



**NEXT TOURISM
GENERATION
ALLIANCE**

**DESK RESEARCH
SUMMARY**

on the future of digital, green and
social skills in tourism

JANUARY 2019

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AND SOCIAL SKILLS IN TOURISM

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Executive Summary

This desk research report summarizes the most important trends, issues and challenges in digital and sustainability skills development for the tourism and hospitality sector and reviews issues in partner countries involved in the NTG project (Bulgaria, Germany, UK, Spain, Hungary, Ireland, Italy, the Netherlands). Each Consortium Partner completed a comprehensive analysis of the situation regarding digital and sustainability skill sets in their country across five tourism and hospitality sectors (visitor attractions; accommodation; food and beverage; tour operators and travel agents and destination management). This involved a thorough examination of company reports, past project reports, academic journals, industry trade journals, government strategies and policy documents, books and websites to execute a thorough evaluation of existing knowledge of issues and challenges related to digital and sustainability skills gaps, company training needs and digital and sustainability training delivery. This draft report is a work in progress and will be updated throughout the lifespan of the Next Tourism Generation (NTG) Project due to ongoing advances at International and National levels. An interim report for publication will be finalised in January 2019 for reference and information by tourism and hospitality businesses, local government departments, private training providers, further education colleges and universities across Europe. The report aims to help the reader to gain insight into the key challenges and issues arising from technological developments and changes in the natural and social environment of tourism destinations to provide better digital, green and social skills development to lead the next tourism generation into the forthcoming decades.

The key findings arising from the desk research will help inform the next stages of the project, development of skills content and delivery mechanisms. Technological innovations will continue to change jobs in tourism and tourist experiences which has created a growing need for data analysts, programmers and AI specialists. AI-driven technologies and data analysis enable a deeper understanding of consumption patterns and create possibilities for more customized and personalized services and experiences. Demographic changes will result in different tourist preferences and choices than today. In Europe, we will see more Asian travellers as well as more elderly tourists. More digitally savvy tourists are entering the travel market allowing companies to stay permanently connected with their customers and build close relationships and loyalty.

There will only be a future for tourism when more sustainable practices are incorporated in the consumption, production, and development of tourism. Reducing the impact of tourism on energy and water consumption, carbon emissions, and waste is not enough. Sustainable forms of tourism that help diversify local economies, create decent jobs and cohesive communities as well as conserving natural and cultural heritage is becoming increasingly important. Conversely, skills to reduce the impact of 'overtourism' are also needed in destinations.

Hyper-connected societies, markets, and industries will be adapting continuously to disruptions, many of which are unknown at this moment in time. The World Economic Forum (2016) notes that in many countries the most in-demand occupations did not exist ten or even five years ago. Technical skills will be

indispensable and permanent education, adaptability and agility will be the new normal. Nevertheless, personal skills such as creativity, critical thinking, collaborative and intercultural skills cannot (yet) be replaced by machines and are likely to grow in importance in the decades ahead. In order to cope with such changes in the tourism and hospitality sector, Cedefop (the European Centre for the Development of Vocational Training) notes a higher level of qualifications in general will be needed in the future. Cedefop's European skills forecasting model projects that by 2025 about 48% of all job opportunities in Europe will need to be filled by individuals with tertiary-level qualifications (Cedefop, 2018). Additionally, to survive in an increasingly digitalized world, the following transversal skills will become ever more relevant for all:

- self-learning capacities;
- digital fluency;
- cognitive skills (such as problem-solving, entrepreneurship, creativity);
- socio-emotional skills (communicative, collaborative) and multicultural dexterity.

While the report highlights essential future skills for tourism, efforts aimed at closing skills gaps, future solutions should be grounded in a solid understanding of a country's and industry's skills base today. The next phases in the NTG project are taking national and regional differences into account when defining skills needs and designing methods to close the gap between today and 2030. In order to map the skills gaps between current skills levels in the business field of tourism and the skills needs in the future (also from a per-country perspective), quantitative research will be conducted in the NTG alliance member countries (i.e., through an online survey), followed by 30 in-depth interviews per country with tourism industry experts in the respective fields of green, social and digital skills. This will result in an Industry Skills Needs Assessment Report, as input for the NTG Skills Assessment Methodology (NTG-SAM).

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THE NEXT TOURISM GENERATION (NTG) ALLIANCE PROJECT

1. INTRODUCTION: THE NEXT TOURISM GENERATION (NTG) ALLIANCE PROJECT

The Next Tourism Generation (NTG) Alliance project is funded by the European Commission to support the progression of a Blueprint Strategy for Digital and Sustainability Skills Development in the Tourism and Hospitality Sector. The Blueprint is to provide an effective innovative and applied approach for operational delivery at European and National levels across 5 tourism and hospitality sectors including destination management, tour operators and travel agents, accommodation, food and drink and visitor attractions. The Project Coordinator is Federturismo Confindustria, (Italian Tourism Trade Association) and the NTG Consortia consists of a unique industry and education partnership of 6 universities and 7 trade associations and 1 sector skills council in 8 target countries: Eurogites; University of Alicante and CEHAT, Spain; Union Cammere, Italy; Varna University, Bulgaria; University of Sopron and VIMOSZ, Hungary; Cardiff Metropolitan University and People 1st, UK; Breda University of Applied Sciences, The Netherlands; Tourism Training Academy, Berlin, Germany; Dublin Institute of Technology, Ireland; ATLAS, Association of Tourism Lecturers and Students. Other EU countries will also be involved during the life of the project. The project commenced in January 2018 for a duration of 4 years to Dec 2021.

1.2 Core NTG Skills

A key element of the Blueprint strategy, the NTG Alliance will provide employees, employers, entrepreneurs, teachers, trainers and students with a set of core NTG digital, green and social skills represented in a skills matrix with associated content in units/modules that can be applied using a range of Delivery methods, guidelines and tools across different levels of industry jobs and different levels of qualification and training by education and learning providers.

- **Digital/Technological** = online marketing, data analytics, use of technology via artificial intelligence, robotics, virtual and augmented reality applications
- **Sustainable Skills**: green and socio-cultural:

Green = Resource management to recycle and manage waste, water and energy services including principles of circular economy in the design and management of tourism value chains, sustainable design and management techniques of hotels and sustainable tour packages.

Social = Behavioural and practical attitudinal competences (soft skills) in interpersonal communication, accessible tourism knowledge, gender equality, cross-cultural understanding and delivering optimal customer service.

1.3 The Project Scope

The NTG project aims to provide a European and National Blueprint Strategy to respond to the fast

changing and increasing skills gaps in *digital, green and social skills sets*. The following explains this scope of the project using innovation in tourism skills development.

- To create transformative cooperation in five key tourism sub-sectors: accommodation providers, food and beverage operations, travel agencies /tour operators, visitor attractions and destination management organizations.
- To define a scalable mechanism and model for sustainable and digital curricula between the industry and education providers at regional, national and European level.
- To develop, deliver and test Next Tourism Generation (NTG) Skills Products for professionals, trainers, students, university tourism departments, local authorities, companies to respond to the fast changing and increasing skills gaps in digital, green and social skills sets.

1.4 Desk Research Methodology

The primary aim of the desk research was to identify and summarize previous research, reports and documents in the public domain to establish existing knowledge on current tourism and hospitality digital and sustainability skills and skills gaps in country for the five sub-sectors (Food and Beverage; Accommodation providers; Destination Management; Tour Operators and Travel Agents and Destination Management organizations). This included an assessment of trends, developments and future needs regarding digital and sustainability skills and training delivery using previous research and written reports. Secondary research methods include critical analysis of policy documents, government strategies, statistical reports, academic and trade journal articles, text books, websites. The analysis was completed from the perspective of the tourism industry (demand side), from policy developers at European and National Level and public and private training and education suppliers including universities, local government, businesses and training companies. Although the future is uncertain it is considered important to understand what skills the industry will need in 2030 as well as the current skills gaps. Some skill sets are specific to the relevant sub-sector; however, many skills are generic and relevant to all sectors. This also reflects the ongoing changes in the tourism industry such as the blurring of boundaries between sectors and the opportunities for career progression and movement of jobs within the tourism and hospitality sector. Therefore, many of the investigated skills could be identified as *transversal skills* that are relevant for all subsectors within tourism.

TOURISM IN 2030

2. TOURISM IN 2030

To develop skill sets for the future, the date of 2030 raises many questions. According to the World Economic Forum, we are today witnessing the beginning of the Fourth Industrial Revolution (World Economic Forum, 2016). Developments in previously separate areas such as cloud computing, artificial intelligence and machine learning, robotics, 3D printing, and blockchain technology are now joining forces and amplifying one another, and the impact of this will be visible in the coming years (World Economic Forum, 2016). While the future at large is uncertain, it is certain that disruptive influences will affect European societies, jobs, incomes, amounts of free time. Therefore, the tourism industry, soon, will not only pose threats from political, economic, social, environmental and technological perspectives, but also open up new opportunities for which the NTG project needs to prepare the next generation of entrepreneurs, educators, students and workers in tourism.

Planning for the future involves a comprehensive understanding of the current situation regarding the delivery of digital, green and social-cultural skills in partners' countries and regions. Regarding education for tourism in Europe, the report *Mapping and performance check of the supply side of tourism education and training* (Centre for Strategy and Evaluation Services, 2016), mentions that in jobs in the European tourism sector, as well as education and training for tourism (including higher education, VET, other education and training for adults, in-company training) are very diverse. Due to this diversity and the fact that many students who have completed tourism-related education or training do not enter the sector and many of those who do work in tourism have an educational background unrelated to tourism. Therefore, it is very challenging to “to talk about a European tourism education and training “system”, or even about national or regional systems” (p. 96). The NTG project aims to develop cohesive strategies, which facilitate skills development in tourism at a European, national, regional and local level. The report proves this point that the diversity of education and training offered in the NTG countries and regions is extremely diverse.

Tourism continues to be one of the largest and fastest growing economic sectors in the world. Tourism not only stimulates economic growth but also helps to sustain cultural and natural heritage, and “promotes an awareness of a common European identity and citizenship distinguished by its diversity” according to the European Tourism Manifesto (European Tourism Manifesto, 2017).

Tourism creates employment for people of different ages and skill levels with around half of the tourism workforce in OECD member countries working in small and medium enterprises or SME's (Stacey, 2015). Tourism generates export revenues and makes relevant contributions to the GDP of countries worldwide. In 2016, tourism directly contributed, on average, 6.9% of employment, 21.7% of service exports and 4.2% of GDP in OECD countries (OECD, 2018). According to the World Travel and Tourism Council (WTTC), tourism accounted for 10.4% of global GDP and 313 million jobs, or 9.9% of total employment in 2017 (WTTC, 2018).

In the face of challenges such as the 2008 global economic crisis, terrorist attacks, and natural disasters, tourism has demonstrated resilience and experienced a steady growth. International arrivals are forecast

to increase from 1.3 billion in 2017 (UNWTO, 2018) to an estimated 1.8 billion by 2030 (UNWTO, 2011). Even though tourist arrivals are projected to grow in the years to come, the tourism industry is likely to change substantially as tourism, just as other industries and societies in general - will be influenced by world-wide socio-economic and geostrategic forces, such as technological innovations, demographic changes, and changing values, shifting economic power, and environmental pressures. The OECD (2018) delineates four megatrends generated by these socio-economic and geostrategic forces that are likely to impact the development of tourism to 2040. These are evolving visitor demand, sustainable tourism growth, enabling technologies and travel mobility. Since the latter, travel mobility, is not a part of the NTG project, only the first three megatrends will be briefly discussed in this report to provide a context for the tourism skills needed in the future and respond to such megatrends. This report is not an in-depth discussion of all the changes that are facing the world at large and the tourism industry, including unpredictable events such as economic crises, disasters and wars, that are likely to take place in the years ahead that will influence and adjust trends in the global tourism economy.

2.1. Evolving visitor demand

The world population will continue to grow in the next decades as Table 1 demonstrates.

Table 1. World population 2015, 2030, 2050 (millions)

Area	2015	2030	2050
World	7 349	8 501	9 725
Africa	1 186	1 679	2 478
Asia	4 393	4 923	5 267
Europe	738	734	707
Latin America & Caribbean	634	721	784
Northern America	358	396	433
Oceania	39	47	57

Source: United Nations, Department of Economic and Social Affairs, Population Division (2015b, p. 1).

Table 1 shows that, currently, around 60% of the global population lives in Asia (around 4.4 billion people) with China (1.4 billion) and India (1.3 billion) having the largest numbers of inhabitants (19% and 18% of the world's population, respectively). Europe is home to only some 10% of the global population and this will decrease to around 8.6% in 2030. The African continent, on the other hand, will see a substantial population increase.

These demographic changes illustrate a shift in global economic power from the West to emerging and developing countries and will contribute to increasing arrivals of Asian tourists to Europe and the need to respond to their cultural needs and tastes. By 2030, these countries are expected to contribute two-thirds of global growth and half of the global output (OECD, 2018). By 2030, these countries will also be home to the majority of the world's middle class as table 2 demonstrates.

Table 2. Number (millions) and share (%) of the global middle class by region

Region	2015		2020		2030	
North America	335	11	344	9	354	7
Europe	724	24	736	20	733	14
Central & South America	285	9	303	8	335	6
Asia Pacific	1,380	46	2,023	54	3,492	65
Sub-Saharan Africa	114	4	132	4	212	4
Middle East & North Africa	192	6	228	6	285	5
World	3,030	100%	3,766	100%	5,411	100%

Source: Kharas (2017, p. 14)

While the global middle class is projected to nearly double between 2015 and 2030, it is the middle class in the Asia Pacific area that is most rapidly expanding. Around 65% of the global middle class will be based in the Asia Pacific region by 2030 (and only 14% in Europe). Although unforeseen impacts of technological developments on jobs and economic growth worldwide must be considered, it nevertheless seems safe to say that the Asia Pacific area is going to play an increasingly important role as a source market for global tourism.

