia since its independence', *Journal of Geography, Politics and Society* 9(3), p. 6.
[489] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), 1990, p. 33.
[490] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 35.
[491] A. Gosar, 'Some characteristics of tourism in Slovenia', *Slovene Studies* 12(1), p. 37; J. Sirse, 'The new Strategy for the Development of Tourism in Slovenia', *The Tourist Review* 50(1), 1995, pp. 18-22.
[492]A Gosar, 'The Recovery of Tourism in Slovenia', *in* M. O. Adamič (ed.), *Slovenia: A Geographical Overview*, p. 134; S. S. Lebe, 'Tourism Planning and Organisation in Slovenia: From Cheap Destination Image to Sophisticated Offer', *in* C. Costa, E. Panyik & D. Buhalis (eds.), *European Tourism Planning and Organisation Systems: The EU Member States*, 2014, p. 369.
[493] STB, 'Slovenian tourism in 25 years', <https://www.slovenia.info/en/business/slovenian-tourist-board/25-years-of-slovenian-tourism>, 2016, access: 27 March 2020.
[494] STB, 'Slovenian tourism in 25 years', <https://www.slovenia.info/en/business/slovenian-tourist-board/25-years-of-slovenian-tourism>, access: 27 March 2020.
[495] S. S. Lebe, 'Tourism Planning and Organisation in Slovenia: From Cheap Destination Image to Sophisticated Offer', *in* C. Costa, E. Panyik & D. Buhalis (eds.), *European Tourism Planning and Organisation Systems: The EU Member States*, p. 369.

From a government position the then Slovene Ministry of Hospitality and Tourism, founded in 1992, enacted the country's first tourism development strategy in 1994 focusing on the re-imaging and promotion of the country as a tourist destination as well as the improvement of infrastructure and the quality of tourism products.[496] The following year, at the country's first tourism forum, Slovenian tourism policy was set out and a new destination branding campaign was launched. The campaign was centred around the slogan "The Green Piece of Europe", meant to emphasise Slovenia's natural diversity.[497] Tourism officials argued that the country did not have a recognisable and competitive destination image and as such, in 2002 the Slovenian Tourist Board (STB) issued a call for "creative marketing communication concepts for increasing Slovenia's recognisability".[498] In 2003 the slogan "Slovenia Invigorates" was introduced, this was the country's first large-scale promotional campaign with a unified brand. "Slovenia wished to position itself as a country that surprises, invigorates, and enriches the European Union".[499] Slovenia rebranded itself again in 2006, seeking to further increase its recognisability and international competitiveness. The new destination image, using the slogan "I feel Slovenia", is still in use and focuses on the country's love of all things green, active, and healthy.[500] (See figure 7)

[496] A. Gosar, 'Development Characteristics and Challenges of Tourism in South-eastern Europe, with special emphasis on Slovenia', n.d., p. 17; S. S. Lebe, 'Tourism Planning and Organisation in Slovenia: From Cheap Destination Image to Sophisticated Offer', *in* C. Costa, E. Panyik & D. Buhalis (eds.), *European Tourism Planning and Organisation Systems: The EU Member States*, p. 373.
[497] P. Prešeren, 'The brands of Slovenia – from the linden leaf to I feel Slovenia', <https://www.rtvslo.si/news-in-english/the-brands-of-slovenia-from-the-linden-leaf-to-i-feel-slovenia/387430>, 19 July 2018, access: 30 August 2020.
[498] P. Prešeren, 'The brands of Slovenia – from the linden leaf to I feel Slovenia', <https://www.rtvslo.si/news-in-english/the-brands-of-slovenia-from-the-linden-leaf-to-i-feel-slovenia/387430>, access: 30 August 2020.
[499] P. Prešeren, 'The Green line to I feel Slovenia', <https://slovenia.si/this-is-slovenia/the-green-line-to-i-feel-slovenia-brand/>, 07 November 2019, access: 30 August 2020.
[500] P. Prešeren, 'The Green line to I feel Slovenia', <https://slovenia.si/this-is-slovenia/the-green-line-to-i-feel-slovenia-brand/>, access: 30 August 2020.

Figure 7: "I Feel Slovenia" logo[501]

Since it gained independence in 1991, the country has made concerted efforts to consolidate its destination brand and position itself among the top destinations globally. The country also has a long history of protecting its natural resources, this is firmly embedded in the national identity, branding, legislation, and development strategies.[502] The next section will focus specifically on this dimension.

Natural and cultural heritage

The natural environment is in many ways regarded as a national treasure in Slovenia, and protecting it is a tradition among the inhabitants dating back over a century. The country's first forest management plan was published in 1892 and "it continues to form the basis of forest management today".[503] The first attempts at nature conservation were made in the early twentieth century when a catalogue of Carniola's natural monuments was produced following a decree made by the Austrian Ministry of Education and Religion. Slovenia's only national park owes its existence to this decree, it was

> by all means recommend[ed] that a protected area be established at the Seven Lakes [Triglav Lakes Valley] in order to prevent any human impact and save the last remnants of an exceptional high-mountain virgin forest for posterity.[504]

[501] STB, 'I Feel Slovenia', <https://www.slovenia.info/en>, n.d., access: 28 May 2020; Nation Branding, 'Slovenia launches branding initiative', <https://nation-branding.info/2007/11/24/slovenia-branding-initiative/>, 24 November 2007, access: 03 August 2021.
[502] K. P. Horvat, A. Smrekar & M. Zorn, 'The development of environmental thought in Slovenia: A short review', *Journal of Economic and Ecohistory* 10(10), 2014, p. 23.
[503] A. Smrekar, K. P Horvat & D. Ribeiro, 'Slovenia's Protected Areas', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, 2020, p. 313.
[504] A. Smrekar, K. P Horvat & D. Ribeiro, 'Slovenia's Protected Areas', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, p. 316.

However, the negotiations to establish this protected area were interrupted by the First World War. Post-War, in the first Yugoslavia there were no legal means of declaring a protected area. As such, the Slovenian Museum Association signed a 20-year lease with the Carniolan Religious Fund for an area that today falls within Triglav National Park. The political situation in the second Yugoslavia made it impossible to re-instate the park post-WWII, and it was only reinstated in 1961. Twenty years later a new law was passed that significantly enlarged the park from a mere 2 000 hectares to 83 807 hectares. Today, it covers 4.1% of Slovenian territory and is the country's largest single-entity protected area.[505]

However, the first formal concerted efforts to protect the country's biodiversity were only made after the country gained independence. The first policy on environmental protection was published in 1993 and it therefore included much of the recommendations made in *Agenda 21*. Environmental protection legislation further increased when Slovenia initiated the process of becoming an EU member, "through adjusting to legal requirements of the European Union, environmental protection became an indispensable part of political, economic as well as social decisions".[506] Today, over 52% of the country's territory lies within ecologically important areas and over 37% makes up its Natura 2000 network. In addition to Triglav National Park, the country has three regional parks, 44 landscape parks, one strict nature reserve, 56 nature reserves, 355 Natura 2000 sites and 1 164 natural monuments.[507] Slovenia also has two natural World Heritage Sites, two Global Geoparks and three Ramsar Sites which "create the world's largest network of protected areas".[508] Despite the fact that it is one of the smallest countries, Slovenia is regarded as a landscape and biodiversity hotspot as four European landscapes come together within its borders and it boasts "the second highest biodiversity index in Europe".[509] Slovenian law also

[505] A. Smrekar, K. P Horvat & D. Ribeiro, 'Slovenia's Protected Areas', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, pp. 316-317.
[506] K. P. Horvat, A. Smrekar & M. Zorn, 'The development of environmental thought in Slovenia: A short review', *Journal of Economic and Ecohistory* 10(10), p. 23.
[507] A. Smrekar, K. P Horvat & D. Ribeiro, 'Slovenia's Protected Areas', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, pp. 314-319.
[508] U. Šilc, B. Vreš, T. Čelik & M. Gregorič, 'Biodiversity in Slovenia', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, p. 110.
[509] D. Perko, R. Ciglič & M. Zorn (eds.), 'Slovenia: A European landscape hotspot', *The Geography of Slovenia: Small but Diverse*, p. 13; U. Šilc, B. Vreš, T. Čelik & M. Gregorič, 'Biodiversity in Slovenia', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, p. 109.

states that forests have to be publicly accessible and as such outdoor activities such as mountaineering, hiking, foraging and gardening are the most popular leisure activities Slovenians take part in.[510] It is therefore rather obvious why the country is so focused on sustainability.

Despite the fact that Slovenia has a chequered past with a history that spans a diverse number of nation states and is therefore rather diffuse, it also has a long history of protecting, and even commemorating, this past. As with the first forest management plan, the protection of cultural heritage took shape during the time that Slovenia (then Carniola) was still part of the Austro-Hungarian Empire. According to the Slovenian Ministry of Culture "the monument [cultural heritage] protection profession in Slovenia was formed within the Vienna Central Committee" during the 1850s.[511] The Central Committee was comprised of art historians and applied art institutions in Vienna who were tasked with creating "a vision of [the Empire's] multi-ethnic and progressively modern character in contrast to the dissonant voices of nationalism".[512] These dissonant voices of nationalism, as discussed earlier in this chapter, ultimately resulted in the collapse of the Empire.[513] Although the Committee's provincial office (Carniola) was established in 1913, it would take 44 years for the country's heritage protection institutions to properly take shape. It was only between 1957 and the 1980s that "the basic national institutions were set up".[514] Slovenia declaring independence from Yugoslavia gave its heritage protection institutions and practitioners a much needed boost as cultural heritage protection formed part of the 1991 Constitution. Article 73 of the Constitution states that "everyone is obliged in accordance with the law to protect natural sites of special interest, rarities, and cultural monuments". It also states that

[510] M. Urbanc, M. Šmid Hribar & P. Kumer, 'Culture in Slovenia', *in* D. Perko, R. Ciglič & M. Zorn (eds.), *The Geography of Slovenia: Small but Diverse*, pp. 193-200.
[511] Culture.si, 'Heritage preservation and restoration in Slovenia', <https://www.culture.si/en/Heritage_Preservation_and_Restoration_in_Slovenia>, n.d., access: 19 April 2021.
[512] S. K. Rahman, 'Designing Empire: Austria and the Applied Arts, 1864-1918', Doctoral thesis, University of California, Berkley, USA, 2010, p. vii.
[513] S. K. Rahman, 'Designing Empire: Austria and the Applied Arts, 1864-1918', Doctoral thesis, University of California, Berkley, USA, 2010, p. vii.
[514] Culture.si, 'Heritage preservation and restoration in Slovenia', <https://www.culture.si/en/Heritage_Preservation_and_Restoration_in_Slovenia>, access: 19 April 2021.

"the state and local communities shall promote the preservation of the natural and cultural heritage" of the Republic of Slovenia.[515]

Both the Monument and Nature Protection Services were part of the Ministry of Culture until 1994 when the nature protection services division was transferred to the Ministry of Environment and Physical Planning. The country's first heritage legislation was enacted in 1999, the *Cultural Heritage Protection Act* also established the Institute for the Protection of Cultural Heritage of Slovenia (IPCHS). Today, the IPCHS has seven regional offices and a Conservation Centre which has an additional two sub-units, the Restoration Centre, and the Centre for Preventative Archaeology. The *Act* also defines movable and immovable heritage.[516] The 2008 *Cultural Heritage Protection Act* further defines tangible and intangible heritage as well as the role of the IPCHS and its related institutions in the protection of living (intangible) heritage.[517] There is indeed a concerted effort to both monitor and protect Slovenian natural and cultural heritage.

Slovenia has two cultural World Heritage Sites, four sites on the Tentative List as well as four intangible cultural heritage elements on the Representative List of the Intangible Cultural Heritage of Humanity.[518] The two cultural World Heritage Sites are the Idrija Mercury Mine and the Prehistoric Pile Dwellings in the Slovenian Alps. Its tentative sites include: the Fuzina Hills; the Franja Partisan Hospital built and used during WWII; the Walk of Peace from the Alps to the Adriatic – Heritage of the First World War; and architecture of Jože Plečnik. The intangible cultural heritage elements on the Representative List are the art of drystone walling, bobbin lacemaking, the Kurenti harvest festival, and a centuries old traditional play that is still performed today.[519]

[515] Article 73: Protection of Natural and Cultural Heritage, *Republic of Slovenia Constitution*, 1991.
[516] Culture.si, 'Heritage preservation and restoration in Slovenia', <https://www.culture.si/en/Heritage_Preservation_and_Restoration_in_Slovenia>, n.d., access: 20 April 2021.
[517] Republic of Slovenia, *Cultural Heritage Protection Act*, 2008.
[518] UNESCO, 'Slovenia: Properties inscribed on the World Heritage List', <http://whc.unesco.org/en/statesparties/si>, n.d., access: 20 April 2021; UNESCO, 'Lists of Intangible Cultural Heritage and the Register of good safeguarding practices', <https://ich.unesco.org/en/lists>, n.d., access: 20 April 2021.
[519] UNESCO, 'Slovenia: Properties inscribed on the World Heritage List', <http://whc.unesco.org/en/statesparties/si>, access: 20 April 2021.

Lipizzan horse breeding was nominated in 2020 as an additional intangible cultural heritage element for the Representative List of the Intangible Cultural Heritage of Humanity.[520] Lipizzan horse breeding originated in Carniola in 1580 when the Archduke of the Austrian Empire bought the Lipica Stud Farm, then known as Lipizza, and set out to breed an imperial horse that could be used during war and for classical riding. The Lipizzan breed was meticulously engineered throughout the seventeenth to eighteenth centuries. Breeding these horses is a tradition that is over 400 years old, and the Slovenes are extremely proud of it. Visitors of the Lipica Stud Farm can go on a tour of the oldest barn, the Lipizzan horse and carriage museum as well as guided horse rides. The Farm also has an app which allows users to go on guided virtual tours of the grounds. Lipica is the oldest stud farm in Europe and is a Slovenian cultural and historical monument.[521]

According to Slovene geographers Drago Perko, Rok Ciglič and Matija Zorn "Slovenia's natural landscapes are closely related to its cultural landscapes" which are "distinguished by their embeddedness in the natural environment and high ecological, cultural and emotional value".[522] A perfect example of this is Slovenia's salt pans. Just outside the medieval town of Piran lies the Mediterranean's northern-most salt pans, the Sečovlje and Strunjan Salt Pans.[523] These salt pans are the last in the Mediterranean where salt is produced manually using a method that is at least 700 years old. The first record of salt pans in the area dates back to 804 when multiple small pans were run by monasteries and the larger commercial pans have been active since the thirteenth century. In 1460 the Piran salt pans became the "largest and most

[520] UNESCO, 'Slovenia: Properties inscribed on the World Heritage List', <http://whc.unesco.org/en/statesparties/si>, n.d., access: 20 April 2021; UNESCO, 'Lists of Intangible Cultural Heritage and the Register of good safeguarding practices', <https://ich.unesco.org/en/lists>, access: 20 April 2021; Slovenian Ministry of Culture, 'Lipizzan Horse breeding tradition as Intangible Cultural Heritage of Humanity', <https://www.gov.si/en/news/2020-03-25-lipizzan-horse-breeding-traditions-as-intangible-cultural-heritage-of-humanity/>, 25 March 2020, access: 20 April 2021; UNESCO, 'Slovenia and the 2003 Convention', <https://ich.unesco.org/en/state/slovenia-SI>, n.d., access: 21 April 2021.

[521] STB, 'Lipica: The cradle of white horses', <https://www.slovenia.info/en/places-to-go/attractions/lipica>, n.d., access: 21 April 2021; Tempel Farms, 'The Tempel Lipizzans: History of the Lipizzan breed', <https://www.tempelfarms.com/the-history-of-the-lipizzan.html>, 2016, access: 21 April 2021; Lipica Stud Farm, 'Visit to the Stud Farm', <https://www.lipica.org/en/products/visit-to-the-lipica-stud-farm/>, n.d., access: 21 April 2021.

[522] D. Perko, R. Ciglič & M. Zorn (eds.), 'Slovenia: A European landscape hotspot', *The Geography of Slovenia: Small but Diverse*, p. 12.