Other demographic changes that are going to impact on tourism skill sets in the near future are:

Aging population and increased life expectancy: With people born today in Europe living more than one hundred years and in Japan around one hundred twenty years (Gratton & Scott, 2016), the share of older persons in the total population virtually everywhere will increase rapidly. According to the United Nations (United Nations Department of Economic and Social Affairs, 2015a) the number of people in the world aged 60 years or over is projected to grow by 56%, from 901 million in 2015 to 1.4 billion in 2030. Older persons are expected to account for more than 25% of the populations in Europe and in Northern America, for 20% in Oceania, 17% in Asia and in Latin America and the Caribbean, and 6% in Africa (United Nations Department of Economic and Social Affairs, 2015a)

The rise in prominence of emerging generations in the tourism arena: Millennials (born in the early-1980s to mid-1990s) and Generation Z (born in the late-1990s to early-2010s) will become main forces in mobility. Both generations are “digital natives”, and this will play a key role in how they access and book tourism products and services (OECD, 2018). Millennials, who were hit hard by the 2008 economic crisis, tend to take more (four or more) and shorter trips per year than other generations. Furthermore, they tend to have a broad range of interests, from exploring the outdoors to cultural experiences and romantic getaways. They are interested in “authentic” experiences and in heading off the beaten track (Globetrender, 2017). Generation Z is one of the most budget-conscious generations; they are highly influenced by (appealing images on) social media and recommendations by peers when planning their

trips. They tend to be interested in activities and (“once-in-a-lifetime”) experiences. Destinations where they can take memorable pictures and holidays with friends are more important for Generation Z than for other generations (Globetrender, 2017).

2.2. Sustainable Tourism Development and Challenges

Whilst 2017 was the UN International Year of Sustainable Tourism for Development, it was also the year in which hurricanes devastated entire Caribbean islands heavily dependent on tourism. In the same year, “overtourism” and “overcrowding” became hot topics in cities like Barcelona, Venice, and Amsterdam where the impact of millions of visitors compromises both the quality of life of residents and the quality of the visitor experience. In early 2018, the Philippine and Thai governments closed several island destinations (Boracay in the Philippines and Maya Beach on the Thai island of Koh Phi Phi Leh) entirely to tourists (Baker, 2016). These events have major implications for green and social skills to help with the mitigation of environmental impacts of tourism and management of climate change impacts upon destinations.

The need for a more sustainable development - defined in the Brundtland report as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987) is very urgent. Climate change, resource scarcity (e.g. water) and environmental degradation (such as pollution of air, water, and land; deforestation; decline in biodiversity) are posing increasing threats to the world and skills to manage waste and natural resources in the tourism industry are becoming increasingly urgent. With energy demands forecast to rise by some 50% by 2030 and water withdrawals by 40% (PWC, 2016), more frequent extreme weather conditions and rising sea levels are likely to occur and could possibly be catastrophic. According to PWC (2016, p. 20) “Sea-level rise will act as a threat multiplier in rapidly urbanizing agglomerations, increasing political, economic, religious, demographic, and ethnic tensions by causing land and water to become scarcer”. This highlights the importance of skill sets to support more comprehensive implementation of environmental management systems in tourism destinations.

It is obvious that such developments will heavily impact (and are already impacting) tourism. According to the OECD (2018), increasingly extreme weather and changes in the physical environment may create a need for new and different tourism products: “For instance, much of international tourism occurs in coastal regions, which are under significant threat of storms, flooding, and tidal surges. Southern destinations are likely to face extreme heatwaves in the summer seasons, and northern destinations that rely on outdoor winter activities will face shorter periods of snowfall, leading to potentially larger seasonal variations for many countries. For both government and industry, this will require a serious rethinking of how travel activities are offered and how tourism is managed over the long-term” (OECD 2018, p. 72).

For the tourism industry, the incentive to act in more sustainable ways should perhaps be even stronger than for other industries since so much of tourism is dependent on natural and cultural resources, many of which are being destroyed by unsustainable behavior of companies and tourists. Tourism today is an important consumer of energy and generator of greenhouse gas emissions. Tourism also contributes to - excessive - freshwater use (for showers, laundry services, swimming pools, and spas, keeping hotel

gardens and golf courses green, production of food for tourists and more), to unsustainable land use and food consumption (Mullis, 2017). On the positive side, tourism can raise awareness of cultural and environmental values, help finance the conservation of landscapes and cultural heritage, rekindle interest in ancient traditions and local cultures and create jobs (albeit often at entry level and low paying).

Although technological innovations - such as new solar-powered desalination techniques to turn saline into fresh water - might mitigate some of the environmental threats that are facing the world today, it is necessary that the tourism sector takes responsibility for its potential to create negative impacts in destinations through far-reaching effects on the daily life of local people, environments and cultures. In the 2030 Agenda for Sustainable Development, which comprises 17 sustainable development goals (SDGs), tourism is envisioned as having the potential to contribute, directly or indirectly, to all of the goals and in particular to goals 8, 12 and 14. Goal 8 ("Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all") sees a role for tourism as a potential creator of decent employment opportunities and as a promoter of local culture and products (UNWTO, 2015). In this respect, tourism could also be an innovator in taking a proactive approach in offering possibilities to female and youth entrepreneurs to establish new businesses (Garofano, Martins, Olsen, Chai, Hutchings & McLennan, 2017).

The implementation of principles and practice associated with the achievement of Sustainable Development Goals (SDGs) are particularly relevant to new skill sets in tourism. SDG 12 ("Ensure sustainable consumption and production patterns") considers it imperative for the tourism sector to develop and implement tools to monitor sustainable development impacts for a tourism which creates jobs, promotes local culture and products (UNWTO, 2015). SDG 14 ("Conserve and sustainably use the oceans, seas and marine resources for sustainable development") concerns one of tourism's biggest segments: coastal and maritime tourism. Tourism development should therefore be a part of integrated coastal zone management to help conserve and preserve fragile marine ecosystems and serve as a vehicle to promote the "blue economy" (UNWTO, 2015).

Many companies are already addressing sustainability issues such as reducing carbon emissions and minimizing resource use and pollution. The OECD (2018) notes that "incorporating sustainable practices in consumption and production of tourism services implies a change in the mindset of stakeholders, increasing awareness of the fact that incorporating sustainable practices in their daily activities is for their own benefit in the long run, as it enables the preservation of the environment that is one of the main drivers of tourism" (p. 95).

However, sustainable development implies more. Only tourism that is built upon broad stakeholder engagement and contributes to the well-being of local communities, to decent incomes for those working in tourism, to environmental integrity and authentic visitor experiences is a viable option for sustainable development. However, comprehensive skills implemented at operational through to executive levels are needed to realise successful sustainable tourism initiatives, plans and programmes.

In this perspective the PM4SD certification training programme has been developed in Europe with the specific scope to bring sustainable tourism from theory to practise. PM4SD applies whenever an organization, whether public or private, needs to plan, manage and/or evaluate sustainable tourism initiatives. The certification scheme is for project managers, planners, decision makers, entrepreneurs. The NTG consortium has been designed in line with the PM4SD methodology and the members of the consortium took the certification during the Initiation Stage of the project.

2.3. Enabling technologies

Arguably, the main driver to impact the world in general is *technology*. This encompasses everything from cloud computing, artificial intelligence (AI) and machine learning, to robotics, voice technology, data analytics, 3D printing, blockchain technology and more. Governments, industries, and universities are grappling with the question of how these technologies will affect societies, labor, and business models. According to the World Economic Forum (2016), “...current trends could lead to a net employment impact of more than 5.1 million jobs lost to disruptive labour market changes over the period 2015–2020, with a total loss of 7.1 million jobs—two thirds of which are concentrated in routine white-collar office functions, such as Office and Administrative roles—and a total gain of 2 million jobs, in Computer and Mathematical and Architecture and Engineering related fields” (p. 1). So, while many jobs are likely to disappear in the years to come, many new ones will be created in which working with technology will be of key importance.

This situation also applies to tourism. Travel and tourism have already been deeply disrupted by technological developments, enabling the rise of peer-to-peer online platforms such as Airbnb and Uber which have created new markets and business models. Accommodation sharing services have not only generated income for many, created new jobs and dispersed tourists to less well-known areas; they have also become significant competitors to the hotel industry, changed the character of entire neighborhoods and put pressure on the local housing market in places like Amsterdam and Barcelona. Nevertheless, many innovative start-ups have secured a position in the travel industry (ANVR & Amadeus, 2018) and, according to Deloitte, “the potential for one of these companies to completely change industry dynamics is likely not a matter of if, but a matter of when” (Weissenberg & Langford, 2018, p. 2).

2.3.1. Online Travel Agencies (OTA’s)

The rise of online travel agencies (OTA’s), and online fare aggregators like Skyscanner and Booking.com, have enabled travelers to make their own bookings and reservations. With increasing numbers of tourists connecting directly with service providers through technological platforms, rather than dealing with

professional intermediaries, and with many travellers relying more and more on user-generated content and social media for information, the traditional travel agent and travel advisor are likely to disappear with the continued growth of digital travel platforms (CapGemini & ANVR, 2015). This view is also postulated by the Future Foundation (Future Foundation & Amadeus, 2015): “The most advanced and ambitious future technologies will do much the same work as traditional travel-agents – qualifying choice based on our preferences - only these preferences will not necessarily need to be prompted or consciously expressed, and they will be able to manage inputs of vastly greater complexity than any system we can imagine today” (p. 13).

2.3.2 Data Analytics and Robotics for Tourism Businesses

This does not mean that human-to-human interaction will completely vanish. On the contrary, the gathering and analysis of huge quantities of online customer data will enable different kinds of personalized, customer-centric interactions, experiences, and services. According to Weissenberg and Langford (2018): “The future of the travel experience must be a seamless blend of talent and technology where machines are tasked to do more of the ‘machine’ work - freeing (and empowering) humans to provide better service experiences, and more meaningful connections” (p. 8). This will make it possible for large companies to interact with their clients in similar ways as small businesses who really know their customers.

“Many roles once filled by human workers will be staffed by search algorithms, robotic bellhops, cashless payment systems, virtual customer service avatars, and fluid biometric processing systems. Gauging changing consumer perceptions and social attitudes will be crucial in working out over the next years the ideal human-machine ratio in the service mix” (Future Foundation)

In the accommodation sector, technological innovations are also likely to reduce the numbers and changing the role of humans. [Starwood is experimenting with room service delivered by a robot in their Aloft hotels](#), while YOTEL in New York City uses [the Yobot to help guests](#) store their luggage for the day. And in 2015, the [Henn-Na Hotel in Nagasaki](#), Japan, became the first hotel to be run entirely by robots. Guests are checked in by “humanoids” (robots that look like humans) and robotic dinosaurs, butler robots carry guests’ luggage to their room and customers enter their room using facial recognition. The range and possibilities of electronic systems in use in hotels are expanding continuously.

2.3.4 Online Management Systems

Property management systems (PMS) and electronic point of sales (EPOS) can now be used for a wide range of activities from enhancing stock control and waste reduction to monitoring staff and gathering customer data. Mobile applications such as [Flexkeeping](#) enable real-time data on, for example, room cleaning and are used to increase efficiency in housekeeping, maintenance, and front desk operations while at the same time providing in-depth hotel operations analytics.

In restaurants, interactive tablets are replacing printed menus and staff; guests can scroll through digital menus, place their orders and pay directly at their table. MacDonalD's is implementing self-service ordering kiosks and check-outs which should be operational at all U.S. locations by 2020 and which will affect the number of unskilled entry jobs quite severely (Rensi, 2018).

2.3.5 Mobile Technology and Virtual and Augmented Reality Applications

For all sectors of the tourism industry - travel, destinations, accommodations, attractions - virtual reality (VR) simulations will become increasingly important (Future Foundation & Amadeus, 2015; CapGemini & ANVR, 2015). Travel experience centers will re-invent how consumers book their travels, accommodation, and excursions. Immersive previews or pre-experiences will give customers a virtual reality experience of their hotels, destinations, and activities. Check out the [example the Zanadu Travel Experience Space in Shanghai](#). While VR's most promising travel applications are likely to be in marketing- and sales related fields, VR could also provide alternatives for tourist experiences in areas where the environment is too vulnerable or culturally sensitive to allow actual visitors (OECD, 2018).

Where VR generally removes users from their surroundings and immerses them in 3D environments, augmented reality (AR) and mixed reality (or merged reality which embeds virtual objects in real-world environments and creates the possibility to interact with them) have the potential to make travel easier, more convenient, more educational, and safer by enhancing the experience rather than replacing it. For tourism, this means that (AI powered) augmented reality mobile apps are currently revolutionizing, facilitating and enlivening the processes of:

Booking accommodation, flights and even choosing meal options. Through AI-powered AR apps, customers can have a 3D virtual tour of their preferred hotel, its rooms, swimming pool, and other amenities as well as making a reservation, all on their mobile device. Also, flight booking processes can be greatly enhanced by AR voice-search enabled apps like [App in the Air](#). This application makes it possible to search for flights, filter them by price or schedule, preview the cabin and seats with AR projections, and even to check one's luggage against an AR version of allowed carry-on luggage. In the food and beverage field, the AR application [Kabaq](#) offers restaurant menus with an interactive 360-view of each dish, correct portion size and ingredients.

Accessing information & tour guiding. Hotels can integrate AR in many innovative ways to inform their customers about local sights, local transportation, restaurant choices and other topics one might usually ask front office staff about. HUB hotels (a hotel chain by Premier Inn) offer their guests an array of digital solutions, from superfast Wi-Fi and reception-less check-in at tablet-based kiosks to interactive AR walls providing travel updates, a live news feed, local information, restaurant recommendations and What's On theatre guides (Hub by Premier Inn. A new type of urban hotel, no date).

Destination information can be greatly improved by AR features, making it easier to locate shops, restaurants, or providing background information to tourist sites and producing historic images of current locations.

Museums worldwide are also in the process of creating augmented reality guides to enhance customer experiences. The Smithsonian Museum of Natural History, for example, developed the "[Skin & Bones](#)" augmented reality app which allows visitors to see a "real" representation of extinct animals based on their skeletons in the museum. In fact, Disney CEO Bob Iger sees more possibilities for AR than VR in Disney parks since AR - in which computer-generated images are superimposed on a real-world view - still allows visitors to engage with the park (Huddleston Jr., 2017).

Transportation and navigation. Many apps facilitate the use of public transport in unknown destinations by providing augmented reality answers to questions on where to find the nearest bus stop or which bus (or subway) to take. The Blippar app [AR City](#) provides navigation for cities using augmented reality and computer vision. Following 3D directions makes navigating around unfamiliar cities much easier with AR overlays providing information on street names and points of interest; Google recently announced that they are in the process of creating an AR-enhanced version of [Google maps](#) which will provide 3D directions and other information on the live feed of one's mobile device camera.

Translation. Although translation apps have been around for a while, augmented reality has enabled some innovative additions in this field. By pointing the camera of one's mobile device at printed foreign language materials like signs or menus, [AR-enabled apps can now instantly provide translations](#).

Mobile technologies are not only a precondition for using AR applications and accessing information while "on the road", but they have also facilitated mobile bookings, especially amongst younger generations, and created opportunities to live stream and review experiences as they happen. This not only makes websites designed for mobile devices as well as easy to handle mobile applications a must, but it also creates opportunities for hotels, restaurants, and other experience providers to connect with their customers in real time and promote the brand and special events. Mobile technologies have also greatly impacted processes of ordering (e.g. pre-order food and drink ahead of arrival) and payment (moving towards a cashless society).

Where artificial intelligence broadens the business in general, blockchain applications can fundamentally challenge existing business models. TUI uses the Ethereum blockchain to update, distribute and directly access data about the hotel capacity, removing intermediaries such as Expedia and Booking.com (ANVR & Amadeus, 2018).

Another development in tourism is a growing integration of existing business models and branching out into adjacent spaces. Attractions and theme parks already branched out into the accommodation and retail sectors many years ago. OTA's are currently expanding into offering (private) accommodation, tours and activities, restaurant reservations, local transport and more (with the additional advantage of generating huge amounts of customer data from which they can profit in the future). Hotels are branching out into the health and wellness sector as well as into the tours and activities business (CapGemini & ANVR, 2015; Weissenberg & Langford, 2018). Airbnb, for example, has moved into tours and activities with *Airbnb Trips* and recently added *Beyond by Airbnb* (tour operating) and *Airbnb Plus* (up-scale private accommodations) to its portfolio (Ting, 2018).

2.4. Concluding Remarks

Future demographic developments, including more tourists that are elderly, digital natives coming of age and entering the travel market, new source markets, will reshape the global consumer landscape and have far-reaching implications for travel and tourism in the next decades. The continued growth of the global middle class means that the global population will generally be richer although the exact impact of technology on certain occupations are difficult to assess at this moment in time. Tourism is most likely one of the industries that will benefit from an aging population, which is more inclined to spend on leisure-oriented experiences than past generations; aging tourists can also have a positive impact on reducing seasonality in tourism. Tourism infrastructure and services will need to be tailored to accommodate changing visitor needs and preferences. For example, accessibility (both physical access and information provision) is likely to be an area of particular concern not only for tourists with special needs but also for older tourists.

The rapid rate of technological change will continue to impact societies in general; technological innovations are likely to dramatically change business models, jobs in tourism (with more technical specialists being necessary as well as those able to provide excellent service) and tourist experiences in the - near - future.

However, there will only be a future for tourism when sustainable practices are incorporated in the consumption and production of tourism. The road ahead is that of a sustainable development of tourism, a tourism built upon broad stakeholder engagement that contributes to the well-being of local communities, to decent incomes for those working in tourism, to environmental integrity and authentic visitor experiences.

PLANNING FOR FUTURE SKILLS DEVELOPMENT

3. PLANNING FOR FUTURE SKILLS DEVELOPMENT

It is not possible to predict the exact impact of socio-economic and geostrategic developments on economies and societies in the near future. Nevertheless, it is safe to say that not only will the world, as we know it, change dramatically, it will also be a world in constant flux. Hyper-connected societies, markets, and industries will be changing and adapting continuously to disruptions, many of which are unknown at this moment in time. The World Economic Forum (2016) notes that in many countries the most in-demand occupations did not exist 10 or even five years ago and that “by one popular estimate 65% of children entering primary school today will ultimately end up working in completely new job types that don’t yet exist” (p. 32). Companies and organizations, not only in tourism but everywhere, will need strategies for resilience and transformation in order to be “future proof”. With a labor market that most likely will no longer be divided into the sectors we know today and today’s sequence of “education-work-retirement” no longer a given fact, permanent education, adaptability and agility will be the new normal.

According to the World Economic Forum (2016), the rapid changes and disruptions of business models mean that skills for both current and emerging jobs across industries are continuously changing. Jobs existing today that will still be there in “the future” will need other skills to perform key tasks and actions. The World Economic Forum, (2016, p. 3) states “.....robotics and machine learning—rather than completely replacing existing occupations and job categories—are likely to substitute specific tasks previously carried out as part of these jobs, freeing workers up to focus on new tasks and leading to rapidly changing core skill sets in these occupations” The World Economic Forum (2016, p. 3) also postulates that “On average, by 2020, more than a third of the desired core skill sets of most occupations will be comprised of skills that are not yet considered crucial to the job today....”. This does not only apply to technical skills but also to social skills. While data analysts (to make sense of online generated data) will be one of the most in-demand jobs in the future, their technical skills will need to be supplemented with strong social and collaboration skills (World Economic Forum, 2016).

Cedefop, the European Union’s reference centre for vocational education and training, states that “unripe technological advances, such as machine learning, big data analytics, the internet of things and advanced robotics, together with restructuring in global value chains, are reshaping the world of work as we know it today” (Cedefop, 2018, p. 5). In order to cope with such changes, Cedefop notes, a higher level of qualifications in general will be needed in the future. Cedefop’s European skills forecasting model projects that by 2025 about 48% of all job opportunities in Europe will need to be filled by individuals with tertiary-level qualifications (Cedefop, 2018).

Cedefop (2018) also mentions that technological changes are the major driver of changing skill needs in future work environments. Cedefop’s “European skills and jobs survey” shows that in the digitalized economy about 85% of all EU jobs need at least a basic digital skills level. However, in order to survive in the digital economy not only good digital skills are required but also “a healthy mix of cognitive (problem-solving, creativity, learning to learn) and socioemotional (communication, collaboration) skills” (Cedefop, 2018, p. 13). This applies to high-skilled occupations but, according to Cedefop (2018, p. 24), “some

increase has also been evident among low-skilled, non-routine, jobs, in activities which involve close human interaction and tasks that are not (yet) easily substitutable by machines (such as personal services and social care)".

The New Skills Agenda for Europe, an initiative launched by the European Commission in 2016 to improve skills levels, also has a strong focus on digital skills at all levels and includes a flagship initiative called the "Coalition for Digital Skills and Jobs". Digital skills are lacking in Europe at all levels while employment in this area continues to grow and the number of unfilled vacancies for ICT professionals is expected to almost double to 756,000 by 2020 (European Commission, 2016).

The Institute for the Future, based in California, proposes an interesting list of skills that are necessary to survive in a globalized world where intelligent machines are rapidly displacing human workers. Some of the future skills on their list are multicultural dexterity, digital fluency, disciplined curiosity, entrepreneurial imagination, passionate creativity, continuous flexibility as well as self-advocacy. It is also necessary to be able to read people, machine intelligence, and contexts. Additionally, skills in communicating across media, including unexpected media; thinking across disciplines and contexts; managing the spectrum of knowledge from truth to opinion; and distinguishing ethical principles from legal restrictions are considered highly relevant (Institute for the Future, 2018).

Skills for the future in the tourism and hospitality sector requires a higher level of skills development at operational through to senior management and executive level. Importantly, a higher level of qualifications in general will be needed. Furthermore, transversal skills necessary for everybody to survive in an increasingly digitalized world can be summarized as follows:

- self-learning capacities (permanent education, adaptability, agility, and flexibility);
- digital fluency;
- cognitive (such as problem-solving, creative, entrepreneurial) skills;
- socio-emotional (communicative, collaborative) skills and multicultural dexterity.

Whilst momentous changes are underway and there is a general consensus about the implications for job skills, with both digital and social skills becoming more important, efforts aimed at closing skills gaps should be grounded in a solid understanding of a country's or industry's skills base today. Impacts of changes varying across countries, regions and industries, regional and industrial differences should also be considered when defining future skills needs.

The Royal Association MKB-Nederland (the largest entrepreneurs' organization in the Netherlands, promoting the interests of some 150,000 small and medium-sized companies) has been campaigning for more tech education and for programming skills to be integrated into curricula at all levels, from primary schools to VET to higher education. The idea is not for all students to become programmers but being familiar with programming trains people in logical

and analytical thinking and teaches them the basics of how ICT works. Integrating these skills into curricula at all levels of education is seen as crucial to retaining a competitive position in the world economy by MKB-Nederland (MKB Nieuws, 2018).

EU STRATEGIES & POLICIES FOR FUTURE SKILLS IN TOURISM AND HOSPITALITY

4. EU STRATEGIES & POLICIES FOR FUTURE SKILLS IN TOURISM AND HOSPITALITY

In the 2016 EU report, Mapping and performance check of the supply side of tourism education and training (Centre for Strategy and Evaluation Services, 2016), skills gaps and needs for the tourism and hospitality industry in the EU were researched and identified. The report notes, in line with the observations made above, that in the tourism industry a blurring of boundaries between travel agencies and tour operators is visible with many operative occupations becoming redundant, particularly support and administrative roles. On the other hand, new occupations (web-marketing managers, social media managers) and skills appear, related to the increase in online sales and marketing, customer self-service and promotion via social media. With this comes an increasing demand for interpersonal and customer service skills, as customers demand a higher level of quality and personal service. There is also a growing demand for skills, knowledge, and awareness related to accessible tourism (for all those with special physical and psychological needs as well as elderly tourists in general). Finally, the drive to make tourism more sustainable is resulting in an increasing demand for green skills. The report concluded “The main skill gaps and shortages reported by employers relate to soft skills, language skills, interpersonal skills, and ICT skills rather than to tourism-specific skills” (Centre for Strategy and Evaluation Services, 2016, p. 97).

In an earlier report, the OECD (Stacey, 2015) came to similar conclusions. The skills for which shortages in the tourism sector were reported and could be considered as core skills are:

- “Soft skills crucial for service delivery, including language, customer service, cultural awareness, and cross-cultural skills, service quality and communication skills;
- Problem-solving skills needed for working in a technology-rich environment, notably those related to social media, e-marketing, and e-commerce;
- Small business management skills (finance, human resources etc.), along with leadership, entrepreneurship and innovation skills” (Stacey, 2015, p. 30).

As emerging skills needs, the OECD identified “environmental awareness and ethical behavior, creative and innovative thinking and data management and analysis” (Stacey, 2015, p. 30).

The European Tourism Manifesto for Growth & Jobs, provides a document compiled by European public and private tourism stakeholders which highlights the EU policy priorities for the coming years. It has a wide focus, addressing multiple aspects of tourism and development. Development of skills, qualifications, knowledge, and experience throughout the single market are considered very important in the Manifesto. One of the ways to address this is by enhancing lifelong learning schemes for people working in the tourism sector and make them available online; language skills and cultural awareness are some of the key areas here (European Tourism Manifesto, 2017).

As indicated above (under “Enabling technologies”), digitalization, AI and robotization are causing tremendous changes in the tourism industry with the two main current trends being more “tech”

developments and less but “more personalized” customer service. These developments will translate into new and different skills, which will be needed to work in tourism around 2030 including the above-defined transversal skills necessary for everybody to survive in an increasingly digitalized world. Digital skills need to be complemented by social (communicative, interpersonal, language, service, cross-cultural) skills. With an eye to the future, OECD also identified the importance of “environmental awareness and ethical behavior.....” (Stacey, 2015, p. 30).

SECTOR SKILLS DEVELOPMENT

5. SECTOR SKILLS DEVELOPMENT

5.1. Introduction

As discussed above, the future tourism industry will require skill sets which in some respects will be radically different from today's, especially in the field of digital skills. Previous EU supported projects and research have already indicated the increasing importance of digital, green and social-cultural skills for future jobs in tourism. Desk research conducted by all NTG partners in the UK; Bulgaria, The Netherlands; Spain; Italy; Hungary; Germany; and Ireland confirms this, and the following sections build on existing knowledge by providing more in-depth information on these skills across five sub-sectors citing examples from different partner countries. Sections include information on Current Skills Needs; Delivery of Skills and Future Skills needs in Digital, Green and Social Skills for each of the five sub-sectors (Food and Beverage; Accommodation; Visitor Attractions, Tour Operators and Travel Agents and Destination Management).

5.2. Digital skills

5.2.1 Digital Skills: Current Requirements

Regarding currently required skills, many partners made a distinction between the NTG sectors. In general, the digitization level for all sectors has increased tremendously over the last years. Especially in the areas of communication, information, and distribution, technical developments have been major game changers and many travel agents and tour operators use online distribution and marketing tools these days.

German Tourism Academy (DSFT), Germany: The result of an online survey of the German Chamber of Commerce (DIHK 11/2017) shows that 59% of travel agencies use digital distribution (average overall economy: 28%). More than 50% of turnover result from digital distribution. According to a study of Bitkom 2 out of 3 travel companies invest in digital services: 98% use online marketing, 68% use digital information services like apps, 43% use data analysis solutions (Bitkom, 2016).

Within the different sectors, growing “digital gaps” can be perceived between international brands (international tour operators, theme parks and hotel chains) and digital platforms (OTA's, Booking.com) on the one hand and more traditional travel agents, attractions and accommodation providers on the other hand. It is also important to keep in mind that SME's make up a large portion of the tourism industry in Europe for whom keeping up to date with digital innovations is not easy.

Today's requirements in the field of digital skills for the defined NTG subsectors are summarized underneath.

5.2.1a. Travel agents, tour operators, DMO's

Currently, the main digital skills for *travel agent and tour operator employees* are described as being able to work with:

- computers and mobile devices
- MS Office - Word, Excel, PowerPoint
- databases
- Internet and Intranet systems
- e-mail correspondence / digital communication
- Global Distribution Systems - Amadeus, Sabre, Travelport/Galileo, Worldspan
- another online booking/reservation systems
- social media and review sites (Facebook, Twitter, TripAdvisor, and other media)
- specialized travel agency management software, e.g. DCS
- basic digital security measures

For sales agents, marketing specialists, customer service specialists, and related jobs, additional skills are required. This is mainly in the field of digital branding, marketing and distribution: conducting E-business (digital marketing; website and social media content creation and management; positioning the company online; yield management, dynamic pricing and other price management systems; different distribution channels); skills in SEO (search engine optimization) and SEA (search engine advertising, mostly Google AdWords) and analysing big data are often required as well as skills in managing social media and review sites (checking and analysing customer feedback; answering customers and taking action to improve quality of service and customer experience; detecting and managing fake reviews).