[523] A. Faganel & A. Trnavčevič, 'Sustainable natural and cultural heritage tourism in protected areas: case study', *Annals for Istrian and Mediterranean Studies* 22(2), 2012, pp. 589-597.

significant salt pans in the north-eastern Adriatic as well as the entire Venetian Republic".[524] The Sečovlje pans were taken over by the Austrian Empire in 1797 and following the fall of the Austro-Hungarian Empire in 1918, the Italians took control of the pans. The pans were reconstructed, and this greatly increased the quality and output. The Sečovlje and Strunjan Pans were declared Nature Parks by the local municipality in 1990 and the Sečovlje Pans were declared a Ramsar site in 1992. Sečovlje was also declared a Natura 2000 site in 2004 and the entire Sečovlje Salina Nature Park (SSNP) is regarded as an area of ecological importance and is "the biggest wetland on the [Slovenian] coastline".[525]

The Sečovlje Pans, a gift shop with an exhibition on the history of salt panning in the area as well as a spa are located in the northern part of the Park, a salt panning museum is located in the southern part where visitors can also enjoy birdwatching, cycling and hiking along themed trails. Guided tours of the pans and various trails are also offered.[526] Today, those who work these salt pans do so to preserve a dying tradition that is centuries old. Although these salt pans are of both natural and cultural significance, the cultural aspect is perhaps the most important as "the cultural heritage of SSNP … reflects and provides testimonies of significant ethnological, technical, historical, settlement and landscape heritage".[527]

Slovenia's hundreds of castles, manors and fortresses provide perhaps the best cultural representation of the country's chequered past. The most well-known and widely marketed castles are Bled, Ljubljana and the cave castle of Predjama however, Brdo Castle is perhaps the most important. Brdo Castle has a history of over 500 years and has served as the residence of the royal family of the first Yugoslavia as well as

[524] Sečovlje Salina Nature Park, 'History', <https://www.kpss.si/en/history>, 2011, access: 21 April 2021.
[525] Portoz Tourist Board, 'Sečovlje Salina Nature Park', <https://www.portoroz.si/en/experience/natural-sights-and-attractions/4457-object-krajinski-park-secoveljske-soline>, 2018, access: 21 April 2021; Sečovlje Salina Nature Park, 'History', <https://www.kpss.si/en/history>, access: 21 April 2021;
Nature Parks of Slovenia, 'Sečovlje Salina Nature Park', <https://www.naravniparkislovenije.si/en/nature-parks/secovlje-salina-nature-park>, 2017, access: 21 April 2021.
[526] Nature Parks of Slovenia, 'Sečovlje Salina Nature Park', <https://www.naravniparkislovenije.si/en/nature-parks/secovlje-salina-nature-park>, access: 21 April 2021.
[527] A. Faganel & A. Trnavčevič, 'Sustainable natural and cultural heritage tourism in protected areas: case study', *Annals for Istrian and Mediterranean Studies* 22(2), p. 590.

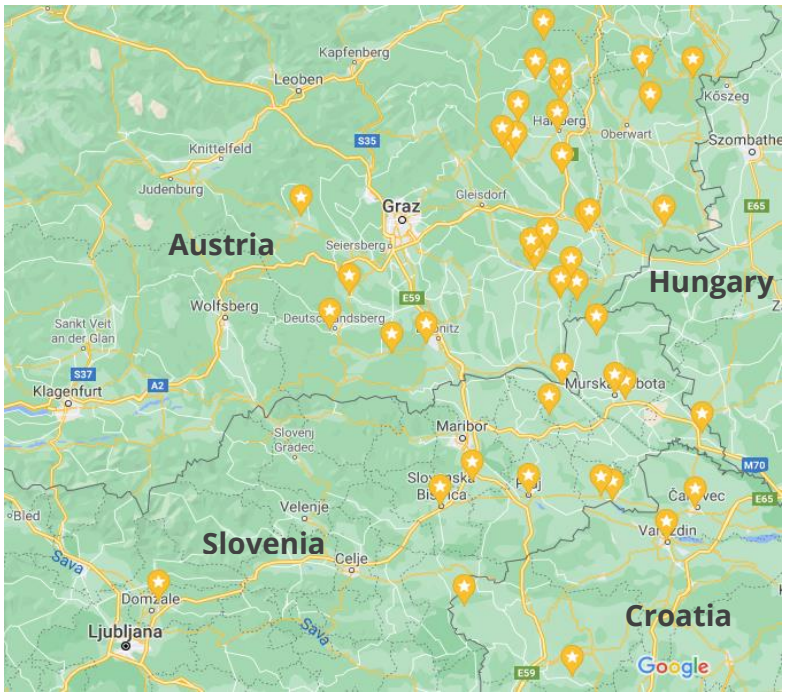
president of the second Yugoslavia. Today, the castle serves as accommodation for state visitors as well as one of the best conference centres in the country.[528] Several of Slovenia's castles have been turned into hotels and museums, offering visitors a glimpse into the country's complex past. Bled Castle and its Gothic church on the island in the middle of Lake Bled is the country's most popular castle as well as its oldest. The castle was originally just a tower on the island, built in 1004, which was then rebuilt as a castle in 1011. After it was badly damaged by an earthquake, it was rebuilt in 1511. The castle underwent a series of restoration works from 1951 to 1961 and today, it houses a memorial room, museum, gift shop, restaurant, and a gallery space.[529]

Many of Slovenia's castles are also part of a cross-border tourism project. The area of south-eastern Austria (Styria) and north-western Slovenia has the highest density of castles, manors, fortifications, and other defensive structures in all of Europe. For over a millennium the Franks, Avars, Romans and Ottomans fought many battles to gain control of the region as it was regarded as the gateway to central and eastern Europe.[530] The region is therefore instrumental in the representation of central and eastern Europe's turbulent past. In the 1980s the castles, manors and forts in Austrian Styria were grouped together to form the Schlösserstraße (CASTLE ROAD). However, in 2018 it was recognised that the region's cultural heritage could not be properly interpreted without the inclusion of castles on the other side of the border.[531] As such, the director of Schlösserstraße initiated a partnership with the castles in Slovenian Styria. The Schlösserstraße/Cesta gradov project is co-funded by the EU and the

[528] STB, 'Castles', <https://www.slovenia.info/en/things-to-do/culture/castles>, n.d., access: 21 April 2021; Brdo Estate, 'Brdo Estate: Domain of delights', <https://www.brdo.si/en/brdo-estate>, 2015, access: 21 April 2021.
[529] STB, 'Castles', <https://www.slovenia.info/en/things-to-do/culture/castles>, access: 21 April 2021; Bled Tourism Board, 'Bled Island', <https://www.bled.si/en/what-to-see-do/attractions/2/bled-island>, 2019, access: 21 April 2021.
[530] Interreg Slovenia-Austria, 'CASTLE Road', <http://www.si-at.eu/en2/castle-road/>, n.d., access: 10 February 2021; RIS Rakičan Manor, 'CASTLE ROAD: Cross-border Road of Castles got a new map', <https://www.ris-dr.si/go/588/1643/CASTLE_ROAD_Cezmejna_Cesta_gradov_dobila_nov_zemljevid>, n.d., access: 22 April 2021.
[531] Styrian Tourism Board, 'Schlösserstraße', <https://www.steiermark.com/sl/stajerska/destinacije/cesta-gradov-schlosserstrasse_p9352>, n.d., access: 22 April 2021; Weiz Tourism Region, 'The Schlösserstraße', <https://www.tourismus-weiz.at/ausflugsziel/schloesserstrasse/>, n.d., access: 22 April 2021; Interreg Slovenia-Austria, 'Cross-border Schlösserstraße as an internationally positioned tourism destination', <http://www.si-at.eu/de2/2019/06/11/grenzuebergreifende-schloesserstrasse-als-international-positionierte-tourismusdestination/>, 11 June 2019, access: 22 April 2021.

European Regional Development Fund as part of the Interreg Slovenia-Austria programme. The project is seen as contributing to Interreg's investment priority of achieving sustainable development of natural and cultural heritage. In 2020, four castles in Croatia were also added to the project. CASTLE ROAD has 7 routes (1 001km) that connect 43 castles across the three countries. (See map 4) One of the aims of the project is to conduct further research on the history of the castles and develop high-quality cultural tourism offerings.[532] Slovenia's castles and manors are therefore an important element of its cultural heritage that, perhaps more than anything else, depict the country's long and arduous struggle to become an independent and united nation.

Map 4: CASTLE ROAD locations[533]



[532] Interreg Slovenia-Austria, 'Cross-border Schlösserstraße as an internationally positioned tourism destination', <http://www.si-at.eu/de2/2019/06/11/grenzuebergreifende-schloesserstrasse-als-international-positionierte-tourismusdestination/>, access: 22 April 2021; RIS Rakičan Manor, 'CASTLE ROAD: Cross-border Road of Castles got a new map', <https://www.ris-dr.si/go/588/1643/CASTLE_ROAD_Cezmejna_Cesta_gradov_dobila_nov_zemljevid>, access: 22 April 2021.

[533] Composed by author.

Slovenia: Eastern Europe's boutique green destination

Often described as green, active and healthy, Slovenia is currently receiving multiple accolades for its attention to detail, high-quality (safe) experiences and promotion of all things green. In addition, it was identified as one of the top 10 sustainable destinations to visit and one of the best holiday destinations for 2021 by *Condé Nast Traveller*; one of the top 20 destinations to visit in 2021 by *Forbes*; Lake Bled is number 6 on *Lonely Planet*'s Ultimate Travel List; Ljubljana is on *Monacle*'s top 25 small cities; the country is on *The Sunday Times*' top 10 foodie destinations for 2021; it is among *The Guardian*'s 21 places to go in 2021; and lastly, it is number 10 on *Falstaff Travel*'s list of top 10 sustainable countries to visit in 2021.[534] In 2018 Slovenia was also awarded the title of European Region of Gastronomy for 2021 "based on [it's] gastronomic offers combined with the development of sustainable living and quality of life".[535] As is evident, Slovenia has an extremely diverse tourism offering which includes the age-old spa tourism as well as adventure and nature-based tourism, cave tourism, cultural tourism, and food and wine tourism.

In response to the Covid-19 pandemic's impact on the global tourism industry, and as an attempt at easing travellers' concerns about travel during the pandemic, the WTTC developed "Global Protocols for the New Normal" for all tourism service providers.[536] Compliance with these protocols means that a country, airline, tour operator, restaurant or hotel will receive a 'Safe Travels' stamp. Slovenia was one of the first

[534] J. Kinsman, '10 Sustainable destinations we'd love to visit in 2021', <https://www.cntraveller.com/gallery/sustainable-destinations-2021>, 10 January 2021, access: 30 March 2021; L. Pook, 'The best holiday destinations for 2021', <https://www.cntraveller.com/gallery/best-holiday-destinations-2021>, 04 January 2020, access: 30 March 2021; L. B. Bloom, 'The 20 Best places to travel in 2021: Where to go next', <https://www.forbes.com/sites/laurabegleybloom/2020/10/22/the-20-best-places-to-travel-in-2021-where-to-go-next/?sh=13879f564094>, 22 October 2020, access: 30 March 2021; Lonely Planet, 'Ultimate Travel List', <https://www.lonelyplanet.com/landing/ultimate-travel-list>, 07 October 2020, access: 30 March 2021; N. Giles, 'Bright lights, small city', <https://monocle.com/magazine/the-forecast/2021/bright-lights-small-city/>, 2021, access: 30 March 2021; S. d'Arcy, '10 best foodie holidays for 2021', <https://www.thetimes.co.uk/article/10-best-foodie-holidays-for-2021-9rbvd2q9p>, 01 January 2021, access: 30 March 2021; The Guardian, '21 places to go in 2021', <https://www.theguardian.com/travel/2021/jan/02/21-places-for-2021-holidays-were-dreaming-of>, 02 January 2021, access: 30 March 2021; Falstaff Travel, '10 sustainable places to visit in 2021', <https://www.falstaff.at/travel/artikel/diese-nachhaltigen-orte-sollte-man-2021-besuchen/#>, n.d., access: 30 March 2021.

[535] T. Koren, 'Slovenia – European Region of Gastronomy 2021', <https://foodtourljubljana.com/blog/slovenia-european-region-of-gastronomy-2021/>, n.d., access: 30 March 2021.

[536] WTTC, '"Safe Travels": Global Protocols & Stamps for the New Normal', <https://wttc.org/COVID-19/Safe-Travels-Global-Protocols-Stamp>, 2020, access: 30 March 2021.

countries to receive the stamp. Furthermore, in May 2020 Slovenia also launched its own certification system and label for safe travels: the "Responsible travel standards of Slovenian Tourism GREEN&SAFE" label. The new label was integrated into Slovenia's existing green branding to emphasise its continued commitment to providing responsible and sustainable tourism experiences.[537]

Sustainability is at the core of the Slovenian brand which serves as both the national and tourism brand. 'I feel Slovenia', in use since 2006, markets the country as a green boutique destination.[538] In an interview with *The Place Brand Observer*, the director of the Slovenian Tourism Board (STB), Maja Pak, stated that:

> Love for nature is deeply embedded in us and the essence of our *I feel Slovenia* brand identity. Slovenians have a tight connection with nature and attachment to the local environment … We are green, we develop Slovenia in a green manner, and we proudly promote it as green.[539]

In 2015 the STB launched the Green Scheme of Slovenian Tourism (GSST) which falls under the SLOVENIA GREEN umbrella brand.[540] The GSST "brings together all efforts directed towards the sustainable development of tourism in Slovenia, offers tools to destinations and service providers that enable them to evaluate and improve their sustainability endeavours, and promotes these green endeavours through the SLOVENIA GREEN brand".[541] The GSST was developed in harmony with global standards of other certification and accreditation schemes such as the Green Destinations Standard (GDS), Green Globe, GSTC and the ETIS. Its criteria also adhere to requirements and standards set by UNESCO, "Man and the Biosphere Programme", and the EUROPARC Foundation in the case of the assessment of parks.[542]

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[537] STB, 'Five green and safe reasons to choose Slovenia', <https://www.slovenia.info/en/stories/five-green-and-safe-reasons-to-choose-slovenia>, 2020, access: 30 March 2021; STB, 'GREEN&SAFE – Commitment to responsible, green and safe tourism', <https://www.slovenia.info/en/business/green-safe-commitment-to-responsible-green-and-safe-tourism>, 2020, access: 30 March 2021.
[538] STB, *Slovenian Tourism Board Work Programme 2018/2019*, p.17.
[539] F. Kaefer, 'Slovenia: Smart destination branding for sustainable tourism – special report', <https://placebrandobserver.com/slovenia-destination-branding-sustainable-tourism-report>, 27 June 2019, access: 28 May 2020.
[540] STB, *Green Scheme of Slovenian Tourism*, 2018, p. 1.
[541] STB, *Green Scheme of Slovenian Tourism*, p. 1.
[542] STB, *Green Scheme of Slovenian Tourism*, p. 3.