Online travel agents (OTA's) like Skyscanner require mainly digital specialists (software engineers, system engineers, UX writers, PHP developers, front-end specialists) with knowledge of and experience in analysing Big Data and a range of computer programming languages and tools (Spark, Solr/ElasticSearch, Haskell, Cats / Scalaz, React, GCP, Objective-C, Java, Swift, Fastlane, Gradle, Docker, AWS, SQL, Python and more).

Large tour operators (TUI, Thomas Cook) also require IT specialists with skills in fields such as AFAS InSite, Web Analytics, and Data Management. For these jobs, a tech education at the tertiary level is a must, but a background in tourism education is not required.

Destination Management Organisation (DMO) employees should be able to work with:

- computers and mobile devices
- MS Office - Word, Excel, PowerPoint
- databases
- Internet and Intranet systems
- e-mail correspondence / digital communication
- online booking/reservation systems
- social media and review sites (Facebook, Twitter, Trip Advisor, and other media)
- basic digital security measures

The importance of digital marketing and distribution as a success factor for DMO's is widely recognized. For those working in marketing and sales, the same skills as listed for those working in digital branding, marketing and distribution with tour operators and travel agents are required. However, many of these agencies lack the expertise and staff for online campaigns in which the visual elements are increasingly important and which are often outsourced to other companies.

Some partners mentioned the need for skills in the field of digital security, data protection and legal obligations regarding privacy issues related to online marketing and business. One partner mentioned skills for assessment methods with regards to occupational health (e.g. computer-related risks such as back and eyesight problems).

5.2.1.b. Visitor Attractions

The main perceptions of characteristics of operational positions in this sector are that a rather low level of education is required with many companies employing staff without any previous experience or any specific job qualifications. Many operational jobs in the visitor attractions sector are seasonal. However, there is also an extensive range of managerial jobs in visitor attractions which require more senior level of digital knowledge and skills for reporting and evaluation tasks. Pending on the type of operational position in visitor attractions, varying levels of digital skills are currently required. When digital skills are required, they are mostly the same as for those working in travel, tour operating or DMO's and staff should be able to work with:

- computers and mobile devices
- MS Office - Word, Excel, PowerPoint
- databases
- Internet and Intranet systems
- e-mail correspondence / digital communication

- online booking/reservation systems
- social media and review sites (Facebook, Twitter, Trip Advisor, and other media)
- basic digital security measures
- cash registers /QR or barcode scanners/sound, light & video equipment

Staff working in sales and marketing need similar skills as those mentioned under travel agents and tour operators. Those working in management positions also need skills in working with property management systems (PMS), for example for accounting and other performance measurements. Here, digital security, data protection, and privacy issues are increasingly important.

Attractions need to provide visitor experiences and create cutting-edge experiences which requires specialized staff who are capable of combining new technologies with Imagineering. Imagineering, the creation of experiences and worlds of experiences, is a core competency for those working in this field. The influence of digital developments on the world of experiences can hardly be overrated. All the developments mentioned under “enabling technologies” (AR, VR, mixed reality), as well as wearables (customizable electronic chips, bracelets, 3D glasses), are becoming more and more integrated with experiences and skills in this field will be crucial for the future of attractions (Pizam, 2017).

5.2.1.c. Accommodation and food & beverage

In this sector, a major gap exists between the more traditional, small-scale, privately owned accommodation and food & beverage providers on the one hand and major hotel chains and online platforms on the other hand. The entire sector is facing problems in filling vacancies for both lower skilled and skilled staff, something that is believed to increase in the near future. Many SME’s also have trouble in keeping up-to-date with digitization because of a lack of financial and human resources. They tend to prioritize soft skills (interpersonal, communication and language skills) and attitude (flexibility, service orientation) over digital skills in many cases. Many small and medium hotels possess dysfunctional websites (with few functions, no booking options) resulting in low search engine visibility and missing out on customers.

For staff working in housekeeping, maintenance and restaurants, digital skills are often not required. When required, the skills are largely the same as those listed above for the other sectors. Staff should be able to work with:

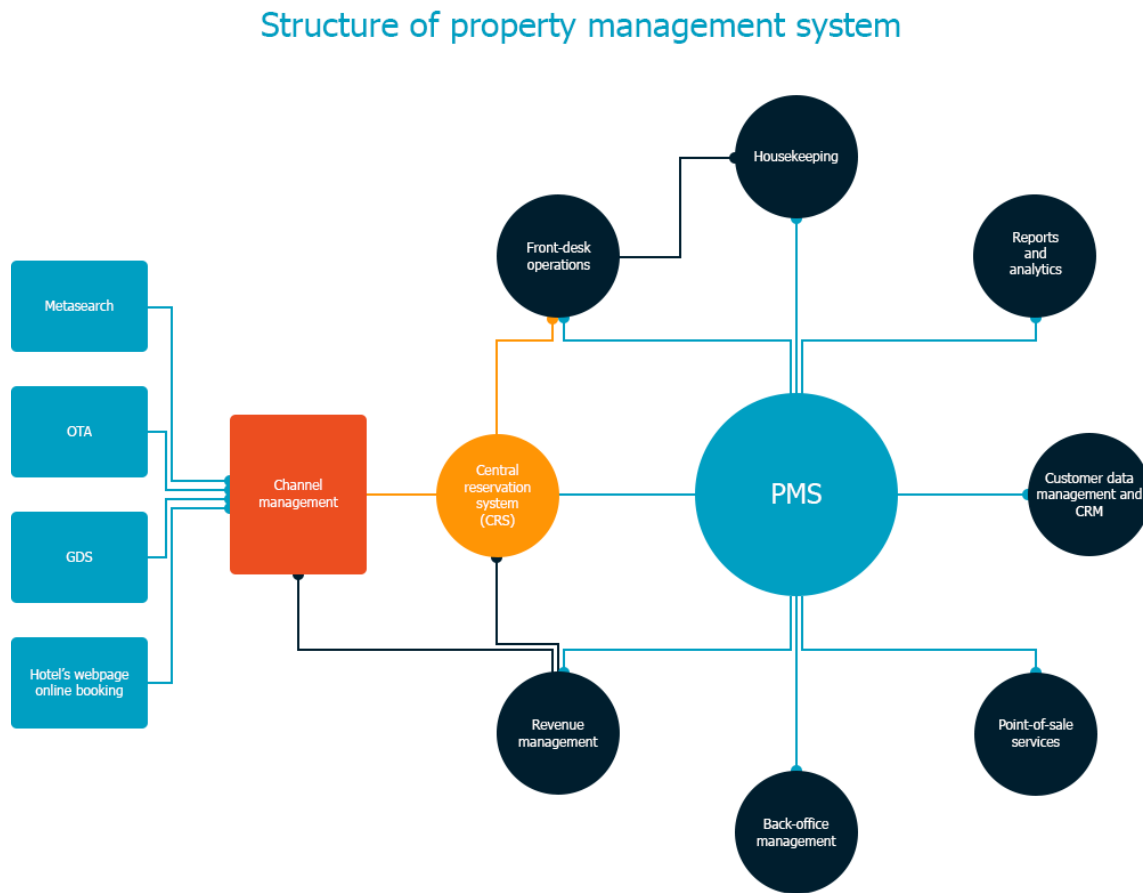
- computers and mobile devices
- MS Office - Word, Excel, PowerPoint
- databases
- Internet and Intranet systems

- e-mail correspondence / digital communication
- online booking and reservation systems
- social media and review sites (Facebook, Twitter, Trip Advisor, and other media)
- basic digital security measures
- cash registers /online billing systems /property management and electronic point of sales systems

Staff working in sales and marketing need similar skills as those mentioned for travel agents and tour operators.

Property management systems: electronic management systems have become an essential part of accommodation and restaurant operations and there is a wide variety of different technology-based systems available, both for SME's and large companies. Some of the systems mentioned by partners are Clock, Opera, Fidelio, Flexys, and Hotelgram. Property management systems were designed to more efficiently manage front-office operations (reservations, check-in/check-out procedures, room assignment, managing room rates, billing). In recent years, PMS technology has evolved to include food and beverage operations, housekeeping and maintenance management, sales and revenue management, distribution across multiple channels, management of customer data to create customized guest experiences for more satisfaction and greater loyalty and other features as figure 1 shows.

Figure 1. Possible structure of a property management system



Source: Altexsoft (2018).

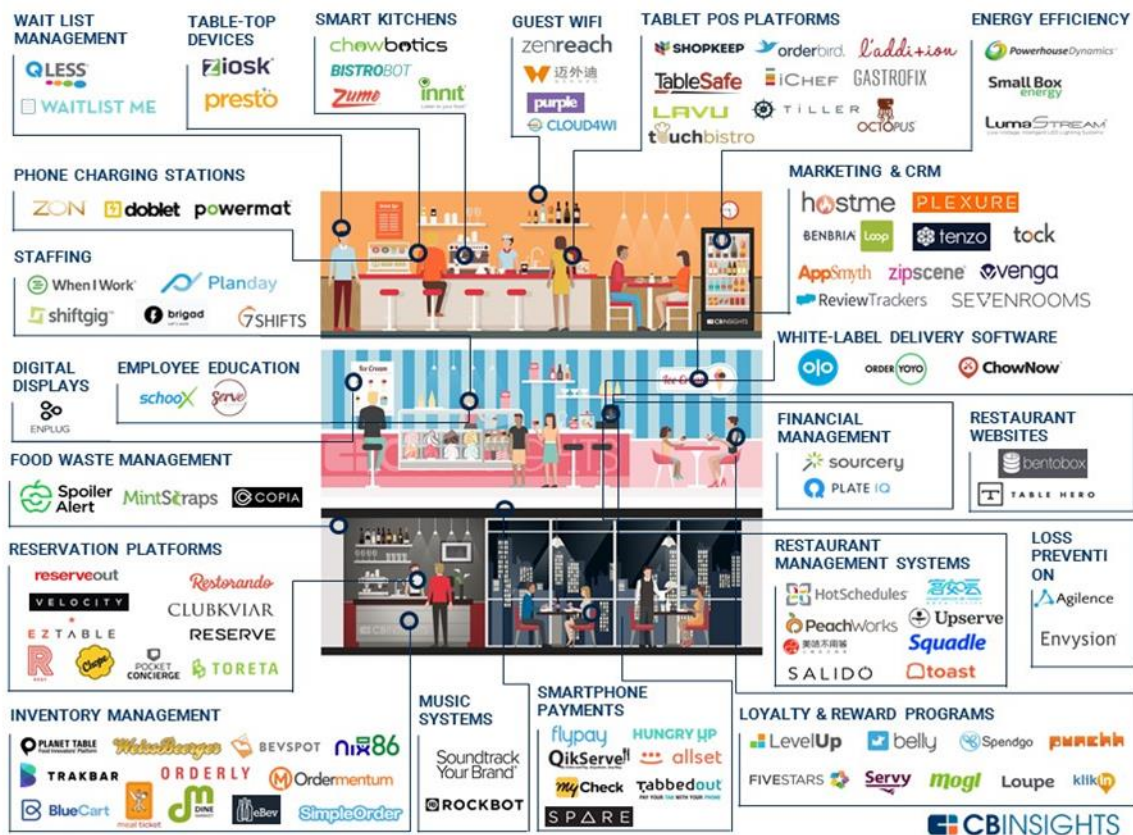
Today, many cloud-based, mobile-enabled hotel PMS platforms are operational. Hotel staff is working with mobile devices (tablets and smartphones) which release them from the front desk and enable them to improve customer service. For example, when checking in an early arrival it is now possible to simultaneously notify housekeeping staff in real time to tidy up a guest room; or welcome guests at the door; or upload photos of a technical problem so maintenance can assess the severity. A PMS is becoming more and more essential for achieving the two key success factors for accommodation providers: having an online presence that makes the reservation process easier and deliver outstanding customer service.

Electronic Point of Sales systems are designed to help (small) businesses with keeping track of customers, items and inventory, and generate reports based on sales. POS systems can reduce the time spent on stocktaking, compiling sales figures, and collecting other data. Point of sale systems have altered the restaurant industry, and specifically the fast food sector, by speeding up the processes of taking orders and payments. Mobile POS systems (or mPOS) are increasingly used in restaurants to collect and transmit orders in real time to the kitchen, either by staff equipped with mobile devices or by customers

themselves via tablets at their tables. Mobile POS systems and mobile POS applications can also print bills, process credit and other card payments, manage loyalty schemes and produce data. POS software is also used in hotels and sometimes integrated with property management software.

Obviously, staff needs to be able to operate these systems. Mostly in-company training is provided to work with these specialist systems and to extract the right information from it when needed. Figure 2 demonstrates that this is an increasingly demanding task with the multitude of applications currently in use; this requires increasing digital fluency from staff.

Figure 2. Technologies within the restaurant sector



Source: CBI Insights (2017)

Online platforms such as Booking.com offer an entirely different picture. A university (of applied sciences) background is required for most jobs at Booking.com as well as advanced digital skills (knowledge of data analytics and data gathering techniques; programming skills; digital marketing skills). Other requirements are often flexibility and a pro-active, can-do mentality. A tourism background is mostly not required.

5.2.2. Delivery of digital skills: current situation

At the European level, the Digital Competence Framework for Citizens, also known as DigComp, presents a common framework of digital competencies needed in an increasingly globalized and digital world. The European Commission first published DigComp in 2013 and revised and renamed DigComp 2.0 in 2016. DigComp 2.0 provides an updated vocabulary of digital competences at a European level, developed by the Institute for Prospective Technological Studies of the European Commission’s Joint Research Centre. DigComp 2.0 structures 21 competences in six competency areas as a tool to improve citizens’ digital competence (Vuorikari, Punie, Carretero Gomez & Van den Brande, 2016). Table 3 displays the updated conceptual reference model of the DigComp 2.0 version of the Digital Competence Framework for Citizens. Since this model offers a common reference as well as a common language regarding key areas of digital competence at European level, it seems advisable to build on this when defining the NTG digital skills sets and use the same competence areas and vocabulary.