The GSST functions at two levels: destinations and service providers. At the destination level there are three categories: Gold, Silver, and Bronze. Service providers also have three categories: accommodation, travel agency and parks.[543] The GSST has certified 53 destinations, 46 accommodation establishments, 4 parks, 2 travel agencies and 1 attraction.[544] In 2019, 31 of these destinations were ranked among the Global Top 100 Sustainable Destinations.[545] Interreg Europe identified the GSST as a good practice example in 2018, stating that it is "an inspiring example [of] how to encourage destinations and tourism service providers to adopt standards of sustainability and stimulate innovation in [the] tourism sector".[546]

In 2015 the Slovenian government adopted the *Slovenian Smart Specialisation Strategy* (S4) to increase the country's competitiveness, diversify its industries and enhance the growth of emerging enterprises, thereby increasing its innovation capacity.[547] The S4 identified sustainable tourism as one of the key focus areas of the country's smart and sustainable development.[548] It is stated that:

> a key development priority of Slovenian tourism is the design of competitive and sustainable tourism products which will place Slovenia on global markets as a green, active, and healthy tourist destination. Emphasis will be placed on the development of integrated services providing a top-level experience by including and taking into account the preservation of nature and natural and cultural resources.[549]

[543] STB, *Green Scheme of Slovenian Tourism*, p. 2.
[544] STB, 'Green Scheme of Slovenian Tourism', <https://www.slovenia.info/en/business/green-scheme-of-slovenian-tourism>, n.d., access: 03 September 2020.
[545] STB, 'As many as 31 destinations within in Green Scheme of Slovenian Tourism ranked among top global sustainable destinations', <https://www.slovenia.info/en/press-centre/press-releases/10342-as-many-as-31-destinations-within-the-green-scheme-of-slovenian-tourism-ranked-among-top-global-sustainable-destination>, 11 October 2019, access: 03 September 2020.
[546] Interreg Europe, 'Promoting sustainable tourism: Green Scheme of Slovenian Tourism', <https://www.interregeurope.eu/policylearning/news/4257/promoting-sustainable-tourism-green-scheme-of-slovenian-tourism/#:~:text=The%20Green%20Scheme%20of%20Slovenian,part%20of%20interregional%20learning%20process.>, 29 October 2018, access: 03 September 2020.
[547] Slovenian Government Office for Development and European Cohesion Policy, *Slovenia's Smart Specialisation Strategy (S4)*, 2015.
[548] Republic of Slovenia, *Implementing the 2030 Agenda for Sustainable Development: 2018 update*, p. 23.
[549] Slovenian Government Office for Development and European Cohesion Policy, *Slovenia's Smart Specialisation Strategy (S4)*, 2015, p. 20.

One of the cornerstones of the S4 is to foster better collaboration between different stakeholders at different levels in order to advance innovative solutions and strategies for the development of all focus areas of the strategy.[550]

In line with the country's new national development plan, the Slovenian Ministry of Economic Development and Technology also adopted a new tourism development plan in 2017. The *Strategy for the Sustainable Growth of Slovenian Tourism for 2017-2021* identified sustainability as one of the country's hidden potentials in terms of its global competitiveness.[551] The strategy states that

> green, sustainable, and responsible development is the pillar of Slovenian tourism, all its stakeholders have committed themselves to those ideals. They provide support for the preservation and protection of natural and cultural assets and heritage, and for responsible and sustainable tourism revaluation.[552]

The country's multiple awards won since 2016, the GSST and inclusion of sustainable tourism in its S4 is a testament to its commitment to fostering a truly sustainable tourism industry. It is within this developmental context that Tourism 4.0 was innovated.

[550] Slovenian Government Office for Development and European Cohesion Policy, *Slovenia's Smart Specialisation Strategy (S4)*, 2015.
[551] S. Zagorc, 'The strategic vision for Slovenian tourism', *Strategy for the Sustainable Growth of Slovenian Tourism for 2017-2021*, 2017, p. 12.
[552] S. Zagorc, 'The strategic vision for Slovenian tourism', *Strategy for the Sustainable Growth of Slovenian Tourism for 2017-2021*, p. 12.

CHAPTER 6: TOURISM 4.0 ON THE SUNNY SIDE OF THE ALPS

The Secretary-General of the UNWTO opened the Second World Conference on Smart Destinations by stating that "technology helps us to manage our social, cultural and environmental impacts better. Moreover, if well managed, tourism can act as an agent of positive change for more sustainable lifestyles, destinations, and consumption and production patterns".[553] It is widely recognised that the use of technology can assist tourism destinations in the sustainable development and management of tourism. Slovenia's Tourism 4.0 project is one of the newest, and perhaps most cutting-edge, examples of how technology can be used to the advantage of tourism destinations. In light of this, this chapter sets out to unpack this initiative by discussing its individual elements (technology pillars) as well as several of its projects related to the protection and promotion of natural and cultural heritage in the context of tourism.

Tourism 4.0

The earlier mentioned Arctur's Tourism 4.0 truly embodies Slovenia's S4 and has fully embraced 'technology for sustainable tourism'.[554] The 'Tourism 4.0 TRL 3-9 – enriched tourist experience' research project was launched in 2018 by the private company Arctur in collaboration with the Slovenian Ministry of Economic Development and Technology.[555] It is co-funded by the latter Ministry and the EU Regional Development Fund with an estimated worth of €2.3 million.[556] As such, it is the "largest government-funded research and development project in the field of Slovenian tourism".[557] The first phase of the project was initiated in September 2018 and was intended to be concluded in August 2021. The initiative is claimed to be a "unique solution in the field

[553] Authenticitys, 'Technology guiding the way to sustainable tourism?', <http://www.authenticitys.com/blog/technology-guiding-the-way-to-sustainable-tourism/>, 24 November 2018, access: 14 September 2020.
[554] Arctur is a leading tech company in Slovenia. See also: Arctur, 'About us', <https://www.arctur.si/about-us/>, n.d., access: 02 September 2020.
[555] Tourism 4.0, 'Tourism 4.0 TRL 3-6', <https://tourism4-0.org/t4-0-projects/trl-3-6/>, 2019, access: 01 September 2020.
[556] Tourism 4.0, 'Tourism 4.0 TRL 3-6', <https://tourism4-0.org/t4-0-projects/trl-3-6/>, 2019, access: 01 September 2020.
[557] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, 2020, p. 230.

of sustainable tourism".[558] The outcome of the project will be known as Tourism 4.0, inspired by the merging of the concepts of ongoing Fourth Industrial Revolution (Industry 4.0) and Smart Tourism. Sustainability is at the core of Tourism 4.0 and the project aims to make use of the key enabling technologies of the 4IR to monitor the impact of tourism in a town, city, region or even an entire country; to manage tourist flows; encourage responsible behaviour through a rewards system; and to preserve cultural heritage.[559] Tourism 4.0 has five technological pillars: Tourism Impact Model (TIM); FLOWS – analysis of tourist flows; Collaboration Impact Token (CIT); Digital Online Tourist Identity (DOTI); and third party applications (apps). These five pillars are connected and run through the T4.0 Core Collaboration Platform and will be expanded on below.[560]

The Tourism Impact Model (TIM) is a tool that will help tourism service providers manage tourist flows within a certain area and is "based on more than 300 indicators to show the effects of tourism in a selected destination".[561] It will make use of the predetermined carrying capacity of a destination which will be combined with technological solutions. This will then enable the "assessment of the impact of tourism on different societal aspects (environment, economy, culture, health, education, etc.) in order to reach sustainable development in a specific geographical area".[562] The impact on a destination will be determined through the completion of a questionnaire, the data obtained will then be charted on a Destination Character Chart (DCC). According to the creators of Tourism 4.0, the benefits of the TIM include the following:

- Built-in transparency and inclusion of local inhabitants in strategic planning.
- Supervised collecting of data from various sources and their transformation into valuable information.
- [Realistic representation] of the whole spectrum of positive and negative impacts of tourism based on real data.

[558] Arctur, 'First Tourism 4.0 Living Lab and innovative solutions for Tourism 4.0', <https://www.arctur.si/news/2020070211505942/>, 06 July 2020, access: 31 August 2020.
[559] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, pp. 229-253.
[560] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, 2019, access: 31 August 2020.
[561] Tourism 4.0, 'A prestigious award in the field of tourism innovation for TIM', <https://tourism4-0.org/tourism-innovation-award-2020-for-tourism-impact-model/>, 27 November 2020, access: 10 February 2021.
[562] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, access: 31 August 2020.

- Complex concepts made simple and understandable through visualisation of results and sets of recommendations for improvements.
- Dynamic real data simulations of possible scenarios for a quick and competent response in all situations.[563]

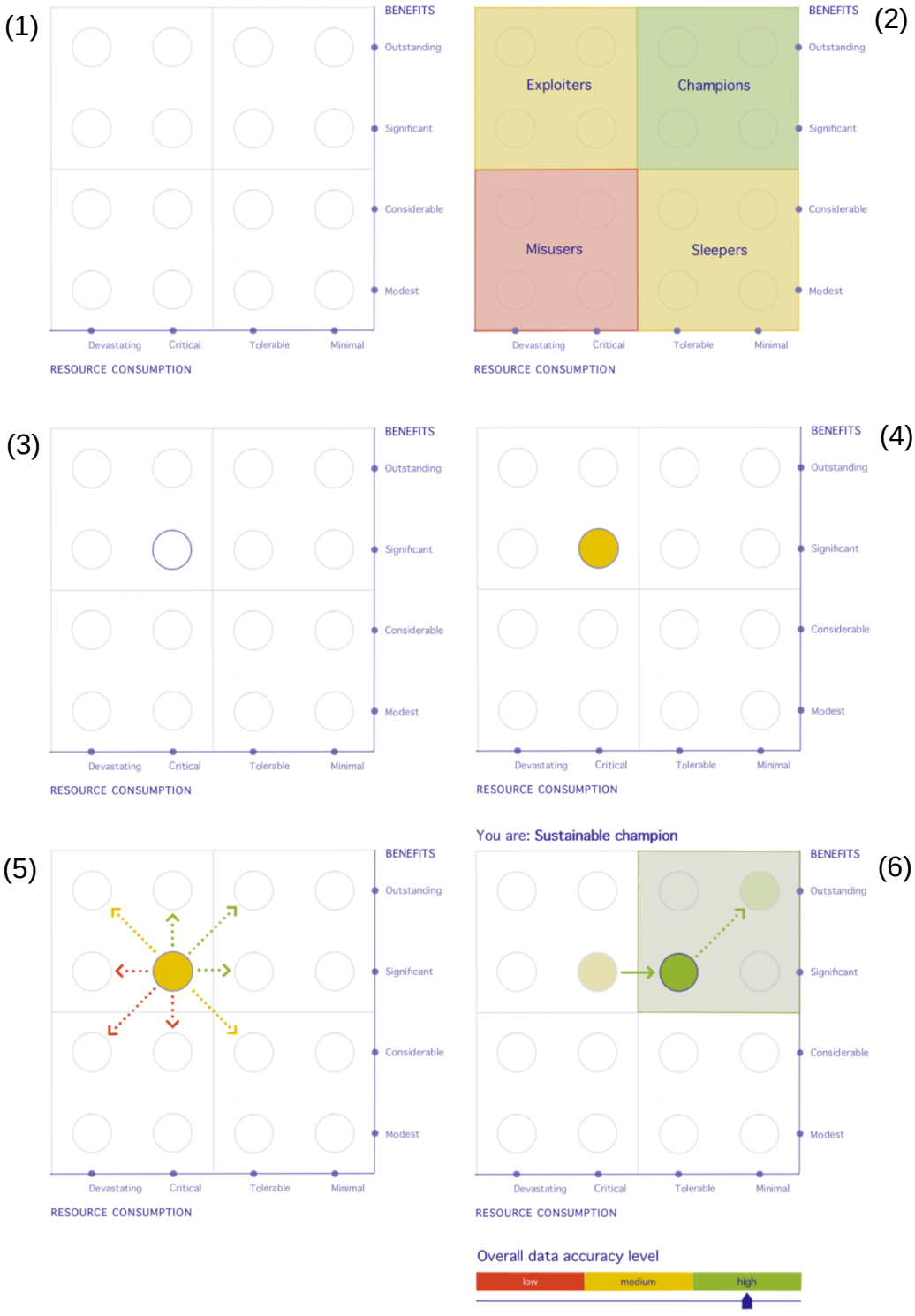
The TIM questionnaire consists of five groups with 23 sub-sets or categories of questions. The five groups are: basic questions; environment; economy; society and culture and collaboration. The results obtained from this questionnaire will also indicate contributions made or potential negative impacts on specific SDGs and their targets.[564] The environmental sub-set includes questions on air quality, water and sanitation, energy and waste management, sustainable transportation, tourism infrastructure and space and land management. Tourism income, accommodation capacity, jobs in tourism, local economy and real estate make up the economic sub-set. Society and culture questions comprise of quality of life, health and safety, inclusion of vulnerable groups, and preservation of heritage. Collaboration's sub-set focuses on local residents, state and state institutions, NGOs, tourism service providers and vulnerable groups.[565]

The DCC will depict the results on a 3-dimensional matrix which is a combination of the benefits of tourism, negative impacts (resource consumption) and the general condition of the destination.[566] Benefits range from outstanding to modest, and resource consumption from critical to minimal (chart character 1). A destination can then be characterized according to four different positions on the matrix: champions; exploiters; misusers; and sleepers (chart character 2) and will then be placed in one of 16 positions (chart character 3). The general condition of the destination is represented by a colour: green (excellent); yellow (middle); red (bad) (chart character 4). In addition to the character and general condition, trends will also be depicted on the matrix using coloured arrows (green, yellow and red) (chart character 5). The end result is a combination of the past and present position of the destination as well as its predicted trend/s (chart character 6).[567] (See figure 8) At the Tourism Innovation

[563] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, access: 31 August 2020.
[564] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, access: 31 August 2020.
[565] Tourism 4.0, 'Tourism Impact Model', <https://vimeo.com/425766785>, 2020, access: 05 June 2021.
[566] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, access: 31 August 2020.
[567] Tourism 4.0, 'Tourism Impact Model', <https://tourism4-0.org/tim/>, access: 31 August 2020.

Summit 2020, hosted in Spain, the TIM received the award for the best innovation in the field of artificial intelligence and data analytics.[568]

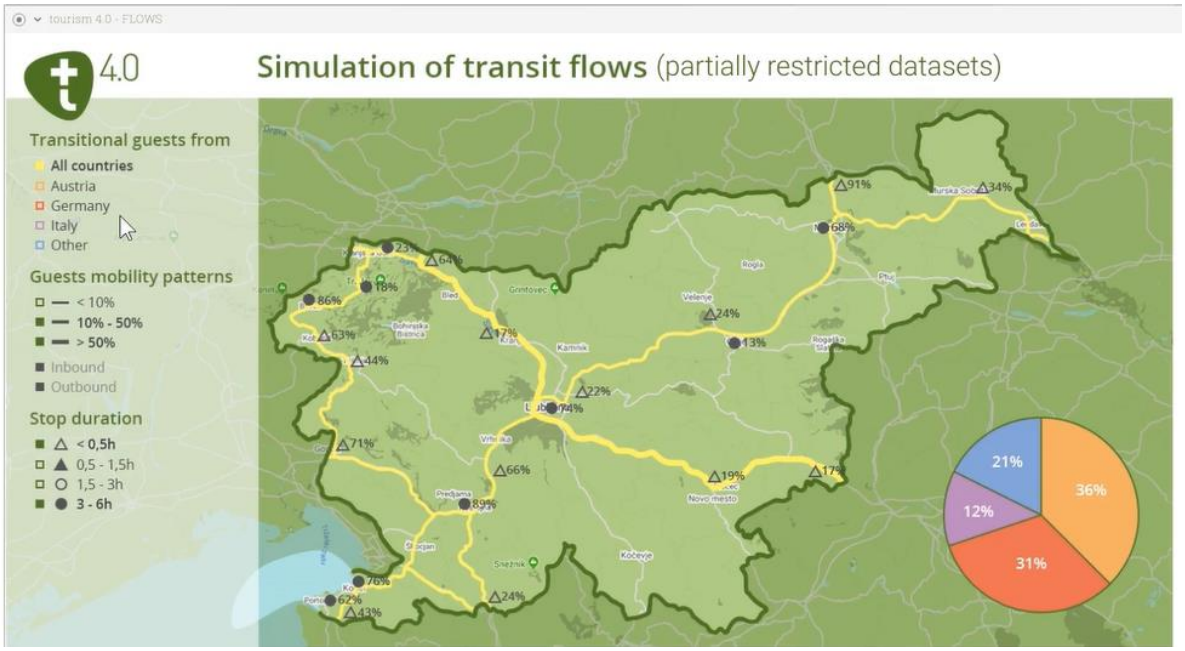
Figure 8: Destination Character Chart[569]



[568] Tourism 4.0, 'A Prestigious award in the field of tourism innovation for TIM', <https://tourism4-0.org/tourism-innovation-award-2020-for-tourism-impact-model/>, access: 10 February 2021.
[569] Adapted from Tourism 4.0 website.