Table 3. DigComp 2.0 conceptual reference model Digital Competence Framework for Citizens

Competence areas Dimension 1	Competencies Dimension 2
<p>1. Information and data literacy</p>	<p>1.1 Browsing, searching and filtering data, information and digital content To articulate information needs, to search for data, information, and content in digital environments, to access them and to navigate between them. To create and update personal search strategies.</p> <p>1.2 Evaluating data, information and digital content To analyze, compare and critically evaluate the credibility and reliability of sources of data, information and digital content. To analyze, interpret and critically evaluate the data, information and digital content.</p> <p>1.3 Managing data, information and digital content To organize, store and retrieve data, information, and content in digital environments. To organize and process them in a structured environment.</p>

<p>2. Communication and collaboration</p>	<p>2.1 Interacting through digital technologies To interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.</p> <p>2.2 Sharing through digital technologies To share data, information and digital content with others through appropriate digital technologies. To act as an intermediary, to know about referencing and attribution practices.</p> <p>2.3 Engaging in citizenship through digital technologies To participate in society through the use of public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.</p> <p>2.4 Collaborating through digital technologies To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of resources and knowledge.</p> <p>2.5 Netiquette To be aware of behavioral norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.</p> <p>2.6 Managing digital identity To create and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments, and services.</p>
<p>3. Digital content creation</p>	<p>3.1 Developing digital content To create and edit digital content in different formats, to express oneself through digital means.</p> <p>3.2 Integrating and re-elaborating digital content To modify, refine, improve and integrate information and content into an existing body of knowledge to create new, original and relevant content and knowledge.</p> <p>3.3 Copyright and licenses To understand how copyright and licenses apply to data, information and digital content.</p> <p>3.4 Programming To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.</p>

<p>4. Safety</p>	<p>4.1 Protecting devices To protect devices and digital content, and to understand risks and threats in digital environments. To know about safety and security measures and to have due regard to reliability and privacy.</p> <p>4.2 Protecting personal data and privacy To protect personal data and privacy in digital environments. To understand how to use and share personally identifiable information while being able to protect oneself and others from damages. To understand that digital services use a “Privacy policy” to inform how personal data is used.</p> <p>4.3 Protecting health and well-being To be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies. To be able to protect oneself and others from possible dangers in digital environments (e.g. cyberbullying). To be aware of digital technologies for social well-being and social inclusion.</p> <p>4.4 Protecting the environment To be aware of the environmental impact of digital technologies and their use.</p>
<p>5. Problem-solving</p>	<p>5.1 Solving technical problems To identify technical problems when operating devices and using digital environments, and to solve them (from trouble-shooting to solving more complex problems).</p> <p>5.2 Identifying needs and technological responses To assess needs and to identify, evaluate, select and use digital tools and possible technological responses to solve them. To adjust and customize digital environments to personal needs (e.g. accessibility).</p> <p>5.3 Creatively using digital technologies To use digital tools and technologies to create knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.</p> <p>5.4 Identifying digital competence gaps To understand where one’s own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.</p>

Source: Vuorikari, Punie, Carretero Gomez & Van den Brande (2016, p. 8-9)

5.2.3. Digital skills: future needs

The ongoing digitization and computerization of the tourism sector will impact many jobs in the future. AI will automate and simplify more and more aspects of the customer journey (booking, ticketing, payments, check-in, information) as well as management processes (via PMS/ EPOS and other systems). Low-skilled jobs and repetitive routine tasks are likely to be replaced by AI-powered applications and systems while the complexity of remaining jobs will increase and new jobs will be created, mainly in technical areas. The following topics are therefore important for the future of all sectors:

- Higher levels of education in general;
- In order to cope with on-going changes and innovations self-learning capacities (permanent education, adaptability, agility, and flexibility) will be the most important skill for the future in order to cope with digital innovations and disruptive business models;
- Digital fluency (encompassing all topics DigComp2.0 covers with the addition of skills for online marketing, branding and distribution as well as skills in data analytics), will be crucial. It will be impossible to acquire skills for all reservations-, bookings-, PMS-, and POS systems and digital applications in use today, let alone those awaiting us in the future. This is the main reason why self-learning capacities are so important: these will enable people to cope with digital innovations in the future;
- Since AI driven technologies will be increasingly important in all tourism sectors, a better understanding of AI is essential;
- Unique, customized and personalized experiences are the future in all tourism sectors. Therefore, skills in creating experiences, both in the real world and with the use of AR, VR, or in mixed reality with special attention to gamification, will be important.

These “basic skills for the future” apply to all sectors, in tourism and other areas. Below, some sector-specific skills or focus points are added.

Dublin Institute of Technology, Ireland: *According to the Department of Transport, Tourism & Sport (2015) the tourism sector requires a wide range of skills including management capability, IT, and design into the future. These skills are required across all tourism sub-sectors (including attractions).*

German Tourism Academy (DSFT), Germany: *The importance of Lifelong Learning will grow, whereby the continuous qualification need will rise with the extent of working with digital technology. The use of digital application requires a high degree of sensitivity towards the handling of information (data protection, integrity, confidentiality, IT-security) (DIHK 2017c).*

VIMOSZ Hospitality Association & University of Sopron, Hungary: *the rapid expansion of the sharing economy brought an explosive rearrangement of sectors such as hospitality and public transport, and regulatory systems could only partially keep up with the pace of these changes. This expansion of the sharing economy is expected to continue in the next 10-15 years, with new emerging forms of use and business models having a significant effect on tourism.*

5.2.3.a. Travel agents / tour operators / DMO's

As noted above, the two main trends with implications for future skills in the travel agent and tour operators' sector can be summarized as more "tech" developments and less but "more personalized" customer service.

Digital fluency (as described above) will be necessary for everyone but most important of all data collection, data analytics, and data management skills (including protection and cybersecurity). In a world where customization will be key, data and making sense of data are indispensable. However, data analysts do not necessarily need to have a degree in tourism - in fact, companies like Skyscanner and Booking.com do not require a background in tourism or a tourism degree (although "affinity with travel" is sometimes asked). AI developers will also be in great demand but they are currently already very scarce. Companies such as Facebook hire graduates with very high salaries that most companies within the tourism industry cannot afford (ANVR & Amadeus, 2018). Although tourism and technology degrees may become popular in the future.

This raises some questions as to the future of education for tourism; we see a growing need for technical skills in tourism-related industries but it is highly unlikely that tourism education can deliver the type of technology specialists that are increasingly needed. In tour operating, data analysts will become more important while knowledge of destinations and products will remain necessary, also because the need for more personalized services is growing. Personal travel assistants with more knowledge than the average customer can google and who know their customers and can give personalized advice will have a future (CapGemini & ANVR, 2015).

University of Alicante, Spain: *So-called 'vertical profiles' are needed in the digital area. That is, people who know (in addition to having knowledge of the digital area) the dynamics of tourism in all its facets (Hosteltur, 2018f).*

Breda University of Applied Sciences, The Netherlands: *Job requirements for the future according to Travix: Bachelor or Masters, data data data, agile (permanent education), tech and online. For education this means that knowledge of tourism is still needed but the focus should be more on IT and online marketing as well as on agility (high learning skills, people who know how to develop themselves, ambitious); educational institutes in the Netherlands so far do not trigger people to get out of their comfort zones.*

Travel agencies and tourist information offices are likely to become experience centers where customers can immerse themselves in “pre-experiences” and go for inspiration and relaxation. With the growing importance of AR, VR and mixed reality, basic skills in the use of these techniques and understanding the possibilities these offer for tourism seems necessary for those working in these fields.

According to Union Camere in Italy, *the innovative and border professions, even if quantitatively still limited, are moving towards a multifaceted and inter-sectorial tourism, where the barriers between the professions operating in the sector fade making room for contaminations between more trades, to always serve better niche needs. Consultants, web market analysts, local network organizers, innovative and niche entrepreneurs are increasingly required in the tourism industry.. These professionals find their skills in non-specialist degrees, especially humanities, from masters and specialization courses and have gained experience in other sectors than in the tourism sector.*

University of Alicante, Spain: *It is expected that artificial intelligence, the internet of things ..., virtual reality, augmented reality and gamification are incorporated into the chain of value of the sector. Artificial intelligence will allow the creation and automatic recommendation of personalized dynamic packages, where chatbots (to interact with the client and book flights, taxis, etc.), voice technology ..., and the application of Deep Learning and Machine Learning will gain positions. Virtual and augmented reality will increase the expectations and different and immersive experiences with high emotional potential An example of this is what airlines are doing to show travelers the cockpit of the plane before boarding, to increase ticket prices by choosing a better location or selling complementary services. The gamification will apply the game as an element of attraction and tourist experience (Hosteltur, 2018b, 2018d, 2018e; Pizam, 2017))*

5.2.3.b. Visitor Attractions

In the attraction sector, a future gap is arising between jobs that require practical skills (i.e. maintenance, service, cleaning, retail), and jobs that require interpersonal and language skills and a basic level of digital skills (similar to those described under current skills).

On the other hand, there will be a growing need for people who are familiar with AR, VR, mixed reality, Imagineering, gamification, creating (video) content etc. Again, as with tourism, these jobs do not necessarily require a degree in tourism - technical and creative backgrounds are more important.

Cardiff Metropolitan University, Wales: Pizam (2017) notes 'The hospitality and tourism industries have been relatively slow in adapting to the Internet of Things technology. ...An exception is Disney World which has invested upward of \$1 billion in the development of the Magic Band. The Magic Bands are colorful wristbands that are used to enter the parks, open the hotel room doors, charge food and merchandise purchases and make Fast Pass selections (Disney, 2017a; Disney, 2017b). The Magic Band "contains an HF Radio Frequency device and transmitter which sends and receives RF signals through a small antenna inside the Magic Band and enables it to be read by long-range readers. . ." (Croslin, 2015). From a visitor perspective, the Magic Band improves the overall experience of the visitors and cuts the waiting time between the attractions. But from the Disney company perspective, the Magic Bands enable the park to track its visitor's movement through the park and understand every aspect of their visitor and purchasing behavior. For Disney, the Magic Bands, "enables thousands of sensors to talk to one hundred systems linked together to turn the park into a giant computer—streaming real-time data about where guests are, what they're doing, and what they want" (Croslin, 2015). It is designed to anticipate their customers' desires and prepare for meeting them.'

5.2.3.c. Hotels and food & beverage

As mentioned above, the hospitality sector is experiencing a shortage regarding service staff (waiters, bartenders et cetera) as well as qualified chefs and sous-chefs. These shortages are expected to grow soon (Groenemeijer, De Kort, Marchal, Grotenhuis, & Zwaneveld, 2017).

Another development is how the definition of "accommodation" has evolved. The emergence of home-sharing and other formats of hospitality has added a new dimension to traveling; spending the night away from home is not just about staying in a property anymore. The design is becoming more and more important. Millennial travelers are still interested in what a hotel has to offer - security, swimming pools, and other amenities but aspects like being in control of the stay (not wasting time on check-in or storing luggage), encountering a sense of the destination and what it is like to live as a local are becoming increasingly important in accommodation design. The development of properties, such as visualizations of refurbished or new build environments with the use of Computer Aided Design (CAD) is also becoming increasingly important for the future.

Other trends are a blurring of various sectors, as described above, and a growing integration of various existing business models (i.e. hospitality-retail, hospitality-work, hospitality-healthcare, hospitality-living, hospitality-wellness). All this comes with higher customer expectations regarding hospitality, healthy food

and environments, sustainability and quality; guests will be more demanding due to the influence of review sites. Personalized and excellent service provision will be essential.

Marketing and distribution will increasingly be conducted online while PMS and EPOS systems will take over time-consuming processes; AI related innovations will also have a great impact on staff and skills. From chatbots on websites, facial recognition for check-in and unlocking hotel doors, to voice-activated room amenities controls (lighting, TV, temperature, music), personalized activity suggestions and AI enabled housekeeping services (the robots described above), automation is proceeding very fast in this sector although the human touch will remain, and most likely, become even more important (Or, 2018).

There will be a growing need for accommodation suppliers and restaurants to collect data for a better understanding of guests and their preferences in order to create more personal communication and customized offers. Thereby skills in data analytics to utilise data from Booking.com, Facebook, Google, TripAdvisor, Expedia, et cetera should be a part of the everyday routine to improve products and services (Joosten, 2017).

Technical developments will continue to make it possible for customers to not only book and pay online but also order music or lighting preferences in their hotel rooms, check themselves in and out, pay their bill (receiving their invoice in their e-mail) and open their hotel room with their phone. This will make it possible for front desk receptionists to do what their job originally implied: welcoming guests in a personal way (Joosten, 2017).

While the listed digital skills will be indispensable for future work in the accommodation and food and beverage sector, profession-specific knowledge (about hotels, about food) will remain important while social and service skills will become more important.

Cardiff Metropolitan University, Wales: *Mintel (2018b) notes 'that everyday fast-food diners want customer service to be both friendly and quick. That is where technology comes in to play. With more operators embracing technology, such as deploying self-ordering kiosks, staff can focus on providing friendlier customer service, such as bringing food to the table and chatting with diners'.*

Or (2018), *AI Meets Human Hospitality: Humans are all about customer service and guest loyalty. They are adaptable and can tailor their service. They can multitask and have a superior ability to read emotions. They can deliver a soft, joined up service, giving attention to detail and, in some instances, can be cheaper to employ than technology.*

5.3. Social, cultural and soft skills

From the paragraphs above, it emerges that many jobs in tourism will continue to be affected by technical innovations. However, what cannot (yet) be replaced by machines are human skills such as creativity, critical thinking, collaborative, interpersonal and (intercultural) communicative skills. The desk research on social and cultural skills confirms that these skills are relevant for tourism now and in the decades ahead. Most of the social and cultural skills deemed important for tourism today and in the future seem to be transversal skills, relevant for all five NTG sub-sectors.

In 2006, the recommendation of the European Parliament and the Council on Key Competences for Lifelong Learning recognised “sense of initiative and entrepreneurship” as one of the eight key competences all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment (European Council, 2006, p. 1). It refers to an individual's ability to turn ideas into actions, and includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. Also, the European Commission has highlighted in the Entrepreneurship 2020 Action Plan (European Commission, 2013, pp. 1e33) and the Rethinking Education Communication (European Commission, 2012, p. 17) stating the need to embed entrepreneurial education in all sectors of education including non-formal learning, and to make it available to every pupil/student in every school and high education institution (HEI).

Cuffy, Tribe and Airy (2012) wrote an important article which can be utilised using similar principles and arguments for developing digital and sustainability skills using a Lifelong learning approach. Lifelong learning has its roots in lifelong education which has been part of the education debate since the 1960s. A key precept is that education is not limited to a specific number of years of exposure to institutional education, but rather should occur throughout life. This can play a strong role in the structure and framework in the ethos of the NTG project. Lifelong education involves formal, non-formal and informal education and learning which could be applied to sustainability and digital training contexts. In the 1990s the concept of lifelong learning gained prominence, and was promoted as a process of individual learning and development across the life-span (Organisation for Economic Co-operation & Development, 1996). This refers to institutional learning in addition to that which occurs in informal settings. Thus, lifelong learning brings to the fore the learner and their corresponding individual needs; the notion of self-directed learning; the range of environments in which learning may occur; and its long-term nature (Organisation for Economic Co-operation & Development, 1996).