FLOWS is a tool that will predict tourist movements through the collection of data from devices that are connected through the IoT, such as public Wi-Fi servers, social media activity and traffic counters.[570] Based on data obtained from FLOWS, tourism service providers and destination managers can redirect tourist traffic to less visited areas. FLOWS can also be used by tour operators when compiling itineraries to encourage visitation of less popular destinations (potential mitigation of overtourism). This will then contribute to the sustainable development of the destination's tourism industry.[571] The FLOWS tool also provides information such as origin of tourists, mobility patterns, duration of stay and where they stay when travelling through the country.[572] (See figure 9)

Figure 9: FLOWS simulation[573]



[570] Tourism 4.0, 'FLOWS – analysis of tourist flows', <https://tourism4-0.org/flows/>, 2019, access: 31 August 2020.
[571] Tourism 4.0, 'FLOWS – analysis of tourist flows', <https://tourism4-0.org/flows/>, access: 31 August 2020.
[572] Tourism 4.0, 'FLOWS – analysis of tourist flows', <https://tourism4-0.org/flows/>, access: 31 August 2020.
[573] Tourism 4.0, 'Analysis of tourist flows', <https://vimeo.com/425777169>, 2020, access: 05 June 2021.

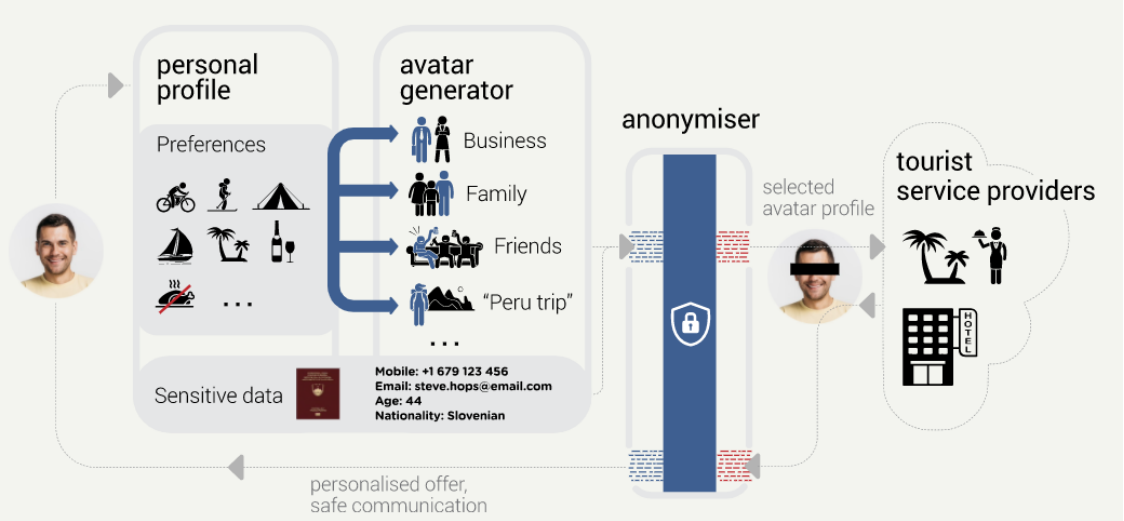
As part of Tourism 4.0, tourists will earn Collaboration Impact Tokens (CIT) which will encourage and reward responsible and sustainable behaviour. CITs are earned as part of a rewards system and will act as an incentive for responsible behaviour and actions while visiting a destination. It is proposed that CITs will be earned when a tourist makes use of public transport, uses water sparingly or visits a destination with less tourist traffic, for example, and can then be used to purchase other tourist products.[574] The value of a CIT will change in accordance with the location and time of the visit. According to the Tourism 4.0 creators "it is an innovative tool that establishes a comprehensive system of rewarding positive behaviour [through gamification] of all stakeholders in a tourism ecosystem and [increases] the positive effects of tourism".[575] This Blockchain-based crypto (digital) currency will be stored within the Digital Online Tourist Identity (DOTI) app which will enable tourists to purchase products and services using the app.[576]

The developers of Tourism 4.0 recognised the tourists' need of more personalised experiences and recommendations without giving away their personal information seeing as "one of the greatest individual challenges posed by new information technologies is privacy…".[577] As such, they conceived of a personalised digital passport, known as the Digital Online Tourist Identity (DOTI), that will store a tourist's personal information but anonymise it when processing the data to make recommendations. This will be achieved through the use of blockchain technology.[578] The DOTI app will enable the user to set their preferences for a destination as well as

[574] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, 2020, p. 6-8; J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, 2020, p. 239; Tourism 4.0, 'Collaboration Impact Token', <https://tourism4-0.org/cit/>, 2019, access: 31 August 2020.
[575] Tourism 4.0, 'Collaboration Impact Token', <https://tourism4-0.org/cit/>, access: 31 August 2020.
[576] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, p. 239; Tourism 4.0, 'Collaboration Impact Token', <https://tourism4-0.org/cit/>, access: 31 August 2020.
[577] K. Schwab, 'The Fourth Industrial Revolution: what it means, how to respond', <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>, 14 January 2016, access: 03 February 2021.
[578] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, p. 239; Tourism 4.0, 'DOTI – Digital Online Tourist Identity', <https://tourism4-0.org/doti/>, 2019, access: 31 August 2020.

to create multiple profiles based on the reason for their visit (e.g., business trip, family vacation, or solo travel).[579] (See figure 10)

Figure 10: Digital Online Tourist Identity (DOTI) – personalised digital passport[580]

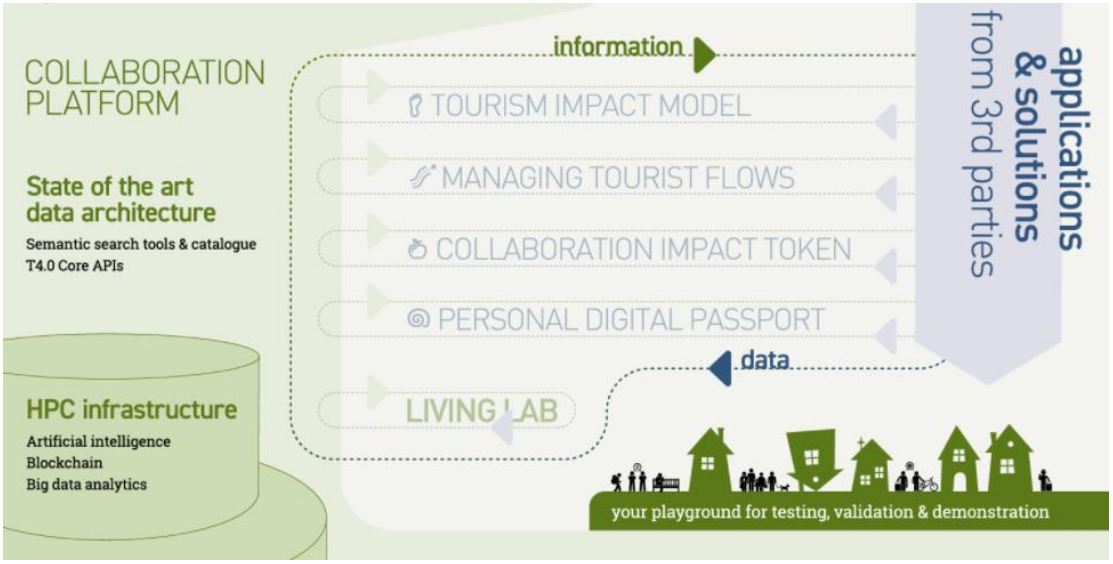


To ensure that the four pillars are seamlessly integrated and continually have access to real-time data, the T4.0 Core was created. This is a HPC platform that makes use of AI and Blockchain, while ensuring the encryption and protection of all data generated through the system.[581] Collaboration is an essential part of the sustainable development and management of tourism, as such the Tourism 4.0 developers "wish to encourage collaboration of all stakeholders and develop processes to support simple and privacy compliant dynamic data exchange[s]".[582] The T4.0 Core will have an interoperability interface which means it will be able to run on several different platforms and efficiently extract, process and interpret data from these. This will further enable the co-creation of improved tourist experiences through innovative measures while improving "strategic decision-making based on real [time] data and

[579] Tourism 4.0, 'DOTI – Digital Online Tourist Identity', <https://tourism4-0.org/doti/>, access: 31 August 2020.
[580] Tourism 4.0, 'DOTI – Digital Online Tourist Identity', <https://tourism4-0.org/doti/>, access: 31 August 2020.
[581] Tourism 4.0, 'T4.0 Core Collaboration Platform', <https://tourism4-0.org/core/>, 2019, access: 31 August 2020.
[582] Tourism 4.0, 'T4.0 Core Collaboration Platform', <https://tourism4-0.org/core/>, access: 31 August 2020.

information".[583] The T4.0 will extract data and information from the various third party apps linked to the platform as well as the technological pillars in order to provide real-time data. (See figure 11)

Figure 11: T4.0 Core[584]



The Tourism 4.0 Living Lab is critical to the development and testing of these new products and services. The T4.0 Core will be put to the test during the second phase of the development of Tourism 4.0, known as the 'Tourism 4.0 TRL7-9 Demo Pilot'.[585] This phase involves the testing of all the above mentioned components in a controlled real world environment – the Tourism 4.0 Living Lab.[586] The Tourism 4.0 Living Lab, described as a "playground for all stakeholders", is a permanent simulator which will enable service providers to "test, validate and present their solutions, provide training and allow users [tourists] to experience the complete T4.0 experience".[587] The first Living Lab was set to be constructed in 2021 in southwestern Slovenia, close to the town of Postojna, and will be equipped with state of the art technologies which will

[583] Tourism 4.0, 'T4.0 Core Collaboration Platform', <https://tourism4-0.org/core/>, access: 31 August 2020.
[584] Tourism 4.0, 'T4.0 Core Collaboration Platform', <https://tourism4-0.org/core/>, access: 31 August 2020.
[585] Tourism 4.0, 'Tourism 4.0 Demo Pilot', <https://tourism4-0.org/t4-0-projects/t4-0-demo-pilot/>, 2019, access: 01 September 2020.
[586] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, p. 234.
[587] Tourism 4.0, 'Tourism 4.0 Living Lab', <https://tourism4-0.org/ll/>, 2019, access: 01 September 2020.

provide the ultimate experience of the "sustainable tourism of the future".[588] This phase, co-financed by the EU Regional Development Fund and Slovenian Ministry of Economic Development and Technology, was initiated in October 2019, and will be (Covid-19 permitting) concluded in March 2022 and is worth an estimated €10.7 million.[589] According to the creators of Tourism 4.0 the pilot project is

> running with the aim to develop an innovative business ecosystem which will enable [the] tourism economy to improve interactions between guests and [tourism service] providers as well as foster the development of new T4.0 products based on the needs and expectations of guests.[590]

Heritage+

Heritage+ refers to a collection of projects concerned with the protection and promotion of cultural and natural heritage. According to the T4.0 developers "when talking about sustainable and socially, culturally and environmentally conscious tourism, cultural heritage and its protection, promotion and re-use is one of the main topics".[591] Therefore, the second component of Tourism 4.0 is the T4.0 Heritage+ programme, an initiative aimed at digitally recording and documenting cultural heritage to preserve it for future generations. It involves the 3D reconstruction and mapping of cultural heritage (objects and buildings), as well as creating a digital library of museum collections. It is envisioned that the use of AR, VR and or XR, holographs and interactive object recognition tables will create a new cultural heritage experience, one in which tourists co-create their experience.[592] According to the founder and CEO of Arctur, Tomi Ilijaš, tourists will be able to download the 3D models free of charge and

[588] J. Urbančič, V. Kuralt, H. Ratkajec, M. Straus, A. Vavroš, S. Mokorel, U. S. Peceny & T. Ilijaš, 'Expansion of Technology Utilization through Tourism 4.0 in Slovenia', *in* E. Çeltek (ed.), *Handbook of Research on Smart Technology Applications in the Tourism Industry*, p. 244; Tourism 4.0, 'Tourism 4.0 Living Lab', <https://tourism4-0.org/ll/>, access: 01 September 2020.
[589] Tourism 4.0, 'Tourism 4.0 Demo Pilot', <https://tourism4-0.org/t4-0-projects/t4-0-demo-pilot/>, access: 01 September 2020.
[590] Tourism 4.0, 'Two new unique wellness applications in Tourism 4.0 Demo Pilot project', <https://tourism4-0.org/two-new-unique-wellness-applications-in-tourism-4-0-demo-pilot-project/>, 26 November 2020, access: 28 March 2021.
[591] Tourism 4.0, 'It's time for Heritage+', <https://tourism4-0.org/its-time-for-heritage/>, 24 February 2019, access: 08 September 2020.
[592] Tourism 4.0, 'Heritage+', <https://tourism4-0.org/heritage/digital-media-for-cultural-heritage/>, 2019, access: 08 September 2020.

use them to 3D print their own 'souvenirs', thereby further contributing to the preservation of cultural heritage.[593]

The director of Heritage+, Matevž Straus, stated that "cultural heritage is an ideal springboard for creating new digitally enriched tourist products … because [it] is deeply rooted in the local context … and it inspires creativity, creative storytelling and digital interpretation".[594] Straus further argued that the digital innovation has multiple benefits, one of these being the creation of new jobs in tourism through the creation of these new tourist products and the other, the preservation of endangered cultural heritage.[595]

As with the Tourism 4.0 Living Lab, Heritage+ has a HeritageLab. The first HeritageLab is located at the Idrija UNESCO World Heritage Site in western Slovenia. The HeritageLab incubator programme seeks to "foster entrepreneurial skills, knowledge and competencies needed in the area of cultural heritage".[596] As part of the HeritageLab, workshops and training sessions are offered to not only cultural heritage specialists and practitioners, but anyone who wants to contribute to the sustainable promotion and use of cultural heritage.[597] The Idrija town centre is the UNESCO World Heritage Site and the surrounding areas make up the UNESCO Global Geopark.[598] Idrija is the oldest mining town in Slovenia and was home to the second biggest mercury mine in the world. The eighteenth century water barriers and an old mine shaft used to display mining machinery are some of the main attractions in the town. It is also home to the largest preserved wooden waterwheel in Europe.[599] As such, the first digital mapping and reconstruction projects of Heritage+ were carried

[593] T. Ilijaš, 'Tourism 4.0 @ Bled eConference', <https://www.youtube.com/watch?v=ieJxY0FRImY>, 13 September 2018, access: 07 June 2021.
[594] T. Ilijš, 'Expo 2020 Dubai: Slovenia's Approach to Travel and Connectivity', <https://www.youtube.com/watch?v=lgDVgoySnUw>, 13 February 2021, access: 06 June 2021.
[595] T. Ilijš, 'Expo 2020 Dubai: Slovenia's Approach to Travel and Connectivity', <https://www.youtube.com/watch?v=lgDVgoySnUw>, access: 06 June 2021.
[596] ID20, 'HeritageLab launched', <https://www.id20.si/en/news/heritagelab-launched/>, 2020, access: 08 September 2020.
[597] Tourism 4.0, 'Digital interpretation of cultural heritage', <https://tourism4-0.org/heritage/digital-interpretation-of-cultural-heritage/>, 2019, access: 08 September 2020; ID20, 'HeritageLab launched', <https://www.id20.si/en/news/heritagelab-launched/>, access: 08 September 2020.
[598] UNESCO, 'Idrija UNESCO Global Geopark', <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/list-of-unesco-global-geoparks/slovenia/idrija/>, 2017, access: 08 September 2020.
[599] European Best Destinations, 'Tourism in Idrija', <https://www.europeanbestdestinations.com/destinations/eden/idrija/>, n.d., access: 08 September 2020.

out in Idrija. A digital 3D model of the Idrijske klavže water barrier was created in order to preserve its current condition as well as to showcase it to wider audiences.[600] Digital 3D models were also created of traditional mountain herders' huts and a chapel, originally built in 1938, from the same region.[601]

Heritage+ will also provide support for destinations that are looking for new and innovative ways to digitally preserve their cultural heritage offering. As such, the Heritage+ ToolKit was created which consists of a manual for digital innovation of cultural heritage as well as T4.0 technical guidelines for the digitisation of cultural heritage. The Ministry of Economic Development and Technology issued the first open-call in January 2020 for those who wish to undertake such a project.[602] Tourism 4.0 also has six other projects: Tourism 4.0 for the Black Sea (T4BS); Heritage in Action; the CASTLE ROAD digital storytelling route; WEAVE; INSITES; and Amazing AoE. These projects have various stakeholders and are primarily concerned with cultural heritage and will be briefly considered below.

The ever-growing tourism industry in the Black Sea is placing strain on the natural and cultural resources of its relatively small tourist destinations. Tourism 4.0 for the Black Sea (T4BS) is therefore envisioned to assist these destinations in the sustainable management and development of their tourism industries. Thus far, Tourism 4.0 will be implemented in Ukraine, Romania and Georgia. Two destinations of varying sizes have been identified in each country to test the accuracy of the TIM. Destination sizes range from a population of 800 to about one million, and visitor numbers of a few hundred to two million.[603] Along with Arctur, regional partners include the Georgian

[600] Tourism 4.0, 'Digitising UNESCO World Heritage in the deep forests', <https://tourism4-0.org/digitising-unesco-world-heritage-in-the-deep-forests/>, 14 August 2020, access: 08 September 2020.
[601] Tourism 4.0, 'Using new technologies to preserve the cultural heritage of Slovenia', <https://tourism4-0.org/using-new-technologies-to-preserve-the-cultural-heritage-of-slovenia/>, 14 November 2020, access: 10 February 2021; T4.0 Heritage+, 'Velika Planina – Kepla Marija Snežne', <https://sketchfab.com/3d-models/velika-planina-zabrska-bajta-b8c46d52e8ac4fbe99fc63bd5d5e4a4c?fbclid=IwAR0rMOsK6vxlcLF-hxUxO8k7M9KzcI74Tt5C3FTrzsMh0jcNpIOUcyaE1LQ>, 2020, access: 10 February 2021.
[602] Tourism 4.0, 'Heritage+ toolkit', <https://tourism4-0.org/heritage/toolkit/>, 2019, access: 08 September 2020.
[603] Tourism 4.0 for the Black Sea, 'About', <https://www.t4bs.eu/en/about/>, 2020, access: 09 September 2020; Tourism 4.0 for the Black Sea, 'Testing Tourism Impact Model at Black Sea in Progress', <https://www.t4bs.eu/en/latest-news/2020082609061972/testing-tourism-impact-model-at-black-sea-in-progress/>, 26 August 2020, access: 09 September 2020.

Tourism Institute, the Romanian tour company SANOTour, the Ovidius University of Constanta in Romania, Agricola (Ukrainian NGO), and an international development consultancy.[604] The European Commission stated that the T4BS project

> brings innovative co-creating and technology into [strategic data-driven tourism thinking] to boost the positive impacts of tourism and growth of local socio-economic returns. The project coordinator Arctur introduced the use of Tourism 4.0 tools … which provide local governments (on any level) with competent and quick response [tools] and offers them a better understanding of current patterns of visits, and encourages innovative touristic services and policies tailored to the regional challenges / opportunities.[605]

The Heritage in Action project commenced in November 2019 and is planned to be concluded in November 2021. It is co-financed by the Slovenian Ministry of Culture and the Slovenian Research Agency (ARRS) to the value of €40 000. The main aim of the project is to test and develop digital solutions that will encourage primary school and high school students to show more interest in and engage with cultural heritage, thereby contributing to the Heritage+ initiative.[606] The interdisciplinary research team, bridging the public and private sector, will produce a manual for the design and application of these digital solutions as well as assist in the development and design of a prototype. The pilot study will be conducted in the town of Ajdovščina, located in the Vipava Valley in southwestern Slovenia. The research team will assist students from the town to develop a prototype application "for the purpose of better promotion and education about cultural monuments" in the town.[607] The team will also produce guidelines for the integration of digital heritage in primary and high school curricula for the Ministry of Culture and Ministry of Education, Science and Sport.[608] In 2019 Arctur prepared a recommendation document for the Ajdovščina pilot project. The document provides an overview of multiple digital solutions (mobile, web, digital-physical experience, etc.) from multiple countries and outlines the pros and cons of each,

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[604] Tourism 4.0 for the Black Sea, 'About', <https://www.t4bs.eu/en/about/>, access: 09 September 2020.
[605] European Commission, 'Co-creating tourism for the Black Sea with data analytics', <https://ec.europa.eu/easme/en/news/co-creating-tourism-black-sea-data-analytics>, 2021, access: 10 February 2021.
[606] Tourism 4.0, 'Heritage in Action', <https://tourism4-0.org/t4-0-projects/heritage-in-action/>, 2019, access: 09 September 2020.
[607] Tourism 4.0, 'Heritage in Action', <https://tourism4-0.org/t4-0-projects/heritage-in-action/>, access: 09 September 2020.
[608] Tourism 4.0, 'Heritage in Action', <https://tourism4-0.org/t4-0-projects/heritage-in-action/>, access: 09 September 2020.

thereby identifying good practices. The document concludes by providing five recommendations for the development and implementation of the Ajdovščina project.[609]

As earlier discussed, the CASTLE ROAD project is being developed within the broader EU Interreg Slovenia-Austria Programme and aims to facilitate cross-border tourism. It will focus on conducting research on the history of the castles, manors and forts in order to effectively develop and connect these through tourist routes that showcase the history of the region from the time of Avar and Frankish rule.[610] The project was initiated in September 2018 and is planned to be concluded in November 2021, it is therefore not directly a project of Tourism 4.0 but could make use of some its technologies. However, the directive for the development of virtual storytelling based on the CASTLE ROAD route will be taken by the Heritage+ Programme.

The Widen European Access to Cultural Communities via Europeana (WEAVE) project, launched in April 2021, aims to address the many problems faced by Cultural Heritage Institutions (CHIs) in their attempts at digitally preserving both tangible and intangible cultural heritage.[611] As part of the project, a framework for the collection, preservation and presentation of diverse cultural manifestations will be developed and provided to CHIs, as well as innovative tools and technologies. These are aimed at assisting CHIs in the

> linking and presenting [of] the connections between tangible and intangible heritage of cultural communities, bringing the rich and invaluable cultural heritage which they represent and guard from the periphery to the centre of attention by making it accessible on Europeana.[612]

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[609] M. Straus, *The Use of Digital Solutions: Overview of Good and Bad Practices*, 2019.
[610] Tourism 4.0, 'Development of the CASTLE ROAD digital route through virtual storytelling', <https://tourism4-0.org/development-of-the-castle-road-digital-route-through-virtual-storytelling/>, access: 10 February 2021; Interreg Slovenia-Austria, 'CASTLE ROAD', <http://www.si-at.eu/en2/castle-road/>, access: 10 February 2021.
[611] Europeana was created by the European Union to empower the cultural heritage sector in its digital transformation and also serves as a digital archive of European cultural heritage. See also: Europeana, 'About us', <https://www.europeana.eu/en/about-us>, n.d., access: 22 May 2021; WEAVE, 'WEAVE, project of relevance for cultural communities', <https://www.digitalmeetsculture.net/article/weave-a-project-of-relevance-for-cultural-communities/>, 13 May 2021, access: 22 May 2021.
[612] WEAVE, 'WEAVE, project of relevance for cultural communities', <https://www.digitalmeetsculture.net/article/weave-a-project-of-relevance-for-cultural-communities/>, access: 22 May 2021.

Arctur developed and will manage the WEAVE Toolkit which consists of many tools and technologies that employ a mixture of AI, ML, natural language processing and Big Data analysis apps and software. The Toolkit will demonstrate how cultural heritage can be better promoted thereby increasing engagement for both recreational and educational purposes, as well as enhance the economic impact of cultural heritage in the tourism industry.[613]

The Erasmus+ Digital Cultural Heritage Custodians – INSITES project was launched in December 2020 and is set to conclude in December 2022. The project explores technology's dual purpose in the digital preservation and safeguarding of Europe's tangible and intangible cultural heritage.[614] It aims to 'future-proof' the cultural heritage sector by making it more appealing to younger generations through its use of innovative digital technologies. The project will upskill employees of CHIs as well as Vocational Education and Training (VET) institutions by providing training and support to these CHIs. Upskilling will be done by improving CHI employees' digital and immersive tourism skills and by improving VET trainers in the UK, Ireland, Italy, Turkey, Greece and Slovenia's ability to provide training in digital and immersive tourism that is future-proof (i.e., sustainable). Lastly, the project partners will "add digital / immersive elements to their current cultural heritage tourism training and support, while also bringing new innovations to the ongoing work of Arctur and [Destination Makers] in this sector".[615]

In July 2020, the Amazing AoE – Responsible Green Destination Amazon of Europe project was launched by Interreg Danube. The world's first "pentalateral biosphere reserve", the UNESCO Mura-Drava-Danube Transboundary Biosphere Reserve, connects 12 protected areas across five countries, along three rivers.[616] The area,

[613] Tourism 4.0, 'WEAVE', <https://tourism4-0.org/t4-0-projects/weave/>, 2021, access: 22 May 2021.
[614] Tourism 4.0, 'INSITES', <https://tourism4-0.org/t4-0-projects/insites/>, 2021, access: 22 May 2021.
[615] Destination Makers is an Italian tourism marketing firm that specialises in the marketing of small, lesser known destinations as well as authentic and more sustainable tourism experiences. See also: Tourism 4.0, 'INSITES', <https://tourism4-0.org/t4-0-projects/insites/>, access: 22 May 2021; Destination Makers, 'Who we are', <https://destination-makers.com/chi-siamo/>, 2018, access: 22 May 2021.
[616] Tourism 4.0, 'Amazing AoE', <https://tourism4-0.org/t4-0-projects/amazing-aoe/>, access: 14 January 2021; UNESCO, 'Mura-Drava-Danube', <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/europe-north-america/croatiahungary/mura-drava-danube/>, 2017, access: 22 May 2021.

known as the Amazon of Europe (AoE) is Europe's largest free-flowing river system and has immense potential for sustainable tourism development. The Amazing AoE project aims to ensure the sustainable development and growth of tourism in the area through creating a network of stakeholders that provide enhanced tourism products and experiences.[617] As part of the first tourism product development in the area, the cross-border AoE Bike Trail, the T4.0 TIM will be used to develop a Responsible Green Destination TIM (RGD TIM).[618]

According to the creators of Tourism 4.0, the initiative

> aims to improve the added value to tourism through innovation, knowledge, technology and creativity … by creating an ecosystem, in which [the] physical and digital space, infrastructure, personnel and technology behind it merge into one seamless experience of many personalised outputs.[619]

The initiative has four target groups: tourism service providers; tourists; government; and the local community. (See figure 12) The local community and their quality of life is placed at the centre of the tourism ecosystem as the creators of Tourism 4.0 recognise that for far too long the global tourism industry has neglected these communities.[620]

Figure 12: Tourism 4.0 ecosystem[621]

[617] Tourism 4.0, 'Amazing AoE', <https://tourism4-0.org/t4-0-projects/amazing-aoe/>, access: 14 January 2021.
[618] Tourism 4.0, 'Amazing AoE', <https://tourism4-0.org/t4-0-projects/amazing-aoe/>, access: 14 January 2021.
[619] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, p. 2.
[620] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, p. 9.
[621] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, p. 5.

The Tourism 4.0 collaboration platform will enable tourism service providers to develop products that are more specific to their chosen target groups as they will have been able to gather data through the platform. Tourists, according to the Tourism 4.0 creators, will be more motivated to use the platform because of the convenience of the embedded applications and features that make it an 'all-in-one' solution.[622] The platform's use of AI and ML to provide more personalised tourism offerings will further motivate tourists to make use of the platform as well as enhancing their overall pre-, during and post-travel experience.[623] The data collected through the platform will be provided to national and local governments which will then assist in developing appropriate policies with regards to the sustainable development of the tourism industry. With regards to the local community, the platform will serve two purposes. On the one hand it will be used to measure tourism's impact on the local community and on the other, it will also be used to measure the local community's attitude towards tourism developments. This will then be used as an incentive for all stakeholders to strive for more responsible and sustainable behaviour.[624] According to Tomi Ilijaš, Tourism 4.0 will "empower local communities with the technology to transform data into valuable information for their business and society".[625]

In February 2021, Tourism 4.0 and the Slovenian Ministry of Public Administration issued a call for tenders for the development of Smart Communities (Smart Cities and Smart Municipalities) to then also act as demonstrators of Tourism 4.0.[626] The goal of the project, co-funded by the EU Regional Development Fund, is the

> establishment of a demonstration environment with an (inter) municipal networking platform for all stakeholders in tourism, based on Industry 4.0 technologies … and [the enabling of] advanced use and data exchange

[622] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, pp. 9-10.
[623] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, pp. 9-10.
[624] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, p. 10.
[625] T. Ilijš, 'Expo 2020 Dubai: Slovenia's Approach to Travel and Connectivity', <https://www.youtube.com/watch?v=lgDVgoySnUw>, access: 06 June 2021.
[626] Slovenian Ministry of Public Administration, 'Public tender for demonstration projects for the establishment of Smart Cities and Communities "JR PMIS"', <https://www.gov.si/zbirke/javne-objave/javni-razpis-za-demonstracijske-projekte-vzpostavljanja-pametnih-mest-in-skupnosti-jr-pmis/>, 12 February 2021, access: 08 June 2021; Tourism 4.0, 'Smart Communities for better tourism in the service of man', <https://tourism4-0.org/pmis/>, 2021, access: 08 June 2021.

> to increase the positive impact of tourism and improving the quality of life in the local community.[627]

It is envisioned that Slovenia will become a Living Lab for the testing of Tourism 4.0 and that the best practices identified during this testing phase can then be transferred to the rest of Europe and possibly the world. Municipalities can opt to only implement one of the technological pillars, but are encouraged to implement the initiative as a whole to truly advance sustainability. This is further encouraged as it is argued that the use and application of the technological pillars will in time be used in other sectors and industries as well.[628] The trial phases of the project (2020 -2021), facilitated through the Living Labs, were meant to connect consumers of the product (tourists and local communities) and service providers in order to test these new technological solutions.[629] However, as mentioned before, because of Covid-19 the trial phases were postponed.

As was made apparent earlier, from the early 1900s Slovenia has been far more advanced in its industrial developments than most of its neighbours and it should therefore come as no surprise that it is once again at the forefront of the newest technological developments. This chapter, through its in-depth discussion of Tourism 4.0, provided the necessary context for the evaluation of Tourism 4.0 as a potential best practice example of the innovative use of cutting edge technologies to make tourism more sustainable, thereby turning it into a driver for the SDGs. This evaluation is the focus of the concluding chapter.

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[627] Tourism 4.0, 'Smart Communities for better tourism in the service of man', <https://tourism4-0.org/pmis/>, access: 08 June 2021.
[628] Tourism 4.0, 'Smart Communities for better tourism in the service of man', <https://tourism4-0.org/pmis/>, access: 08 June 2021; Slovenian Ministry of Public Administration, 'Public tender for demonstration projects for the establishment of Smart Cities and Communities "JR PMIS"', <https://www.gov.si/zbirke/javne-objave/javni-razpis-za-demonstracijske-projekte-vzpostavljanja-pametnih-mest-in-skupnosti-jr-pmis/>, access: 08 June 2021.
[629] U. S. Peceny, J. Urbančič, S. Mokorel, V. Kuralt & T. Ilijaš, 'Tourism 4.0: Challenges in Marketing a Paradigm Shift', *in* M. Reyes (ed.), *Consumer Behaviour and Marketing*, p. 14.

CHAPTER 7: REFLECTIONS: TOURISM 4.0 – THE FUTURE OF TOURISM?