Marshall and Marrett (2008, p. 2) explain that life-long learning, “is linked to the concept of a knowledge-based economy, which engenders the need for learning to occur throughout a person’s lifetime” while Parnham (2001) suggests that it entails establishing a “learning society” (Antonacopoulou, 2000). According to McKenzie (1998) this is an important phenomenon since the complexities of modern societies, with knowledge and information intensive economies, demand the ability to anticipate and adapt to change.

Lifelong learning is an accepted and central organising concept in education and training (McKenzie, 1998), encompassing the elements of breadth, progression and continuity (Department For International Development-World Bank, 2009). It is now a social prerogative (Leader, 2003) for achieving continuing employment and economic success (Brennan, Mills, Shah, & Woodley, 2000; Marshall, Brandon, Thomas, Kanwar, & Lyngra, 2008; McKenzie, 1998; Parnham, 2001; Vargas, 2005). The precepts of lifelong learning can be readily adapted to tourism education and training.

5.3.1. Social, cultural and soft skills: current requirements

Sustainable tourism implies a comprehensive aptitude for social skills to advocate and practice a positive impact of tourism on society, local culture and heritage. Other key areas where social and soft skills sets could be supported by the lifelong learning approach are required is forging a better understanding between local hosts, communities, tourists and businesses so that tourism destinations can provide a safe, satisfying and fulfilling experience for visitors and staff without discrimination by gender, race and disability.

Today the most in-demand social and cultural skills needed relate to:

- communication skills;
- social skills such as conflict management, ability to stay calm in times of pressure, collaborative skills;
- service readiness/customer handling/customer care/service skills, also for accessible tourism;
- foreign language skills;
- intercultural sensitivity and competences (including an understanding of foreign cultures and business environments);
- personal skills such as emotional intelligence, passion, reliability, initiative, motivated, friendly or cordial attitude.

5.3.2 Delivery of social and cultural skills: current situation

Regarding the delivery of intercultural competences, Varna University of Management (Bulgaria) was involved in the EU funded [CULTOUR project](#). CULTOUR was aimed at the recognition, validation, and up-skilling of intercultural competences for tourism jobs. Participants were Bulgaria, France, Italy, Portugal, Spain, and Turkey. CULTOUR partners conducted the following activities:

- Identification of the specific intercultural knowledge, skills, and competencies required for tourism sector jobs (IO1 State of the art report);

- Increasing transparency and mobility of tourism professional by means of recognition and validation of intercultural competences for tourism sector jobs, based on the previous successful curriculum CULTOOL (IO2 ECVET Curriculum);
- Designing new pedagogies and innovative methodologies to train intercultural competences in tourism jobs (IO3 CULTOUR Handbook);
- Upskilling teachers and instructors of the tourism sector, both in VET centers and/or in the industry, on new pedagogies and innovative methodologies to train intercultural competences in tourism jobs (IO4 CULTOUR Toolbox);
- Empowering tourism workers in their capacity to understand and cope with cultural differences (IO4 CULTOUR Toolbox);
- Increasing labor market relevance of learning provision and qualifications in the tourism sector, reinforcing links between VET and the world of work (IO5 CULTOUR Open Online Center).

The [SOCCES project](#) (SOCial Competences, Entrepreneurship and Sense of Initiative; 2015-2017) was funded by the Erasmus + program and focuses on social skills. One of the NTG project partners, Breda University of Applied Sciences, was also involved in this project. SOCCEs proposes a framework for the methodical assessment of important working life competences (transversal skills), which can be used for assessment and quality assurance.

The [CULTOUR+ project](#), an Erasmus+ strategic partnership, is targeted at innovation and capacity building in higher education for cultural management, hospitality and sustainable tourism in European Cultural Routes and Heritage. As well as SME generation and networking, CULTOUR+ promotes intercultural dialogue and other transversal skills, especially, creativity, entrepreneurship, cooperation, and global awareness. Part of the project was the development of a free, 2 ECTS online programme on “creativity, capacity building and business ideas for cultural management and tourism” which is running to the end of 2018. It contains the following modules:

- Module 1 | Sustainable tourism;
- Module 2 | Skills and competencies for guiding in cultural tourism;
- Module 3 | Skills and competencies to enhance the transfer of knowledge, mediation and accessibility in cultural tourism;
- Module 4 | The Internet as a means of communication and promotion;
- Module 5 | Applied Digital Storytelling;
- Module 6 | International Project Management.

There are a number of EU funded projects for (the delivery of) skills for accessible tourism. The European Network for Accessible Tourism (**ENAT**) provides a [comprehensive website](#), which provides many examples of good practices to help make travel and tourism accessible for all travelers with special needs.

The European Commission in collaboration with VVA Consulting and ENAT have conducted extensive research on skills needs for accessible tourism, published in a major comprehensive guide: [Mapping skills and training](#) needs to improve accessibility in tourism services.

NEWSCAT - [New Skills for Customised Accessible Tourism](#) - is an Erasmus+ funded project that runs until mid-2019. Its aim is to improve the skills and competence of tourist guides, other professionals and local policymakers to better deal with the diversified touristic demand of persons with special needs. NEWSCAT will develop a training course on customized accessible tourism, providing tools and methodologies to increase the competence of the tourist sector in dealing with diversified clients' needs. In this project, NTG partner Breda University of Applied Sciences is also involved.

The [ELEVATOR](#) project focuses on adult education and business development (business competencies) in the field of accessible tourism for all. The aim of the ELEVATOR project, which was completed in August 2018, is to exchange good practices in adult education for accessible tourism and develop and disseminate three innovative intellectual outputs:

- a comparative analysis of existing tools and conditions for the development of competencies for accessible tourism in partners' countries;
- an open educational resource for tourist and travel guides raising their awareness of requests of tourists with special needs and skills for adaptation of guided tours which allow access and enjoyment for those tourists;
- an accessible tourism guideline.

The European Federation of Tourist Guide Associations in partnership with ENAT (the European Network for Accessible Tourism) has developed training for tourist guides. This online course provides a general introduction to some of the basic principles that tourist guides should observe when preparing a guided tour for persons with intellectual impairments or learning difficulties. It also introduces [examples of good practice](#).

It seems advisable to consult and build on these projects when developing best practices or modules in the field of social and cultural skills for the NTG project.

5.3.3. Social and cultural skills: future needs

According to the German Tourism Academy (DSFT), Germany job profiles will change because of structural conversion, the continuous technical progress, the progressive digitization and internationalization of societies and economies: manual skills will lose importance in exchange for communicative skills, problem-solving competencies, media skills and the ability for logical and creative thinking.

In all five sectors there seems to be a future need for pro-active, empathic service experts who can gain an in-depth understanding - through online data or otherwise - of their customers to deliver highly personalized services whether they are elderly travelers, passengers with special needs or tourists from non-European countries of origin.

These experts need to make sure tourists have a great experience before, during and after their trip (UA) and need to be good communicators in several languages. It is obvious that these jobs will be different from today's travel agents, travel advisors or hotel receptionists. According to the Future Foundation "...an entirely new class of professionals may emerge to help us repackage the dazzling array of choice out there into more comprehensible "bundles" of choices. Part data scientist, part lifestyle guru they will encapsulate a broader repositioning of agency action in the travel sector, the main role of which will shift from providing information to offering personalized guidance" (Future Foundation & Amadeus, 2015, p. 13). This is confirmed by other industry reports. CapGemini & ANVR (2015) indicate that in tour operating, data analysts will become more important while knowledge of destinations and products will still remain necessary, also because the need for more personalized services is growing. Personal travel assistants with more knowledge than the average customer can google and who know their customers and can give personalized advice will have a future next to digital travel assistants and avatars (CapGemini & ANVR, 2015).

Bulgaria, according to the sector skills analysis prepared by the Bulgarian Industrial Association (2013), the most crucial competencies for the staff in tourism are not the specific professional qualification, but the foreign language skills, the intercultural competencies, and the personal traits. The sector skills analysis emphasizes the growing significance of the intercultural competencies which have to be integrated in the training and education of the tourism staff, in order to guarantee the quality of human resources in the sector.... that intercultural skills are relevant for all staff categories in tourism, since all job profiles have to deal with cross-cultural

interaction. That is, intercultural skills can be considered as transversal skills for Hotel Industry and Tourism sector (Business Foundation for Education, 2015).

For this, these experts need not only excellent interpersonal and collaborative skills but also creativity to come up with original, surprising solutions to co-create unique and authentic experiences in collaboration with their customers. Union Camere in Italy states the importance of new specialized professionals such as: advisors in culinary trends, religious tourism experts (to plan, organize and manage the flows of pilgrims and tourists interested in sanctuaries and other religious destinations); personal eco trainers (to evaluate personal physical fitness and plan outdoor workouts, that must be fun, engaging and able to achieve the purpose that the user has set himself); slow travel programmers (to imagine, plan, organise and test slow travel and stays, in order to ensure a full enjoyment of the local attraction and develop social relationships during the holiday); heritage promoters (to curate activities related to tourism promotion while enhancing cultural, artistic and historical heritage).

According to the University of Alicante, Spain: The tourism sector is experiencing a 'creative turn' in which the emotional element of visitor experience takes a strong interest, especially in cities and creative territories. In such visitor experiences, a sensory change toward intangible things is taking place, with the active participation of tourists in creative activities and skills development in a collaborative way with the local population. The customer looks for unique and authentic experiences, in search of the exotic and the unknown in ethnic enclaves. Hence, tourism workers also have this ability to create that intangible and emotional that the customer seeks (Hosteltur, 2017b)

VIMOSZ and the University of Sopron, Hungary also cite the need for experiences, emotions, authenticity and an increase in the personal value placed on travel: instead of products and services, travelers increasingly seek authentic experiences. An ever-increasing proportion of travelers do not wish to experience the destination as tourists: instead, they wish to meet the local people and participate in their everyday activities – they want to connect. They don't want their tourism experiences handed to them in "prefab" packages; they themselves want to be part of producing them. They no longer pick their preferred destinations by the specific attractions on offer, but rather by the experience, the atmosphere and the emotions they promise. Emotional identification plays a significant role.

In Wales “Every visitor interaction, whether at a port, airport, restaurant, hotel, attraction or event has an impact on the visitor’s overall experience. A culture of service and hospitality is crucial to the competitiveness of the sector. We need to compete on quality, consistency of service and sense of place” (The Welsh Government Strategy for Tourism 2013 – 2020 Partnership for Growth).

Unique experiences frequently require experts to deliver them, both on- and offline. Delivering innovative, participatory content requires people with storytelling skills, problem-solving and collaborative competencies as well as those who are not just able to interpret local culture, heritage, history for visitors from different cultures and mentalities but who are able to engage them in emotionally rich experiences.

Due to these shifts in trends of visitor expectations and trends, tourism workers in the future need an open attitude and need to respect the diversity of customers (ethnicity, age, gender, sexual orientation, religious beliefs and those with special needs). Excellent skills in cross-cultural communication / wide use of different languages / multicultural dexterity will be essential due to increasing numbers of tourists from source markets outside of Europe.

Some partners stress the need for more knowledge (culture, politics, economy, values, sensibilities), especially of Asian source markets. China will be the largest global economy by 2030 and increasing numbers of Chinese but also Indian tourists have Europe high on their wish list, making a better understanding of these consumer groups necessary. Culture plays an important role in how customer service is experienced. For example, Chinese tourists tend to see hotel employees in a less-powerful position and expect a high level of respect from them (Wang, Royo Vela & Tyler, 2008). This is also a market that is continually changing. Few people in Europe are aware of the fact that already around 40% of outbound Chinese tourists are FITs (Tok, 2017) and the opportunities this could open up for small and medium enterprises (as opposed to the tour group business which is dominated by large Chinese and multinational companies). Although multicultural dexterity is an important asset when receiving Asian customers, it is at the same time important to realize that, for example, Chinese millennial travelers have more in common with their age group globally than with older Chinese tourists (Matlack, 2017).

The year 2018 is the EU-China Tourism Year (ECTY) with the purpose of improving relations between China and Europe in the field of tourism. The [ECTY website](#) provides some information on how to improve travel and tourism experiences for Chinese clients and how to attract Chinese tourists.

With a labor market that most likely will no longer be divided into the sectors we know today and today's sequence of "education-work-retirement" no longer a given fact, self-learning skills, adaptability, and agility will perhaps be the most important skills, not only for tourism but to survive in the future. Some other skills mentioned as important to help implement socially sustainable tourism also include: the development of competencies for entrepreneurship in tourism; ethical skills; media skills; skills regarding inclusion/gender equality.

5.4. Green skills

The development of sustainable tourism is an urgent issue and sustainability, as discussed above, touches upon many different social aspects of tourism. Partners also investigated different aspects of environmental management skills, covering the entire range from practical, environmental conservation and natural resource management skills (e.g. minimizing water and energy consumption, reduction and reuse of waste), to skills for developing sustainable tourism policies both in the field of job creation and other benefits for local communities and management of overcrowding and "overtourism".

5.4.1. Environmental management (green) skills: current requirements

The desk research shows that in most countries and regions green issues are high on the agenda. Hungary is perhaps an exception:

VIMOSZ / University of Sopron, Hungary: The Green factor is perceived as less important in Hungary than in the more developed European countries. In the new National Tourism Development Strategy, the green issues have a relatively small volume.

All partners see room for improvement in the advancement of green skills. However, there is currently very little mention of specific green skills required for jobs in all NTG tourism sectors.

Dublin Institute of Technology, Ireland: A major gap is identified in relation to Green skills across the three sectors. Reports, policy documents, websites etc. do not make reference to Green skills, either general or specific. There is, however, a general recognition of the importance of sustainability for the industry in general (Gibbons 2016; Department of Transport, Tourism & Sport 2015; ITIC 2018).

The Netherlands a *tourism job vacancy quick scan*, by Breda University of Applied Sciences, and *analysis of vacancies for travel agents and tour operators, including OTA's*, revealed that no specific “green skills” are currently required for the vacancies studied.

5.4.1.a. Travel agents / tour operators

In this sector, there are very few references to green skills or sustainability skills. This seems contradictory to the abundance of certification schemes for tour operators and travel agents, discussed under “Delivery of Green Skills” below. Although certification for sustainability becomes more popular, this does not (yet) translate into (a list of) concrete green skills or literature about this.