This concluding chapter sets out to appraise Tourism 4.0 by using best practice criteria that have been developed based on the research conducted in previous chapters. Seven core criteria and 20 sub-criteria (see Table 1) have been developed to ascertain whether the Tourism 4.0 initiative can be regarded as a best practice example in the use of technology to make tourism more sustainable, thereby turning it into a driver for the UN SDGs. The best practice criteria have therefore been developed to align with the SDGs and relevant targets. The core criteria are: innovation; transferable and adaptable; collaboration and partnership; training and capacity building; evaluation and assessment; natural and cultural heritage; and lastly, interpretation. The first section of this chapter will discuss how Tourism 4.0 as a whole, as well as some of its individual elements, adhere to these core and sub-criteria. The second section of this chapter will present a discussion of how each of these criteria, and thereby Tourism 4.0, contributes to the SDGs. These criteria and or practices have the potential to contribute to 15 of the 17 SDGs and 65 of the 169 targets. However, because of tourism's multiplier effects, it has the potential to contribute to all 17 SDGs and a wider range of targets. The last section of the chapter will reflect on the first two and the future of (smart) sustainable tourism, especially in light of the Covid-19 pandemic and its wide-reaching and, in some cases, devastating ramifications.

It is important to note that this appraisal is based on a desktop study of the available information at the time of writing, because of Covid-19 Tourism 4.0 had not been fully launched yet and the information that was available and accessible was limited. Any contributions discussed in this chapter are therefore only preliminary and assess potential contributions. The ability of Tourism 4.0 to contribute to each of the SDGs will only become clear once it has been launched, implemented and active for some time. Nevertheless, it does seem to have immense potential, as is evidenced by the awards it has already accrued and the high-level recognition received. This chapter will therefore appraise this potential.

Table 1: Best practice criteria

No.	Core Criteria	Sub-criteria	Pillar/s
1	**Innovation**	• Initiative / project itself • Foster / encourage further innovation • Offers innovative tourist experiences	Socio-economic
2	**Transferable / adaptable**	• To other destinations • Skills	Socio-economic
3	**Collaboration / partnership**	• Other destinations • Industry experts • Local community • Non-tourism enterprises • Government • Schools & HEIs • Tourists	Socio-economic & cultural
4	**Training / Capacity building**	• Those directly involved (continuous) • Schools & HEIs	Socio-economic
5	**Evaluation / assessment**	• Internal • External • Visitor satisfaction	Economic
6	**Cultural & Natural Heritage**	• Incorporation • Preservation	Cultural & socio-economic
7	**Interpretation**	• Natural & cultural environment • Technological environment	Cultural & environmental

Best practice evaluation of Tourism 4.0

The first core criterion is concerned with innovation. Its sub-criteria determine whether the initiative provides innovative solutions for sustainability issues, creates an enabling environment for further innovation, and whether it offers innovative tourist experiences. Tourism 4.0's use and application of new and emerging technologies to existing and well-established tourism management practices contributes to its innovativeness. Its various technological pillars, and the interconnection between them are set to provide highly innovative and effective solutions to problems destinations have been facing for many years and have had various degrees of success in mitigating. As mentioned in Chapter 5, the TIM received the award for the best innovation in the field of AI and data analytics at the Tourism Innovation Summit in 2020. Therefore, although the initiative has not yet been launched and implemented as intended, because of Covid-19, its various tools are already being recognised and acknowledged as having immense potential in the drive to make tourism more innovative and sustainable. Although the concept behind the CITs is not new, the approach to and suggested implementation of the concept is highly innovative. The CITs have the potential to drastically change tourists' behaviour by encouraging them to travel more sustainably through a system of tangible rewards, as discussed in Chapter 5.

Tourism 4.0 creates an enabling environment for further innovation through its collaboration with multiple stakeholders, both within and beyond the tourism industry. It has over 160 partners within and beyond Slovenia, which include technology companies, universities, various municipalities, Research and Development (R&D) institutions, consulting firms, and various tourism organisations. All its partners are contributing to developing new and innovative approaches to the move to a more sustainable tourism industry, and these partners could potentially foster further innovation within and beyond the industry. The CIT and DOTI are both technological innovations in their own right, but they also have the potential to contribute significantly to an enhanced innovative tourist experience through their personalised recommendations based on tourists' sustainable behaviour. The third-party apps that will be linked to the T4.0 Core will further add to this innovatively enhanced tourist experience.

The second core criterion refers to the transferability and adaptability of the initiative. Its first sub-criterion determines whether the initiative can be transferred to other destinations as well as whether it is necessary to implement the initiative as a whole or is it possible to only implement certain elements thereof. As evidenced by the T4BS project, Tourism 4.0 can be transferred to other destinations. However, the adaptation and implementation thereof will depend on each individual destination's requirements as well as technological capabilities and or capacity. The aim of Tourism 4.0, as explained, is to make tourism more sustainable and turn it into a driver of the SDGs, however, should a destination want to, it can implement only certain elements of Tourism 4.0. A destination can choose to only make use of the TIM and or FLOWS, for example. However, it would be best to implement the initiative in its entirety to truly enhance sustainability. While aspects of the broader Slovenian tourism industry could easily be implemented elsewhere, Tourism 4.0 could potentially only be transferred to and adapted for a limited number of destinations. Its transferability to or adaptability for other destinations is dependent on a significant amount of funding and investment in advanced technologies. Funds, many would argue, can be better used elsewhere to contribute more directly to advancing progress on the SDGs.

It could be argued that since Europe receives more than half of the world's tourist arrivals (pre-Covid), this initiative is perhaps best suited for Europe's most visited destinations. Based on this, it could then be further argued that the initiative's transferability and or adaptability to destinations in the global South, for example, should not bear as much weight in determining whether it is a best practice example. However, in light of growing concerns of overtourism post-Covid, the FLOWS tool potentially has a greater chance of being adopted by a wider range of destinations world-wide in an effort to mitigate potential overtourism.[630]

The other sub-criterion is concerned with the transferability and adaptability of the skills obtained through the initiative. As mentioned above and as will be discussed as part of the collaboration and partnership criterion, the initiative's various partners and

[630] H. Lagerweij, 'Overtourism after the Covid-19 pandemic', <https://www.guidepoint.com/overtourism-after-the-covid-19-pandemic/>, 2021, access: 12 June 2021; R. Bainbridge, 'New global report identifies pent-up demand for travel', <https://www.itij.com/latest/news/new-global-report-identifies-pent-demand-travel>, 12 March 2021, access: 12 June 2021.

stakeholders operate within and beyond the tourism industry. As such those working on the initiative are gaining valuable skills within and beyond their field of work. The technological skills obtained through Tourism 4.0 will also be highly beneficial within and beyond the tourism industry as we move towards a more digitised world. These skills will also be highly beneficial to those working in the tourism industry as seasonal employees as they can then use these skills to supplement their income when not working in the industry. As has been mentioned before, a number of practices used in the initiative have been in use for many years and are now being enhanced by the use of these technologies. For example, those working on digital storytelling are essentially gaining new skills in digital marketing.[631]

The third core criterion is linked to collaboration and partnership. Its first sub-criterion looks at whether collaborations and partnerships will assist with further development, implementation and training should it be transferred to other destinations. The T4BS project again serves as an example for this sub-criterion and can also be linked to the training and or capacity building core criterion. Through Arctur's collaboration and partnership with the various identified destinations in the Black Sea, stakeholders in each of these destinations are receiving education and training. Moreover, Arctur is gaining new insight on potential uses and methods of implementation of the initiative. Since no two destinations are alike, the implementation of Tourism 4.0 in other destinations can potentially showcase other capabilities of the initiative that its creators were unaware of. Its implementation in other destinations can also highlight areas for improvement within the initiative, which can further advance skills development of the various stakeholders.

Collaboration and partnership with industry experts on a continuous basis is extremely important to the sustainability of the Tourism 4.0 initiative and therefore makes up the second sub-criterion. In this case, industry experts include for example tour operators, DMOs and local tourism SMME owners. Collaboration is taking place during both the TRL 3-6 Research Project and Tourism 4.0 Demo Pilot Project phases of the initiative. The planned Living Labs will ensure further collaboration and partnership with existing

[631] Tourism 4.0, 'Digital tools for Heritage tourism', <https://tourism4-0.org/digital-tools-for-heritage-tourism/>, 28 March 2019, access: 03 June 2021.

as well as new stakeholders as they collaborate to develop and implement new, innovative, and technologically enhanced tourist products and services on a continuous basis. These experts, including the local community, will also be involved in determining the threshold of each destination in order to effectively set up the TIM. Partnerships will also be formed with various product and service providers to have the widest range of options available to accurately make suggestions in the DOTI app. Collaboration and partnership will also continuously take place with the STB as the initiative, its various other partners and stakeholders and their offerings have to be in line with Slovenia's broader destination image and brand. Overall, these continuous collaborations and partnerships will ultimately contribute to ensuring that the initiative's aims and methods are in line and up to date with the changing circumstances of each destination.

A key concern of collaboration, as is evident in figure 12, is the community as it is the linchpin of sustainable tourism. The third sub-criterion is therefore concerned with collaboration and partnership with the local community in order to ensure that the initiative is in line with their expectations. Collaboration and partnership with the local community, which includes local businesses, is of utmost importance to the success and sustainability of the Tourism 4.0 initiative. From the outset, Tourism 4.0 has been centred around the local community. Local communities were continuously consulted during the TRL 3-6 Research Project and Tourism 4.0 Demo Pilot Project phases to voice their requirements, concerns, and suggestions proactively instead of reactively, as has been the case in the global tourism industry for many years. Furthermore, local communities, and more specifically students, are actively involved in many Heritage+ projects as the creators of Tourism 4.0 are aware that no heritage preservation or conservation project or initiative can be successful without the participation of the owners or custodians of that heritage. Arctur is also aware that the participation of youth in these projects is essential to the survival of this heritage as they are its future custodians.

Another sub-criterion is concerned with collaboration with local non-tourism enterprises. Collaboration with these enterprises has been and is taking place on several levels. As mentioned above, several of the initiative's partners are non-tourism

enterprises, as is the creator of Tourism 4.0. In order to process the massive amounts of data collected and generated by the initiative, Arctur is also collaborating with various other 'high-tech' companies to develop and pool together HPC and cloud-computing resources in order to seamlessly run the various technology pillars. Collaboration and partnership with various local municipalities is also taking place to develop and implement Smart City infrastructure which, as discussed in Chapter 5, is integral to the operation of Tourism 4.0. Collaboration with these various stakeholders also contributes to the innovation and training and capacity building criteria.

The next sub-criterion looks at collaboration and or partnership with regional, national, and local government and management entities. On a regional level, some form of collaboration is taking place with the EU Regional Development Fund as the initiative is co-funded by the Development Fund. Collaboration is also taking place with Interreg Slovenia-Austria on the CASTLE ROAD Digital Storytelling project. T4BS is another regional collaboration and partnership effort as the local municipalities and DMOs of each destination are also integral stakeholders to the T4BS project. On a regional level within the country, collaborations and partnerships will surely also be taking place to ensure that the initiative complements and enhances the regional tourism offerings and is also in line with, or enhances, the STB's management of those tourist regions. National and local government are in collaboration and partnership with Tourism 4.0 through funding and the development of Smart Cities or Municipalities. It should also be noted that collaboration with government on a regional, national, and local level has the potential to contribute to the enacting of policies that will further contribute to an enabling environment for and also ensure more sustainable tourism practices, offerings, products, and services. These various collaborations and partnerships can also contribute to the internal and external evaluation of visitor satisfaction as well as the initiative.

Collaboration with schools and Higher-Education Institutes (HEIs) forms the key concern of another sub-criterion for core criterion three. The Universities of Ljubljana, Maribor and Primorska are 'primary' partners of the initiative and are integral to the TRL 3-6 Research Project and Tourism 4.0 Demo Pilot Project phases. Collaboration on R&D is also taking place with various international universities, these include the

University of South-Eastern Norway, Tallinn University of Technology, Washington State University, University of Cumbria (UK), and the Federal University of Pernambuco (Brazil).[632] Beyond R&D, collaboration with schools (primary and secondary) as well as HEIs significantly contributes to innovation, the development of transferable skills, training and capacity building, evaluation and the preservation of natural and cultural heritage. As discussed in Chapter 5, various schools in the Municipality of Ajdovščina are partners in the Heritage in Action project.

Emphasis is also placed on the co-creation of enhanced innovative tourist experiences, and this can only be done through collaborating with tourists. The seventh sub-criterion of core criterion three is therefore concerned with collaboration with tourists. Tourism 4.0 is not only co-creating tourism for the future by collaborating and partnering with local communities, but it will also be doing this by collaborating with tourists through the CITs and the DOTI app. Collaboration will also be taking place in the Living Lab where these new technologies and their various uses and applications will be tested. Collaboration with tourists will therefore be taking place continuously. This can also assist with the evaluation of visitor satisfaction, the interpretation of the technological, natural, and cultural environments as well as the preservation of natural and cultural heritage.

The fourth core criterion for evaluation relates to training and capacity building. Its two sub-criteria assess whether training and capacity building for schools and HEIs as well as all other stakeholders is taking place. The *T4.0 Technical Guidelines for multimedia content, portals and reservations systems* and *T4.0 Technical Guidelines for digitising cultural heritage*, the *Heritage+ ToolKit*, *Handbook on Digital Innovation of Cultural Heritage*, and the *Use of Digital Solutions: Good and Bad practices* all serve to assist in capacity building for Tourism 4.0, both for application and use of these new technologies as well as to enhance capacity building. As mentioned above, primary and secondary schools are partners of the Heritage in Action project which focuses on developing methods, through the use of ICT, to incorporate cultural heritage into primary and secondary school curricula to motivate students' interest in their cultural

[632] Tourism 4.0, 'About the T4.0 partnership', <https://tourism4-0.org/t4-0-partnership/>, n.d., access: 03 June 2021.

heritage.[633] Through this, students will gain valuable skills in the use of ICTs, and it will also enhance capacity building for the project's interdisciplinary research team as they get exposed to new scenarios in heritage education. Furthermore, this project will also enhance the Ministry of Culture and Ministry of Education, Science and Sport's capacity in digital cultural heritage education. The HeritageLab will also further advance training and capacity building for those involved in this project.

Training and or capacity building for those directly involved in Tourism 4.0 is taking place during the Tourism 4.0 Demo Pilot Project and will continue once the initiative is launched. Those students involved in the Heritage in Action project are developing (technological) skills that are regarded as the most important for future work. All participants of the initiative's various projects will be acquiring, developing, and enhancing new technological skills that can also be used beyond these projects. Training for the T4BS project started in February 2020 (Phase 1) and lasted until December 2020 (Phase 2), these training sessions and workshops included members of local communities, tourism businesses as well as members of local government. Further training for T4BS will also be presented throughout and beyond the duration of the project.[634]

The fifth core-criterion is concerned with evaluation and assessment. Its first sub-criterion relates to the internal evaluation of the initiative to identify problem areas and whether the approach and methods used are still applicable to the current situation. Internal evaluation is an important aspect in the sustainability of the initiative. As discussed above, collaboration with various levels of national and local government, schools and HEIs and tourists can contribute to both internal and external evaluation of the initiative. As for identifying potential problem areas or new uses of the various technological pillars of the initiative, this can be done for example through monitoring visitor satisfaction with the DOTI app or the TIM. Internal evaluations can also be conducted by the initiative's various partners and stakeholders by assessing each other's performance. This will also assist in ensuring that all those involved in the

[633] Tourism 4.0, 'Heritage in Action', <https://tourism4-0.org/t4-0-projects/heritage-in-action/>, n.d., access: 09 September 2020.
[634] T4BS, 'Events', <https://www.t4bs.eu/en/events/>, 2020, access: 03 June 2021.

initiative are providing the best possible (tourism) services and products. However, the main tool for internal evaluation is the TIM.

The other sub-criterion relates to external evaluation of the initiative to determine whether it is still up to standard, compatible and in compliance with regional policy initiatives. External evaluation by tourists can be conducted through surveys, questionnaires and the DOTI app. Various universities and scholars, through doing research on the initiative, can also conduct external evaluations. These evaluations will also most likely be conducted by the EU as all member countries, and thereby any projects or initiatives they launch, must comply with and contribute to EU tourism and sustainability policy. The EU also has multiple regional development policies, directives and funding initiatives that are specifically related to technology and its dissemination throughout the EU. It will therefore be able to monitor and or evaluate any projects and initiatives that could potentially contribute to these policies. For example, in February 2021, the European Commission identified the T4BS project as a good practice example in the integration of new technologies in tourism destination management which aims to "make strategic, data-driven decisions and [implement] more effective policy measures".[635] In a presentation at one of the T4BS training sessions, it was stated that Tourism 4.0 contributes to five different EU policies – EU Blue Growth Agenda; Strategic Research and Innovation Agenda for the Black Sea; Sustainable development of the tourism sector; Digital Agenda and lastly; the EuroHPC programme.[636] External evaluation can also be conducted by those destinations looking to implement the initiative as well as organisations and destinations looking to become partners of the initiative.