5.4.1.b. Visitor Attractions

The same applies to the attractions sector. Green skills are undeniably important for the conservation and management of tourist attractions using built and natural environmental practices for effective resource management. Tourist guides also have an important role in the representation of natural heritage to tourists and educating them on sustainability and environmental issues. During the NTG project case studies of good practice will be identified to establish how visitor attractions are implementing and reporting on better environmental management practices and the skills associated with operation and senior management.

5.4.1.c. Accommodation and food & beverage

This sector seems the most dedicated to initiatives to improve the sustainability of restaurants and accommodations. These are mostly focused on environmental management (resource efficiency, waste management) and less on employment practices or engagement with local communities. The NTG project will continue to identify examples of good practice within each of the 5 sectors.

Despite these initiatives and even though sustainable certification schemes for this sector are myriad, most vacancies investigated at this point do not require specific “green skills”. Although many companies seem to address some aspects of environmental management this does not really translate into clearly defined green skills.

Germany the group of ecologically managed hotels (BIO-Hotels) publish 42 job vacancies on their webpage (see: www.biohotel.info – read 2018–07–26). None of it demanded specific competencies in sustainable management. Probably a positive attitude towards ecological management and products is presumed and therefore not mentioned in the ads.

Varna University of Management, Bulgaria, mentioned that in general Bulgarian accommodation establishments mostly focus on legally compulsory practices (e.g. wheelchair ramps) or those that provide immediate cost savings (e.g. energy saving light bulbs, water, and electricity saving by employees). In order to become more sustainable, they should embrace a more holistic approach to sustainability by considering the interests of the local community (e.g. employing local employees, purchasing from local suppliers), tourists (e.g. special diet menus, certification of sustainable practices), employees and all other stakeholders. However, currently, employing (or training) people with specific green skills does not seem to be a major priority for the Bulgarian accommodation establishments. Nevertheless, since some sustainable practices (e.g. solar panels, water saving systems) are being used, there is a need for people with knowledge and competencies in this field. However, the green competencies of the employees are peripheral and not core and compulsory.

Union Camere, Italy, notes that in Italy all tourist accommodation businesses declare to practice environmental sustainability actions at various levels:

- 93.3% declare to adopt the practice of good standards of sustainable behavior (turn off lights, reduce water consumption, etc.);
- 81% adopt energy saving actions;
- 55.3% practice specific separate waste collection;
- 51.8% adopt water saving actions.

Further specification of the above sheds a more detailed and concrete light on environmental practices in accommodation in Italy. However, no specific green skills are mentioned.

Union Camere, Italy (based on [Ecobnb](#), Turismo Sostenibile, Efficienza energetica e sostenibilita per un posizionamento turistico competitivo):

Good practices of sustainable behavior are those that most simply adopted by companies, so that:

- Turn off the lights (88.8%);
- Carefully adjust the heating and cooling temperatures (63.5%);
- Reduce the consumption of water by the staff of the structure (52.8%)

- careful to reduce the consumption of soaps and detergents internally to the staff of the structure (48.7%);
- reduce the consumption of water to customers (41.8%)

The actions of electric savings are more varied and numerous and range from the most widespread as:

- the use of energy saving systems: led (48.3%), fluorescent light bulbs (45.8%)
- use of high insulation windows (31.1%)
- - installation of lighting control systems such as presence sensors (24.8%) or lighting sensors (22.1%)
- - the implementation of interventions suggested by the energy diagnosis (21.4%)
- - the installation of condensation boiler (20.4%)
- - the use of renewable energy sources such as solar thermal (17.8%);
- the installation of a cogenerator (7.7%)
- the use of renewable energy sources such as biomass (8.6%) or solar shading (9.1%)

Separate waste collection is in itself a type of sustainable action that is generally practiced everywhere: 100% declare to practice the separate collection of waste. If, however, we go further on this issue, there are still significant areas for improvement:

- only 40.3% inform and make staff aware of these issues
- 37.1% do scheduled maintenance for green areas
- only 37% of Italian accommodation businesses state that they have taken environmental awareness actions towards customers and 29.5% of using notices for the correct use of water and energy resources
- only 8.5% of the facilities claim to have obtained environmental certifications (EMAS 14001, ecolabel, etc.)

Finally, more specifically among Italian hospitality operators who adopt water-saving practices

- 41.6% use the double drain button, automatic sensors for water supply, etc.
- 26.6% loss control actions
- 26.1% use ventilated aerator and/or low flow dispensers
- 19.7% adopt wastewater treatment systems for their reuse
- 17.7% reuse wastewater for irrigation. Among the points analyzed, today companies still lack the adoption of photovoltaic panels for the total exploitation of solar energy; obviously, the adoption must be understood on a large scale to reconcile the growth of the global economy, reduce emissions and preserve the environment

5.4.2. Delivery of environmental management (green) skills: current situation

The secondary data analysis indicated the delivery of green skills for tourism is mostly outsourced to external training providers, often in connection with achieving (voluntary) certification such as the Travelife certificate for tour operators or eco-labels such as Green Key or Blue Flag for accommodations and attractions. Certification can be described as the process of assuring consumers, as well as other stakeholders in the industry, that the assessed company has achieved a set of voluntary standards which meet or exceed baseline standards or legislation. Certification is sometimes a popular asset for tourism providers and certification for tourism seems to have become an industry in itself. This has led to a situation in which there are now numerous international, national and regional sustainability standards and certificates available for operators in the tourism industry. This not only makes it difficult to choose a certification scheme, but it also contributes to confusion for consumers. The abundance of so many labels, certificates, and standards in the market does not provide clarity for consumers or indicate what they represent and stand for. This diminishes the value of certification because what is the point in becoming certified when your customers do not know what it represents (Mullis, 2017).

In line with the situation described above, many different certification schemes were mentioned in the GreenSkills desk research. Firstly, there are the standards developed by the [International Organization for Standardization](#). The ISO 14000 family of standards are related to environmental management and provide tools for companies and organizations of all kinds to manage their environmental responsibilities. ISO 26000 standards are dedicated to social responsibility and provide guidelines for operating in ethical and transparent ways that contribute to the health and welfare of society. ISO 50001 is about energy management and the ISO 9000 family addresses quality management and contains some of ISO's best-known standards. While some large hotels chains, e.g. Hilton (Hilton, 2014) and NH Hotel group (NH Hotel group, 2018) and tour operators such as TUI (TUI, 2018) are ISO certified, many SMEs consider ISO certification beyond their reach due to the significant amount of time and money required to obtain ISO certificates. A comprehensive review of environmental certification programmes will be undertaken to establish how to link these to skills development programmes.

5.4.3.a. Travel agents / tour operators / DMO's

There are many certification schemes available for tour operators and travel agents. The German Tourism Academy (DSFT) mentions 33 certificates for suppliers of sustainable or environmentally friendly tourism but also stresses that the number of certified tour operators is still small and perhaps no more than 1,2% of the total in Germany.

Many certification programmes are accredited by the [Global Sustainable Tourism Council](#), which acts as a global accreditation body for certification schemes that certify hotels/accommodations, tour operators, and destinations as having sustainable policies and practices in place. GSTC does not directly certify products or companies but accredits those based on the GSTC Criteria. There are two sets: destination criteria for public policy-makers and destination managers, and industry criteria for hotels and tour operators.

For tour operators/travel agents, the following certification organizations accredited by the [GSTC](#) are available:

- [Control Union](#)
- [EarthCheck](#)
- [Ecotourism Australia](#)
- [Rainforest Alliance](#)
- [Travelife for tour operators & Travel agencies](#)
- [Vireo Srl](#)

For destinations there are currently two GSTC accredited organizations:

- [EarthCheck](#)
- [Green Destinations](#)

Other well-known sustainable tourism certification programmes include:

- [ECEAT – European Centre for Ecological and Agricultural Tourism](#)
- [Green Tourism Business Award Scotland - Scotland’s certification program](#)
- [Green Tourism Business Award Wales - certification scheme for Wales](#)
- [Green Globe](#) - The Green Globe International Standard for Sustainability has been applied to a great variety of business types from accommodation and hospitality, to transport and tour operators, and more
- [Nature’s Best - Swedish ecotourism certification program](#)
- [Blue Certified](#) - certification for dive operators and dive resorts
- [Fair Trade Tourism](#) - certifies tourism businesses in South Africa, Madagascar, Mozambique and Zimbabwe
- PM4SD ([Project Management for Sustainable Development](#)), certifies project and destination management skills for sustainable development. Developed in Europe and delivered globally.
- [Nordic Swan Ecolabel](#) - official ecolabel of the Nordic countries, not only for tourism

Travelife for tour operators and travel agents

To gain an understanding of the topics that are covered by (training for) certification, the Travelife Certification standards are reproduced below. These are based on international sustainability and CSR

(corporate social responsibility) standards and guidelines (e.g. ISO 14001 - Environmental management; UNEP - Tour Operators' Initiative; GRI - Global Reporting Initiative, tour operator supplement; GSTC - Global Sustainable Tourism Criteria; OECD - Guidelines for multinational enterprises; ISO 26000 - Corporate Social Responsibility Guidelines and principles). By complying with the Travelife criteria, companies also help to achieve the SDGs. Travelife works closely with the industry and provides training, best practices, and certification tools suitable for companies of any size. Over 15 national travel associations promote Travelife among their members.

[Travelife sustainability themes](#) addressed in the certification scheme include:

- Energy efficiency and conservation
- Water and waste management
- Greenhouse gas emissions
- Labor practices
- Human rights
- Community relations
- Ecosystem conservation
- Cultural impacts
- Health and safety
- Fair Business Practices
- Customer protection
- Animal Welfare

[Travelife training content](#) covers the following topics:

- How to make and implement a sustainability mission statement, policy and action plan;
- How to improve internal sustainability management (e.g. how to 'green' one's office and how to treat employees fairly);
- The sustainability impacts of one's accommodation, transport, and excursion providers;
- Actions to take to improve the sustainability of suppliers;
- How to positively motivate customers to make more sustainable choices during their holidays.

5.4.3.b. Accommodation and food & beverage

RESPONS, a Responsible Skills Alliance for Sustainable Management of Small Hotels and Restaurants (No 539920-LLP-1-2013-1-BG-LEONARDO-LMP), is a project funded with support from the European

Commission. RESPON is dedicated to the development of the sustainable management of small HOTels, REstaurant, and CAFes (HORECA). The project pursued the following aims:

- To identify the needs related to skills and qualification requirements for the professions “hotel manager” and “restaurant manager”;
- To improve and upgrade the specific skills of HORECA managers based on learning outcomes and help transparency and comparability in the qualifications and the mobility of learners and workers;
- To support the acquisition of sector skills in tourism and promote cooperation between education and the world of work;
- To increase cooperation and involvement of employers and social partners;
- To facilitate the provision of work-based non-formal learning;
- To provide easily accessible and high-quality lifelong information.

According to the final results and conclusions the HORECA managers would need to improve the following skills:

- capability to reduce, reuse, and recycle wastes to minimize processing and hauling costs;
- knowledge of systems to reduce the use of company cars to avoid air pollution;
- knowledge and capability to use energy save lighting and solar/photovoltaic panels.

Certification

The number of certification schemes for restaurants, hotel, and other accommodation providers is overwhelming. However the NTG project can utilise these schemes to develop training and skills needed to implement certification schemes and continue with sustainable day to day practice. Below a few are mentioned:

- [Travelife for Hotels and Accommodations](#) is a certification scheme developed in partnership with tour operators like TUI Travel, Thomas Cook, Kuoni, and Virgin Holidays and many others. This helps, currently 1,300 hotel members around the world improve their environmental, social and economic impacts. Hotels that meet the Travelife standard are formally recognized with a Travelife award to promote their achievements.
- [Viabono](#) – a German certification program for mostly accommodation providers although some attractions have been certified as well

- [Green Key](#) – an eco-label awarded to more than 2,900 hotels and other establishments in 57 countries
- The Hungarian Association of Hotels has facilitated the implementation of the Concours of Green Hotel Certificate for the last 20 years.

In the UK organizations such as Waste, Recycling Action Programme ([WRAP](#)), supports natural resource management in different sectors including, food and beverage. A range of waste and environmental management resources are also available on the [Visit Britain Website](#), including the following:

- [Reducing Food Waste: Starting Off Toolkit](#): provides a simple step-by-step approach to reducing food waste and business costs.
- [Guidance for smaller businesses](#) includes a summary checklist, waste measurement sheet and practical advice on food waste recycling.
- The [menu planning webcast](#) provides practical tips, including approaches to reviewing stock, keeping units down and dynamic menu modeling. You can also [watch Oliver Gladwin's chef masterclass](#) on how to get the most from your meat, vegetables, and fish.
- [Legislation and food waste prevention information](#) – Guidance on relevant food safety legislation and waste prevention actions. You can also download [myth buster posters](#) for commercial kitchens.
- The [Courtauld Commitment 2025](#) is a voluntary agreement designed to bring businesses together to make food and drink production more sustainable.
- The [cost calculator tool](#) helps you compare different options for the collection of your waste.
- The [Love Food Hate Waste resource pack](#) helps you work with your customers to reduce plate waste.
- The [Food Waste Infographic](#) gives an overview of how much food is wasted – and its cost – in the hospitality and foodservice sector in the UK.
- The ['Your business is food, don't throw it away' campaign](#) can help you boost your bottom line by monitoring, measuring and reducing food waste.
- You can also explore [WRAP's Prezi](#) to find out which tools can help your business.

Zero-energy consumption toolkit for hoteliers

- The [nearly-Zero Energy Hotels \(neZEH\) online toolkit](#), launched by UNTWO and partners, aims to help hotels reach a nearly-zero consumption of energy resources. Hoteliers can use the toolkit to

assess their energy performance, find ways to improve efficiency and increase their use of renewable energy.

Free International Tourism Partnership resources

- [Green Hotelier](#) online magazine features best practice interviews, know-how articles and the latest updates on sustainability and green hotels.
- [Hotel Water Measurement Initiative](#) helps serviced accommodation measure and report on water consumption.
- [Hotel Carbon Measurement Initiative \(HCMI\)](#) helps serviced accommodation measure and report on carbon emissions.
- [Know how guides](#) take an in-depth look at specific topics such as sourcing sustainable food and managing waste.
- [Going green](#) is an entry-level guide for hotels looking to improve their sustainability.

5.4.2.c. Visitor Attractions

Also in the attraction sector certification schemes are available:

- [Blue Flag Campaign](#) - certification for beaches
- [Audubon International](#) - an education and certification program for sustainable golf courses
- [Clean Marine program](#) – certification for marinas, boatyards and yacht clubs
- [Green Key](#) - next to certification for hotels and restaurants Green Key also certifies attractions (e.g. zoos, nature parks) and conference centers

5.4.3. Green Skills: Future needs

Arguably, tourists are not always willing to pay for green or sustainable options during their travels. However, this attitude is changing with more and more millennials and younger generations traveling across the world, for whom sustainability is a natural consideration. The OECD noticed in their 2013 paper on Green Innovation in Tourism Services (OECD, 2013) that the tourism industry generally perceived customers to be reluctant to pay more for environmentally sustainable products or services. In their 2018 report on tourism trends and policies (OECD, 2018, p. 72), however, the OECD mentions that customer perceptions in this field may be changing. “Results from a 2015 study showed that 66% of global consumers were willing to pay more for sustainable brands, up from 55% in 2014, while for Millennials, the figure was significantly higher at 73%, up from only 50% (Nielsen, 2015)”. In line with this, the

University of Alicante, Spain, states that customers are interested in a long-lasting relationship with socially responsible companies because of greater levels of trust and the psychological commitment of being connected with ethical and responsible companies.

Varna University of Management, Bulgaria, states that *requirements for tourism demand can serve as a stimulus for accommodation establishments to adopt sustainable practices. A new generation of tourists appears showing a behavior drifting away from the pure consumerism, but developing mentality of environmental consciousness, that characterizes them as tourists who would prefer to stay in environmentally friendly accommodations using renewable energy sources. They are willing to pay more for “green” products and higher prices for staying in environmentally friendly hotels (Ivanov et al, 2014). Therefore, by adopting sustainable practices, Bulgarian accommodation establishments could appeal to the more sustainability-conscious tourists but also to employees with relevant knowledge and skills.*

This means that - apart from all other factors - there is also a growing economic interest for the industry to become more sustainable. There is no doubt that green skills will be more in demand in the future. However, the question is which green skills will be needed in the future.

Although this question is not clearly answered in the desk research, some general points can be made. Firstly, most NTG partners indicated that environmental (green) skills should entail more than just helping to reduce the environmental impacts of tourism, but also create opportunities for better community engagement and manage the impact of tourism on local communities through better destination management. This means that we can make the following division in green skills:

Green skills for reducing the environmental impacts of tourism

Apart from cost-saving incentives, these skills are becoming more important in the light of the Paris Climate Agreement and the SDGs; they concern all the topics discussed above (reducing resource consumption, energy efficiency, water, and waste management etc). Regarding levels of energy consumption, it must be noted that the transportation sector is not included in the NTG project which therefore does not address one of the most important contributors to greenhouse gas emissions in tourism: air transportation.

Furthermore, it is important to realize that reducing environmental impacts places emphasis on daily behaviours of staff and customers (switching off lights, separating waste etc. Whereas other aspects involve (people with) technical skills, e.g. for designing and planning low impact buildings, installing solar panels and wind turbines, planning and implementing water saving systems et cetera. This means that education for environmental skills in tourism should perhaps be more targeted at knowing what is possible and needed, where to get it and how to use it rather than only the installation of energy saving devices. Moreover, the number of technological applications for climate control, energy saving,

controlling food waste and more are continually growing. This means that green skills and digital skills will merge in the future.

Varma University of Management, Bulgaria, states that *results from a recent study about the use of alternative energies in Bulgaria (Iankova, 2011) show that the primary reason for installation of solar systems is the high profitability hoteliers achieve during the high tourist season (the average savings from electricity bills are reported to be 30-40 %). However, the “solar fever” is continuing to spread around Bulgarian Black Sea coastal resorts based on hoteliers’ belief that this is moneywise, worthy investment; it is “fashionable” and creates a positive image of the hotels (Ivanov, Ivanova and Iankova, 2014). Therefore, the need for people with a specific attitude to sustainable approach and green skills is expected to rise in the Bulgarian tourism industry.*

Green skills for making other aspects of tourism more sustainable

Several partners emphasised the importance of developing sustainable forms of tourism in (rural) areas as an option to diversify local economies, create economic growth and decent jobs for local people (including women and youth). Sustainable practices need to be integrated right from the start into the economic and socio-cultural environment of local communities through appropriate training and knowledge dissemination. This could support practices, including: conservation of local, natural and cultural heritage; local procurement of food for accommodation providers and restaurants; encouragement of tourists to buy local products; all the environmental management aspects mentioned above as well as a broad range of training for the people involved. Several partners see an important role for local tourist guides in providing authentic local experiences, interpreting local heritage, being ambassadors of local products and educating tourists about environmental aspects of tourism. All this involves extensive green skills such as:

- Creating tourism impact studies
- Planning for sustainable tourism
- Dealing with host-guest interactions and communities
- Cultural awareness
- Resource management (energy, water, emissions, waste) including the use of applications
- Conservation of nature and culture
- Fair business practices
- Green certification / awards / eco-labels for tour operators, accommodation providers, restaurants, attractions & events
- Consumer awareness and education for sustainability
- Knowledge of climate change, renewable energy systems, and sustainable materials

University of Alicante, Spain: *Professionals trained in environmental education and heritage interpretation are needed. We must promote tourism focused on raising awareness from an environmental point of view and recover the fauna and flora of the place, and enjoy the existing natural resources (such as visits at sunset to enjoy unique experiences, outdoor activities such as concerts, excursions, bird watching), to practice sports (such as yoga, kayaking) (Hosteltur, 2018h).*

According to Lu and Gursoy (2015) consumers indicate that having organic or local produce on a menu is one of the key reasons for choosing a restaurant (NRA, 2014). It is reported that 70% of consumers would support restaurants that offer sustainable food (i.e., food produced via sustainable methods) such as organic food or local produce (NRA, 2015). Sustainable food has quickly become a buzzword in today's menu offerings.

With the growing number of tourists, overcrowding, which diminishes the quality of the experience for both tourists and residents, will happen more frequently. Therefore, environmental management skills at the destination will be needed for:

- generating policies and new ideas which focus more on yield per tourist instead of increasing the number of tourists;
- DMOs and tour operators to create experiences which will tempt tourists to travel away from over-visited areas; also - in order to reduce the seasonality of demand - to design all year-round experiences that are not tied to weather conditions.

(Green) skills for advocacy for sustainable tourism and sustainable tourism products

A few partners mentioned the need for more and better education of potential customers on sustainable tourism and the availability of sustainable holidays, excursions, accommodations, and restaurants. It will probably also be necessary to raise awareness on the existence of certified businesses and the meaning of green certificates and eco-labels.

According to several studies (FUR, 2014, TUI 2017, Kreilkamp 2017) there is a high interest in sustainable tourism products and trips. The studies also address the obstacles that might prevent the customers from buying interest becoming reality: beside price, the most important barriers are constituted in missing information, communication and advice. The German Tourism Academy (DSFT) agrees that more training is needed for the staff of travel agencies. From their point of view, tour operators should pay special attention to the training of sales expertise for sustainable products.

CONCLUSION

6. CONCLUSION

Several megatrends - already visible today but with their full impact as yet unknown - are influencing the future of tourism. Demographic developments - the continued growth of the global middle class, more elderly tourists, more digital natives coming of age and entering the travel market, more Asian tourists - will result in more and different tourist preferences and choices than today. Technological innovations will continue to impact tourism and change business models, jobs in tourism and tourist experiences. There will, however, only be a future for tourism when more sustainable practices are incorporated in the consumption, production, and development of tourism.

These developments affect the digital, social and green skills of those aspiring to work in the tourism industry around 2030 and which are the focus of the NTG project. Several influential organizations (OECD, Cedefop, World Economic Forum) indicate that higher levels of qualifications in general as well as the following transversal skills will be needed for everybody to survive in an increasingly digitalized world:

- self-learning capacities (permanent education, adaptability, agility, and flexibility - necessary to cope with digital innovations and disruptive business models);
- digital fluency;
- cognitive (such as problem-solving, creative, entrepreneurial) skills;
- socio-emotional (communicative, collaborative) skills and multicultural dexterity.

6.1. NTG: future digital skills

Digitalization, AI and robotization are causing tremendous changes in the tourism industry; the two main trends are towards more “tech” developments and less but “more personalized” customer service. Digital fluency will be key for everyone; instead of inventing the skills that are needed in order to become digitally fluent, the DigComp 2.0 skill set described above could be taken as a starting point. Since this model offers a common reference as well as a common language regarding key areas of digital competence at European level, it seems advisable to build on this and add skills that are relevant for the future of tourism (such as analysing and making sense of data which will be indispensable for more personal communication and customized offers).

The desk research has shown that there are many reservations/bookings / PMS and EPOS systems and digital applications in use today; the future will bring only more systems and applications. For tourism education, it will be impossible to train students in the use of all these systems. This is the main reason why self-learning capacities are so important: these will enable people to cope with digital innovations in the future.

Taking all this into account, future digital skills across all NTG sectors might consist of:

- Self-learning capacities (permanent education, adaptability, agility, and flexibility - necessary to cope with digital innovations and disruptive business models);
- Digital fluency (based on DigComp2.0);
- Skills for conducting E-business: all skills necessary for online branding, marketing, and distribution (including websites, social media, reviews); data collection, data analytics, and data management (including protection and cybersecurity);
- Since AI driven technologies will be increasingly important in all tourism sectors, a better understanding of AI is essential;
- Unique, customized and personalized experiences are the future in all tourism sectors. Therefore, skills in creating experiences, both in the real world and with the use of AR, VR, or in mixed reality with special attention to gamification as well as creating online and video content will become more important;
- Although beyond the scope of the NTG project, it is important to note that profession-specific knowledge (about attractions, hotels, food, “non-googleable” travel options) will remain important.

This raises some questions about the future of education for tourism; we see a growing need for technical skills in tourism-related industries, but it is highly unlikely that tourism education can deliver the type of technical specialists that are increasingly needed. Data analysts, technical staff and AI specialists working for OTA’s, for example, do not necessarily need to have a degree in tourism - companies like Skyscanner and Booking.com do not require a background in tourism or a tourism degree (although “affinity with travel” is sometimes asked). The same applies to creators of video content or of experiences involving VR, AR or mixed reality: all these jobs do not necessarily require a degree in tourism - technical and creative backgrounds are more important.

6.2. NTG: future social and cultural skills

While many jobs in tourism are and will be affected by technical innovations, human skills such as creativity, critical thinking, collaborative, and intercultural communicative skills cannot (yet) be replaced by machines and are likely to become even more important in the decades ahead.

Most of the social and cultural skills mentioned in the WP2 desk research seem to be transversal skills, relevant for all NTG sectors. Future workers in the industry should:

- Be able to gain an in-depth understanding - through data analysis or otherwise - of their customers;
- Be able to organize and deliver highly personalized services to all kinds of travelers (elderly travelers, passengers with special needs or tourists from non-European countries of origin);
- Be able to ensure that clients have a great experience before, during and after their trip;
- Be able to act as personal travel assistants who are partially data scientist, partially lifestyle guru and who move away from providing information to offering personalized guidance;
- Have more knowledge of destinations, products, and experiences than the average customer can find on the Internet;
- Be creative in order to come up with original, surprising solutions to co-create unique, emotionally rich and authentic experiences in collaboration with their customers;
- Possess excellent interpersonal and collaborative skills;
- Have an open, empathic attitude and respect the diversity of their customers (ethnicity, age, gender, religious beliefs and those with special needs);
- Be able to communicate in a personal way in several languages;
- Possess multicultural dexterity (good cross-cultural communication skills, knowledge of non-European cultures, politics, economy, values, sensibilities with a special focus on Asian source markets).

Some other skills mentioned in the desk research were the development of competencies for entrepreneurship in tourism; ethical skills; media skills. Some partners mentioned the need for future-proof tourist guides. Delivering innovative, participatory experiences requires people with storytelling skills, problem-solving and collaborative competencies; the future-proof tourist guide is not only able to interpret local culture, heritage, history for visitors from different cultures and backgrounds but is also able to engage them in emotionally rich experiences.

When developing a skill set, best practices or modules in the field of social and cultural skills for the NTG project, it might be useful to consult some of the already existing EU projects mentioned above.

6.3. NTG: future green skills

The WP2 desk research demonstrated that green skills comprise more than skills for reducing the impact of tourism on the environment. They also involve developing sustainable forms of tourism in (rural) areas as an option to diversify local economies, create economic growth and decent jobs for local people (including women and youth) as well as conserve local natural and cultural heritage. On the other hand,

managing and reducing the impact of overtourism is also a part of sustainable tourism development. All this involves a great many green skills such as:

- Being able to make tourism impact studies;
- Planning for sustainable tourism (including policies and ideas for increasing yield per tourist instead of increasing the number of tourists);
- Creating and interpreting authentic, local experiences which will attract tourists to under-visited areas (and away from over-visited areas) as well as all year-round experiences to reduce seasonality;
- Dealing with host-guest interactions and relations within communities;
- Cultural awareness and cross-cultural communication;
- Resource management (energy, water, emissions, waste) including the use of applications;
- Conservation of nature and culture;
- Fair business practices;
- Green certification/awards / eco-labels for tour operators, accommodation providers, restaurants, attractions & events;
- Raising consumer awareness of and education for sustainable tourism, sustainable tourism products, the meaning of green certificates and eco-labels;
- Knowledge of climate change, renewable energy systems and sustainable materials (and if applicable, knowing how to use these).

Reducing environmental impacts is for many people already a part of their daily behavior (switching off lights, separating waste et cetera); other aspects involve (people with) technical skills, e.g. for designing and planning low impact buildings, installing solar panels and wind turbines, planning and implementing water saving systems et cetera. This means that education for environmental skills in tourism would perhaps need to be more targeted at knowing what is possible and needed, where to get it and how to use it than the actual implementation of devices. Moreover, the number of applications for climate control, energy saving, controlling food waste and more are continually growing. This means that green skills and digital skills will merge to a certain (as yet unknown) extent.

Given the large number of certification organizations and the huge amount of course materials already existing in this field, it might be useful - when developing a skill set, best practices or modules in the field of green skills for the NTG project - to join forces with industry-recognized certification organisations such as Travelife or Green Key to further envision future green skills.

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