Evaluation and monitoring of visitor satisfaction is also integral to the success and sustainability of the Tourism 4.0 initiative and is the key concern of the third sub-criterion. As discussed above, this can be done through various collaborations or partnerships with stakeholders as well as tourists. Evaluation and monitoring of visitor satisfaction can also be done by using the DOTI app as well as the Living Lab. The

[635] T4BS, 'European Commission recognised the T4BS as a project with impact', <https://www.t4bs.eu/en/latest-news/2021020413311933/european-commission-recognized-the-t4bs-as-a-project-with-impact/>, 04 February 2021, access: 22 May 2021.
[636] T4BS, 'About', <https://www.t4bs.eu/en/about/>, n.d., access: 09 September 2020.

assessment of visitor satisfaction is also crucial to the sustainability of the initiative as one of its main objectives is co-creating an enhanced sustainable tourist experience through the use of these new and emerging technologies. Therefore, if the initiative does not offer an enhanced experience this could potentially negatively impact tourists' perception of the destination and thereby negatively impact the destination image. While the local community is the most important stakeholder in tourism, without tourists there can be no tourism industry which will then lead to the local community being dissatisfied with the initiative. In the worst case scenario, this can then potentially lead to the initiative failing.

The sixth core-criterion relates to natural and cultural heritage. Its two sub-criteria are concerned with the incorporation as well as preservation of both natural and cultural heritage. As discussed in Chapter 4, "culture is the key to people-centred sustainable development".[637] The incorporation, but also preservation, of both natural and cultural heritage is therefore extremely important. It is a well-known fact that the inclusion of a local community's culture in a destination's tourism offering greatly increases the community's pride in that culture, thereby increasing their willingness to contribute to its preservation as well as to contribute to the success of the tourism initiative. According to the creators of Tourism 4.0 "digital tourism experiences should be built on the richness of our cultural heritage", and it should therefore be used in sustainable and ethical ways to further enhance the tourist experience.[638] Cultural and natural heritage is featured in the initiative in various ways through its Heritage in Action and Heritage+ programmes. These include the CASTLE ROAD Digital Storytelling project, the WEAVE and INSITES projects, as well as Amazing AoE. One of the leading examples of the initiative's commitment to cultural heritage dissemination and preservation is the digital reconstruction of various heritage sites, including the Idrija UNESCO World Heritage Site.

The last and seventh core-criterion relates to interpretation. Its two sub-criteria consider the interpretation of the technological, natural, and cultural environments. Interpretation of these environments will most likely be done by the STB as the

[637] Agenda 21 for Culture, <http://www.agenda21culture.net/home>, n.d., access: 18 March 2021.
[638] Tourism 4.0, 'Heritage+ Toolkit', <https://tourism4-0.org/heritage/toolkit/>, access: 03 June 2021.

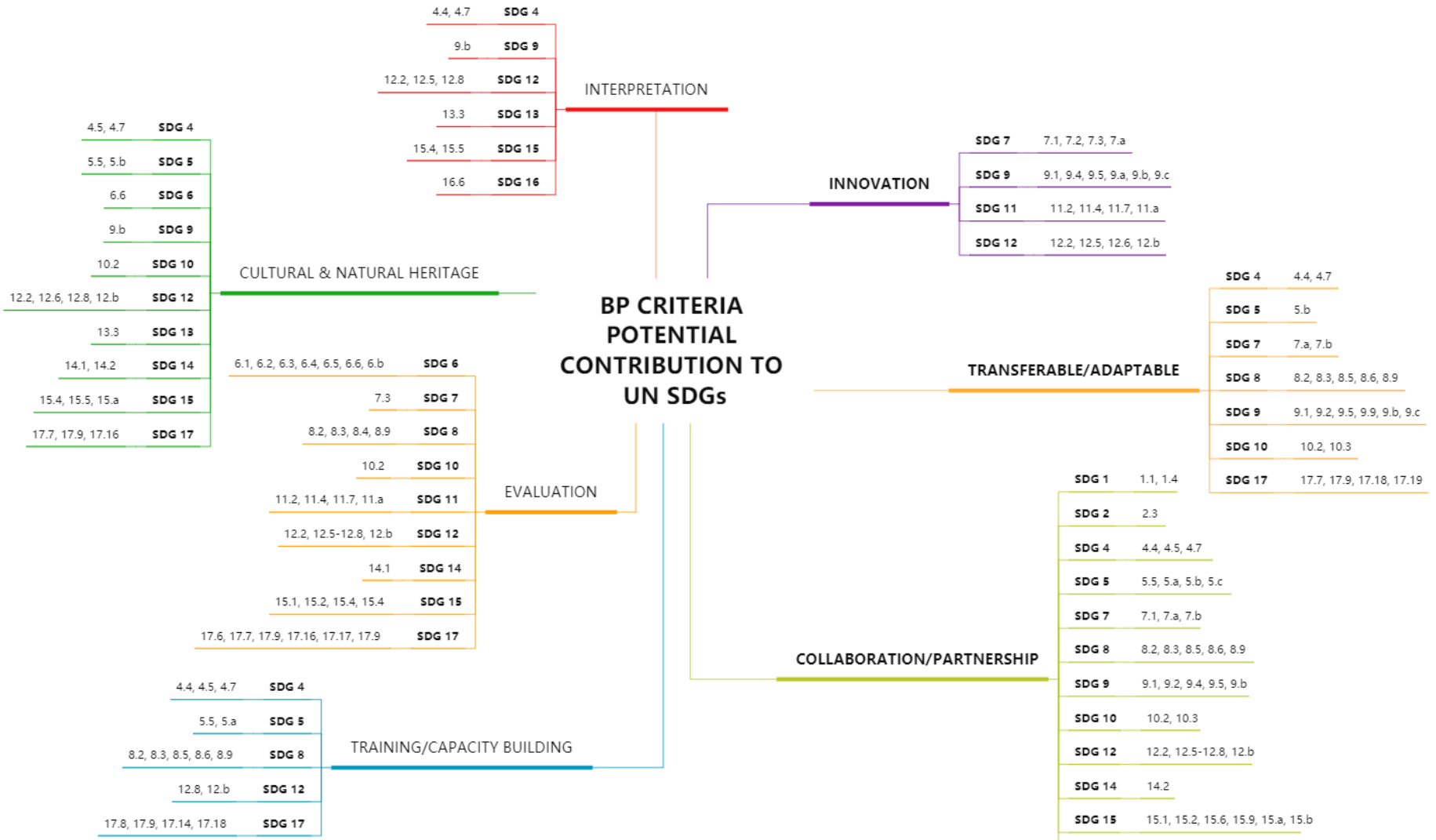
initiative will form part of the broader Slovenia GREEN brand. Interpretation is important in familiarising tourists with the functioning of these technological applications. It is also important that interpretation be done in alignment with the destination brand and image. Research has suggested that interpretation of a destination's natural and cultural environments can assist in ensuring that tourists behave respectfully (and sustainably) when visiting a destination.[639] Although making use of the DOTI, for example, will be voluntary and it will therefore most likely only be used by 'tech-savvy' tourists, interpretation of the app and the broader technological ecosystem is important. It can assist in mitigating any fears of tourists' personal data being sold to the highest bidder or being acquired through a hack of the system, for example, as even the most tech-savvy tourists have these fears in light of an ever-increasing digitised world.

Best practice criteria potential contribution to the UN SDGs

As stated in the introduction to this chapter, seeing as Tourism 4.0 is meant to be a driver for the UN SDGs, the best practice criteria have been developed to align with the SDGs. This section will therefore discuss the criteria and certain individual elements of Tourism 4.0's potential contribution to the identified SDGs and those targets deemed relevant. These criteria and practices have the potential to contribute to 15 of the 17 SDGs and 65 of the 169 targets. (See figure 13) Some contributions have the potential to be more direct than others, as will be illustrated in this section. It is important to again state that these are suggested contributions and that it might manifest very differently once the initiative is fully implemented and operational. Some of the identified targets' deadline was 2020 however, contributions to these can and should still be made. For the full description of each target and its indicators, refer to Appendix 1.

[639] K. N. Tubb, 'An evaluation of the effectiveness of Interpretation within Dartmoor National Park in reaching the goals of Sustainable Tourism Development', *Journal of Sustainable* Tourism 11(6), 2010, pp. 476-498; K. Walker, 'Encouraging sustainability beyond the tourist experience: ecotourism, interpretation and values', *Journal of Sustainable Tourism* 22(8), 2014, pp. 1175-1196.

Figure 13: Best Practice criteria potential contribution to the UN SDGs[640]



[640] Composed by author.

Tourism 4.0 has the potential to contribute to SDG 1: No Poverty and SDG 2: Zero Hunger, although the contribution will potentially be less direct than other SDGs and their targets. Because of its focus on collaboration and partnership with the local community, thereby ensuring that the community gains the most benefit from the initiative, Tourism 4.0 could advance progress on eradicating extreme poverty (1.1) and ensuring that all have equal rights and access to economic resources, land, natural resources, technology, and financial services (1.4).[641] Any contribution to and progress on SDG 2, specifically target 2.3, will also be made because of the initiative's focus on the local community. The target focuses on small-scale food producers, family farmers, pastoralists and fishers and potential non-farm employment.[642] The initiative can greatly support this group of people by encouraging, or even making it a requirement, that tourism service providers (e.g., hotels, bed and breakfasts, restaurants, coffee shops, etc.) buy their produce from these local farmers.

SDG 4 and its targets focus on quality education and lifelong learning for all.[643] The best practice criteria of transferable and adaptable, collaboration and partnership, training and capacity building, cultural and natural heritage, and interpretation have the potential to directly contribute to this SDG and its identified targets (4.3, 4.4, 4.5, 4.7). Through the various collaborations and partnerships and training and capacity building opportunities, Tourism 4.0 has the potential to contribute to the accessibility of affordable and quality education for those involved in the initiative (4.3) which can then contribute to increasing the number of people who "have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" (4.4).[644] Furthermore, the five identified best practice criteria have the potential to directly contribute to eliminating gender disparities in education and ensuring "equal access to all levels of education and vocational training" (4.5) as well as the acquisition of the relevant knowledge and skills for the promotion of sustainable development (4.7).[645]

[641] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, 2016, p. 2. [abridged]
[642] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 3. [abridged]
[643] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, pp. 6-7. [abridged]
[644] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 6. [abridged]
[645] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 7. [abridged]

Tourism 4.0's transferability and or adaptability, its various collaborations and partnerships and training and capacity building opportunities have the potential to contribute to achieving gender equality (SDG 5). The initiative's involvement of a diverse range of stakeholders and partners who present various training sessions could contribute to women having equal opportunities to fully participate in economic activities as well as having leadership roles in the initiative (5.5 and 5.a).[646] The transferring, development and use of technology can also further contribute to women's empowerment (5.b).[647] As various levels of government will be involved, this could inspire the enactment of policies that ensure women's full and equal participation in all industries (5.c) and not only the tourism industry, thereby further contributing to SDG 5.[648]

The TIM's evaluation and reporting on water and sanitation, and waste and land management has the potential to contribute directly to ensuring that water and sanitation is sustainably managed and available to all (SDG 6: Clean Water and Sanitation).[649] The feedback report provided by the TIM can contribute to the accessibility of safe and affordable drinking water and adequate sanitation (6.1 and 6.2).[650] The report could further contribute to action on the pollution of water sources as well as the recycling of water (6.3), which will then contribute to the efficiency of water use (6.4).[651] The use of the TIM by multiple tourism service providers can contribute to the integrated management of water resources (6.5). It can also strengthen the local community's participation in the improvement of the management of water resources (6.b), as well as the protection and restoration of water-related ecosystems (6.6).[652]

The initiative as a whole, but specifically the TIM's evaluation and encouragement of sustainable electricity management, as well as its encouragement to ensure residents' quality of life and health and safety, can advance progress on SDG 7: Affordable and Clean Energy. Overall, the initiative's focus on and requirement of sustainability as

[646] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 8. [abridged]
[647] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 8. [abridged]
[648] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 9. [abridged]
[649] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 9. [abridged]
[650] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 9. [abridged]
[651] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 9. [abridged]
[652] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 9. [abridged]

well as the various innovations emerging from the initiative can "ensure universal access to affordable, reliable and modern energy services" (7.1).[653] Tourism 4.0 can also greatly contribute to the use of renewable energy sources (7.2) and the TIM's evaluations can encourage the improvement of energy efficiency (7.3).[654] Furthermore, it can lead to the enhancement of international collaboration and partnership in the facilitation of access to "clean energy research and technology, including renewable energy, energy efficiency …" and the promotion of "investment in energy infrastructure and clean energy technology" (7.a).[655] Should it be transferred to and implemented in the global South, it could contribute to the expansion and upgrading of infrastructure to facilitate access to cleaner energy and greater energy efficiency in developing countries (7.b).[656]

The innovations that emerge from Tourism 4.0, their potential transferability to not only other destination but other industries, the diversity of its stakeholders and partners, its capacity building opportunities, and the potential external evaluation of the initiative by various entities has significant potential to contribute to economic growth and productive and decent employment (SDG 8: Decent Work and Economic Growth). As the tourism industry is a "high-value added and labour-intensive" industry, it can by itself greatly contribute to achieving higher levels of economic productivity (8.2).[657] However, with Tourism 4.0's diversification of stakeholders and partners and thereby extremely diverse innovations emerging from the initiative, it could contribute to the target even more. The involvement of various levels of government in the initiative, which could also be the case should it be implemented in other destinations, could lead to the enactment of "policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation" all of which relate to tourism and thereby greatly encourages "the formalisation and growth of micro-, small- and medium-sized enterprises [SMMEs]" (8.3).[658] The encouragement of entrepreneurship and the establishment of SMMEs can contribute to more employment opportunities within and beyond the tourism industry (8.5), which can also "reduce the proportion of

[653] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]
[654] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]
[655] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]
[656] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]
[657] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]
[658] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 10. [abridged]

youth not in employment, education or training" (8.6).[659] Government involvement and participation in the initiative could also lead to the enactment of policies that "promote sustainable tourism that creates jobs and promotes local culture and products" (8.9).[660] At the time of writing, the initiative had not been launched and it already had over 160 partners world-wide, and as more partners join, it could contribute to employment and decent work in multiple other industries and countries (8.5).[661]

The initiative could also greatly contribute to SDG 9: Industry, Innovation and Infrastructure. The T4BS and CASTLE ROAD projects are encouraging trans-border and regional development of sustainable technological infrastructure (9.1).[662] The Tourism 4.0 Living Labs are incubators for some of the most innovative products and services, and potentially infrastructure as well, which can be used within and beyond the tourism industry (9.4).[663] Tourism 4.0 is built on R&D and all of its partners are conducting R&D activities to advance the progress and implementation of the initiative. It is therefore contributing to the encouragement of innovation, technological development and increasing the amount of people employed in R&D (9.5).[664] The transferring of these technologies to other destinations, specifically those in the global South, can potentially facilitate the development of sustainable technological infrastructure in these countries, as well as facilitate the development of these technologies locally, which can then increase access to technology (9.a – 9.c).[665] This will be further facilitated by the various partnerships and collaborations that will take place as part of the initiative. The transferring of the initiative to other destinations and the forming of partnerships can further progress on the social, political, and economic inclusion of all, thereby increasing opportunities and reducing inequality (SDG 10: Reduced Inequalities, targets 10.2 and 10.3). This is especially the case given the initiative's emphasis on the full inclusion and involvement of the local community.[666]

[659] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 11. [abridged]
[660] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 11. [abridged]
[661] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 11. [abridged]
[662] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 12. [abridged]
[663] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 12. [abridged]
[664] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 12. [abridged]
[665] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, pp. 12-13. [abridged]
[666] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 13. [abridged]

Five of the seven core criteria can advance progress on SDG 11: Sustainable Cities and Communities (11.2, 11.4, 11.7, 11.a). As part of the TIM, provision of and access to sustainable transportation is assessed. This can contribute to the provision of and access to "safe, affordable ... and sustainable transport systems" which will contribute to the improvement of road safety (11.2).[667] Tourism 4.0's various heritage projects, all geared towards the preservation of cultural heritage by using new and emerging technologies, the TIM's evaluation of the preservation of heritage and the CITs can greatly contribute to target 11.4 as they are "strengthening efforts to protect and safeguard the world's cultural and natural heritage".[668] The TIM, FLOWS and CITs all have the potential to contribute to the accessibility of green public spaces and the linking of urban, peri-urban and rural areas for increased social, economic and environmental benefits (11.7 and 11.a).[669]

Sustainable consumption and production; sustainable management and use of natural resources; reduction of food waste; and reducing, reusing, and recycling can be facilitated by the TIM and CITs (SDG 12: Responsible Consumption and Production, targets 12.2-5).[670] The evaluation conducted by the TIM will also encourage stakeholders to "adopt sustainable practices and to integrate sustainability information into their reporting cycle" (12.6) as well as potentially "promote public procurement practices that are sustainable" (12.7).[671] Collaboration and partnership with local communities and the interpretation of the natural, cultural and technological environments can contribute to ensuring that people have the "relevant information and awareness for sustainable development and lifestyles in harmony with nature" (12.8).[672] The interpretation of the natural environment can also contribute to improving education and awareness raising of the importance of climate change mitigation and impact reduction (SDG 13: Climate Action, target 13.3).[673] There is also potential for contributions towards SDG 14: Life Below Water. Water, sanitation, and waste management, all reported on and encouraged by the TIM, can facilitate the

[667] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 14. [abridged]
[668] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 14. [abridged]
[669] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 15. [abridged]
[670] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, pp. 15-16. [abridged]
[671] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 16. [abridged]
[672] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 16. [abridged]
[673] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 17. [abridged]

reduction of marine pollution of all kinds (14.1).[674] These management practices and collaboration and partnership with local communities, NGOs, and the government can also facilitate the sustainable management and protection of marine and coastal ecosystems (14.2).[675]

Progress towards SDG 15: Life on Land can be advanced by several of the criteria and individual elements of the initiative. Ensuring conservation, restoration and sustainable use, and the promotion of implementation of the sustainable management of terrestrial and inland freshwater ecosystems (15.1 and 15.2) was to be achieved by 2020.[676] However, progress on these can also be made through the use of the TIM and collaboration with national and local government. The interpretation of the natural environment, but also most destinations' reliance on the natural environment in attracting tourists, can ensure the conservation of mountain ecosystems and their biodiversity (15.4) as well as ensuring that the degradation of natural habitats is reduced (15.5).[677] Although less directly, collaborations and partnerships arising from Tourism 4.0 also have the potential to contribute to the promotion of fair and equitable sharing of benefits derived from the use of natural resources (15.6); the integration of ecosystem and biodiversity values in national policy (15.9); and the mobilisation of financial resources for the conservation of biodiversity and sustainable forest management (15.a and 15.b).[678]

Tourism 4.0 has immense potential to contribute to the strengthening of the means of implementation and revitalising the Global Partnership for Sustainable Development (SDG 17: Partnerships for the Goals). It can contribute to nine of SDG 17's 19 targets, specifically in the categories of technology, capacity-building and systemic issues (policy and institutional coherence; multi-stakeholder partnerships; data, monitoring and accountability). Best practice criteria that can contribute to this SDG and the identified targets are innovation, transferable and or adaptable, and training and capacity building. The interconnected nature of the identified criteria means that every one of them contributes to every identified target. However, the main contribution will

[674] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 18. [abridged]
[675] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 18. [abridged]
[676] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 19. [abridged]
[677] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 19. [abridged]
[678] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 20. [abridged]

be made by the various partnerships and collaborations of Tourism 4.0. These various partners and collaborators and the resulting innovations can greatly contribute to the enhancement of "North-South and South-South cooperation on and access to science, technology and innovation", thereby enhancing knowledge-sharing (17.6).[679]

These partnerships and collaborations can further "promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms" (17.7).[680] The progress made on these targets can lead to operationalising the "technology bank and science, technology and innovation and capacity-building mechanism for least developed countries" (17.8).[681] This could be done whether or not the initiative is transferred to other destinations, because of the capacity-building and innovations that result from these multi-stakeholder partnerships and collaborations. Various capacity-building opportunities, although focused on the tourism industry and its sustainability, can contribute to enhancing capacity-building in developing countries to advance progress on the SDGs (17.9), thereby potentially enhancing "policy coherence for sustainable development" (17.14).[682] Tourism 4.0 could also improve the availability, accessibility, ethical acquisition, and evaluation of data in developing countries through its various capacity-building opportunities (17.18).[683] Lastly, the transferring of Tourism 4.0 to other destinations could lead to the emergence of more initiatives that develop means of measuring progress made on sustainable development (17.19).[684]

As mentioned earlier, these contributions are merely suggested, and the true impact of Tourism 4.0 will only become known once it has been implemented and active for some time. Nevertheless, from this discussion it can be stated that Tourism 4.0 has immense potential in becoming a driver for the UN SDGs, more so should it be implemented beyond Europe.

[679] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]
[680] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]
[681] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]
[682] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]
[683] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]
[684] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, p. 23. [abridged]

Reflections on the future of tourism

The question therefore arises as to whether, on reflection, Tourism 4.0 is a best practice example? According to Charles Burke and J. Issaverdis's definitions of best practice (Chapter 4), Tourism 4.0 is a "best practice example". However, it can be regarded as a best practice example for the global North and only a select few destinations in the global South, those that have at least basic ICT infrastructure, if not rudimentary Smart City infrastructure. The argument stands that Tourism 4.0 is perhaps best suited for the world's most popular tourist destinations, which are, in most cases, at the very least equipped with basic technological infrastructure. This line of argument is also supported by the fact that almost half (46%) of the world's population does not have access to the Internet, mostly those in developing and least developed countries.[685] In sub-Saharan Africa, for example, in 2018 only 26% of the population were using the Internet, compared to 84% in Europe.[686] Further supporting this argument is the World Bank's estimation that by the end of 2021, an additional 150 million people will be living in poverty.[687] The UN estimates that by 2022, over 200 million people will be unemployed as a result of the Covid-19 pandemic.[688] Therefore, one cannot in good conscience advocate for the spending of scarce financial resources on the acquisition, development, and implementation of technologies such as AI, HPC, and Smart City infrastructure for an initiative such as Tourism 4.0 when many countries are struggling to see to citizens' most basic needs, let alone mitigate a global health crisis and its accompanying complications.

As discussed in previous chapters, Tourism 4.0 requires Smart City infrastructure to operate as was intended by its creators. Slovenia, a developed country with advanced technological capabilities, is only now putting plans in motion to develop Smart Cities to launch Tourism 4.0. As with a myriad of other issues, Covid-19 has shone a harsh spotlight on the global digital divide – "the gap that exists between individuals who

685 UNESCO, 'News report on global broadband access underscores urgent need to reach the half of the world still unconnected', <https://en.unesco.org/news/new-report-global-broadband-access-underscores-urgent-need-reach-half-world-still-unconnected>, 23 September 2019, access: 21 June 2021.
686 UN, 'Goal 17: Partnerships for the Goals', *The Sustainable Development Goals Report 2020*, 2020, p. 59.
687 World Bank, 'Poverty', <https://www.worldbank.org/en/topic/poverty/overview>, 2021, access: 21 June 2021.
688 UN, 'COVID crisis to push global unemployment over 200 million mark in 2022', <https://news.un.org/en/story/2021/06/1093182>, 02 June 2021, access: 21 June 2021.

have access to modern [ICT] and those who lack access".[689] Before the pandemic it was estimated that it would take at least two decades to close the global technological gap,[690] it could take even longer now. The UN's proposed technology bank (SDG 17) had the potential to close this gap, however, given the economic devastation the pandemic is leaving in its wake, this does not seem likely in the near future. Technological dissemination, although arguably important for overall development, seems a trifle unimportant in the face of a global health and looming economic crisis. According to the UN's *Sustainable Development Goals 2020 Report*, "the world [is facing] the worst economic recession since the Great Depression".[691] In the UN Secretary-General's Advance unedited 2021 SDG Progress Report, published ahead of the July 2021 meeting of the HLPF, it is stated that global "foreign investment is expected to drop by 40%".[692] This could greatly hamper progress on the SDGs. As has been stated before, many would argue that the funds needed to develop an initiative such as Tourism 4.0 could be better used elsewhere to contribute to the SDGs more directly, especially given that these funds will be significantly reduced for the foreseeable future.

However, it will be argued here that there are elements of Tourism 4.0 that can be applied if not aspired to in the context of the global South. Most popular tourist destinations in the global South have at least basic public Wi-Fi infrastructure that can be used for the FLOWS tool. Although it could potentially be less accurate without the traffic counters and various other proposed sensors, it would provide a workable basis for the monitoring and redirection of tourist flows. Where destinations lack AI, HPC and Cloud Computing capabilities, the data can be analysed by teams of analysts. This could provide training and capacity building opportunities that can lead to diversified and increased employment opportunities. The technological pillar with the most potential for implementation in the widest range of destinations is the TIM. The TIM survey can also be conducted manually where necessary, as can the writing of

[689] C. Steele, 'What is the Digital Divide?', <http://www.digitaldividecouncil.com/what-is-the-digital-divide/>, 22 February 2019, access: 21 June 2021.
[690] K. Collins, 'UN's internet access goals won't be met the way we're going, research shows', <https://www.cnet.com/news/un-internet-access-goals-wont-be-met-the-way-were-going-research-shows/>, 16 April 2020, access: 21 June 2021.
[691] UN, 'Overview', *The Sustainable Development Goals Report 2020*, p. 14.
[692] UN Social and Economic Council, *Progress towards the Sustainable Development Goals: Report of Secretary-General*, 2021, p.2.

the TIM report, again providing training and capacity building opportunities. Increased collaboration between accommodation providers, car rental services, public transport agencies, local municipalities and national government for the aggregation and analysis of data on tourist movement within a destination will also be important. This can assist in the strengthening of Public-Private Partnerships within and beyond the tourism industry.

Those destinations that do not possess the full technological infrastructure required for Tourism 4.0 should place increased emphasis on local community partnership and collaboration. Community involvement has been preached, in every sense of the word, for decades by tourism scholars and practitioners alike.[693] The pandemic has provided us with the chance to finally start practicing what we preach by restarting the tourism industry and turning it into the sustainable and equitable industry it should have been decades ago. As has been stated multiple times throughout this dissertation, the tourism industry is extremely vast, complex, and labour intensive. Where technologies are lacking, various employment opportunities can be provided. For example, the absence of technologies for heritage preservation should not be regarded as a barrier that could be detrimental to preservation activities. Local communities have been preserving their heritage for generations through festivals, storytelling, arts and crafts, the transfer of traditions, and where possible, their own community managed websites and digital archives.[694] It is the latter innovation that needs to be acknowledged,

[693] K. Simpson, 'Strategic Planning and Community Involvement as Contributors to Sustainable Tourism Development', *Current Issues in Tourism* 4(1), 2001, pp. 3-41; C. M. Rogerson, 'Tourism-led local economic development: The South African experience', *Urban Forum* 13, 2002, pp. 95-119; N. Ndlovu & C. M. Rogerson, 'Rural local economic development through community-based tourism: the Mehloding hiking and horse trail, Eastern Cape, South Africa', *Africa Insight* 33(1), 2003, pp.124-129; C. M. Rogerson, 'Tourism and local economic development: The case of the Highlands Meander', *Development Southern Africa* 19(1), 2010, pp. 143-167; G. Butler & C. M. Rogerson, 'Inclusive local tourism development in South Africa: Evidence from Dullstroom', *Local Economy* 31(1-2), 2016, pp. 264-281; R. M. Ndivo & L. Cantoni, 'Rethinking local community involvement in tourism development', *Annals of Tourism Research* 57, 2016, pp. 275-278.

[694] M. Hughes & J. Dallwitz, 'Ara Irititja: towards culturally appropriate IT best practice in remote indigenous Australia', *in* Dyson, L. E., Hendriks, M. & Grant, S. (eds.) *Information Technology and indigenous people*, 2007; K. Michael & L. Dunn, 'The use of Information Communication Technology for the preservation of Aboriginal culture: the Badimaya people of Western Australia', *in* L. E. Dyson, M. Hendriks & S. Grant (eds.), *Information Technology and indigenous people*, 2007; T. B. Powel, W. Weems & F. Owle, 'Native/American digital storytelling: situating the Cherokee oral tradition within American literary history', *Literature* Compass 4(1), 2007, pp. 1-23; J. Iseke & S. Moor, 'Community-based Indigenous Digital Storytelling with Elders and Youth', *American Indian Culture and Research Journal* 35(4), 2011, pp. 19-38; Á. Fernández-Llamazares & M. Cabeza, 'Rediscovering the potential of Indigenous Storytelling for conservation practice', *Conservation Letters* 11(3), 2018, pp. 1-12; S. Cisler, 'Introduction: The Internet and indigenous Groups',

encouraged and endorsed by both the industry and state. As mentioned in Chapter 4, innovation remains pivotal to achieving sustainability. As EarthChangers claim, “innovation expands technological capabilities and leads to the development of new skills”.[695]

There is no point in outrightly dismissing Tourism 4.0 and its well-placed goal of turning tourism into a driver for the UN SDGs. It is, as was stated in the previous sections of this chapter, an initiative with immense potential. While its creators merely stated that it was never intended for Tourism 4.0 to remain in Slovenia and never explicitly proposed its implementation in the global South, given its ultimate goal one would assume that there would eventually be attempts at its implementation there. Many aspects of the broader Slovenian tourism industry as well as some aspects of Tourism 4.0 can potentially easily be transferred to other destinations, if not already in use in some variation. Therefore, Tourism 4.0 stands as a new and innovative initiative which has great potential, not only for the region where it is currently being developed, but also beyond Europe. The global South, Africa and in particular southern Africa would do well to embrace these aspects of this innovative initiative to improve and enhance its tourism offering.

<https://www.culturalsurvival.org/publications/cultural-survival-quarterly/introduction-internet-and-indigenous-groups>, 2000, access: 29 June 2021; City of New Castle, ‘Take a virtual tour of hunter sites with Aboriginal Elders’, <https://newcastle.nsw.gov.au/council/news/latest-news/take-a-virtual-tour-of-hunter-sites-with-aborigin>, 09 July 2018, access: 29 June 2021.

[695] EarthChangers, ‘How can tourism help the Sustainable Development Goals? #9 Industry, Innovation & Infrastructure’, <https://earthchangers.medium.com/how-can-tourism-help-the-sustainable-development-goals-9-industry-innovation-infrastructure-c6c591ed3d83>, 30 April 2019, access: 20 February 2021.

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APPENDIX 1

Final list of sustainable development goal indicators (2016)[696] (A selection of relevant SDGs and targets)

Goal 1. End poverty in all its forms everywhere

1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.

1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

[696] IAEG-SDGs, *Final list of proposed Sustainable Development Goals indicators*, 2016.

Goal 5. Achieve gender equality and empower all women and girls

5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.

5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.

5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

Goal 6. Ensure availability and sustainable management of water and sanitation for all

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

6.b Support and strengthen the participation of local communities in improving water and sanitation management.

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.

7.3 By 2030, double the global rate of improvement in energy efficiency.

7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support.

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training.

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.

9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.

9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.

Goal 10. Reduce inequality within and among countries

10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.

11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.

Goal 12. Ensure sustainable consumption and production patterns

12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

Goal 13. Take urgent action to combat climate change and its impacts

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.

15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development Finance

Technology

17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance

knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.

17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.

17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.

Capacity-building

17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation.

Systemic issues

Policy and institutional coherence

17.14 Enhance policy coherence for sustainable Development.

Data, monitoring and accountability

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts.