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Project co-financed by the European Regional Development Fund

support **IN**sular and low density areas in the transition towards a more **CIRC**uLar **E**conomy

Priority axis – Investment Priority – Specific Objective 3-1-1
Priority Axis 3: Protecting and promoting Mediterranean natural & cultural resources
https://interreg-med.eu/

Measuring Tourism as a Sustainable and Circular Economic Sector. The INCIRCLE model

Deliverable 3.3.1 INCIRCLE set of circular tourism indicators

WP 3, Testing
Activity 3.3, Foster comparison and benchmarking: development of INCIRCLE indicators for circular tourism
Partner in charge: Sant'Anna School of Advanced Studies (SSSA)
Partners involved: AREA Science Park
Status: rev0
Distribution (confidential, public, etc.)
30/04/2020

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List of abbreviations and terms

CE	Circular Economy
CET	Circular Economy Tourism
CGE	Computable general equilibrium
EC	European Commission
EMAS	Eco-Management and Audit Scheme
ETIS	European Tourism Indicators System
GDS	Global Destination Sustainability
GRI	Global Reporting Initiative
GTSC	Global Sustainable Tourism Council
IO MODEL	Input-output model
IRTS	International Recommendations for Tourism Statistics
KPI	Key Performance Indicators
MSW	Municipal Solid Waste
PP	Project Partner
RES	Renewable Energy Sources
SAM	Social Accounting Matrix
SD	Sustainable Development
SDGs	Sustainable Development Goals
TDDM	Tourism destinations' decision makers
TIDM	Tourism industries' decision makers
TSA	Tourism Satellite Account
UNEP	United Nations Environment Programme
UNWTO	United Nations World Tourism Organization
WP	Work Package

1. Introduction

The present report represents the **output of the activities carried out in WP3 - Activity 3.3** *"Foster comparison and benchmarking: development of INCIRCLE indicators for circular tourism"* regarding the development of INCIRCLE indicators for circular tourism (Deliverable 3.3.1). The scope of the document is to provide a comprehensive overview about existing indicators and tools in order to ensure comparative results and common standards to assess tourism sustainability. To this aim, the document analyzes the main aspects related to the assessment of sustainability and circularity within the tourism sector and defines the set of INCIRCLE indicators.

INCIRCLE set of circular tourism indicators is a management and monitoring tool to assess tourism impact on a destination from a circular economy (CE) perspective and develops an own structure in order to fit to INCIRCLE purposes and meet the needs of different local, regional, national contexts.

INCIRCLE set of circular tourism indicators builds upon existing data gathered through the analysis of grey and scientific literature as well as upon partners' experience collected through a specific template of preliminary partners' information.

Firstly, an analysis of the tourism industry as a whole has been conducted, investigating its main features from supply and demand side, as well the importance of measuring tourism and identifying appropriate indicators. Then, the concepts of sustainable tourism and circular tourism have been presented in order to frame the tourism measurement.

With regards to the development of the dashboard of INCIRCLE indicators for circular tourism, the first step of the analysis has entailed the definition of the research framework, inspired by the five capitals model and including the identification of tourism actors and circular economy principles. The second step has foreseen the mapping of circularity and sustainability indicators within the tourism sector. Finally, a customized tool able to support the tourism decision-makers in the selection process of CET-KPIs tailored to specific needs has been elaborated.

In addition, ad hoc tool for the collection of a series of information related to partners' territories has been designed and developed. Such template of preliminary partners' information aims at identifying the main characteristics of such areas and accordingly customize circular tourism indicators.

The present document is structured as follows. Firstly, a general overview about the tourism sector is provided in Chapter 2, by discussing the main industry's features, including classification of tourism, tourist's typologies, tourism actors and value chain, as well as tourism assessment by defininig the unit of analysis and the importance of indicators. Chapter 3 deals with the relationship between tourism and sustainability, by introducing the concept of sustainable development, discussing the main impact of tourism activities, defining sustainable tourism and its assessment. The chapter concludes with the presentation of a set of existing best practices related to sustainable tourism at global scale. Chapter 4 presents the concepts of circular economy and circular tourism and its assessment. As done in the previous one, global best practices related to circular tourism are described. Chapter 5 contains the core results of Deliverable 3.3.1, by presenting the INCIRCLE set of circular tourism indicators. Measurement framework, methodology adopted and CET-KPIs dashboard are described.

Then, the preliminary dashboard of indicators are extensively explained, along with future improvements. Chapter 6 shows the characterization of the partners' territories involved in INCIRCLE project through the template *"Partners' territories preliminary information"* and its main results. Conclusions are provided in the last chapter.

2. General overview about Tourism Sector

In order to define the framework within the present activity has been developed, an introductory discussion about the tourism industry has been provided.

2.1 The Tourism Sector

Reaching a common **definition of tourism** is not straightforward. Tourism is a multidimensional and multifaceted activity, which touches many lives and many different economic activities (Cooper et al., 2008). In order to overcome the common perception of tourism as being limited to holiday activity only, the World Tourism Organization (UNWTO) has defined tourism as the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (United Nations 2010).

Tourism is not only conceived as an economic activity, as tourist destinations offer the whole system of culture, nature and historical heritage that make each destination different and competitive. Thus, tourism is not only related to products and services offered, but it represents a means for local prosperity (Nedyalkova 2016). In this sense, *"tourism is foremost a form of economic development which has cultural resources at its foundations. However, it is also a form of development that although bound to economic realities is nonetheless a means by which individuals and societies can access to and gain insight of one another's places and pasts. Through experience, education and enjoyment, tourism can be a liberating vehicle for gaining and exchanging meaning and understanding in an intellectual, emotional and spiritual sense. It is the very movement and exchange of people which differentiates tourism from more mechanistic forms of global trade and economic development"* (Robinson & Picard 2006, p.23).

Tourism operates at various levels and displays various paradoxes and tensions. From one side, tourism sector generates economic benefits in terms of positive impacts on local economies and small businesses, through the creation of jobs and enterprises, export revenues, and infrastructure development. At the same time, tourism can produce negative impacts, by causing environmental damage, pollution, and heritage degradation (Girard & Nocca 2017).

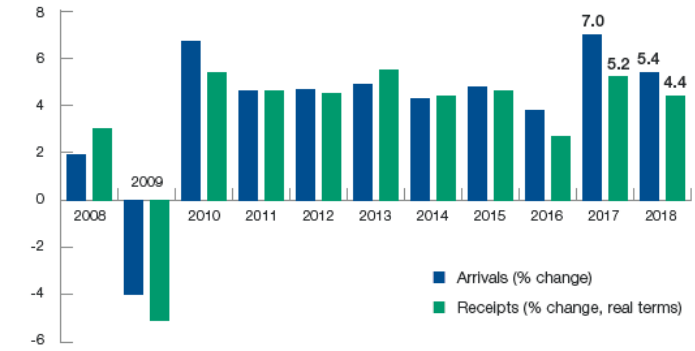
To overcome such issue, tourism sector has the capacity to link economic, social, cultural and environmental dimensions of sustainability and to contribute to their mutual improvement. Since tourism is an economic activity strictly depending on the presence of environments, cultures and communities, social, cultural and environmental impacts represent key challenges for the tourism sector (Girard & Nocca 2017).

2.1.1 Main economic data

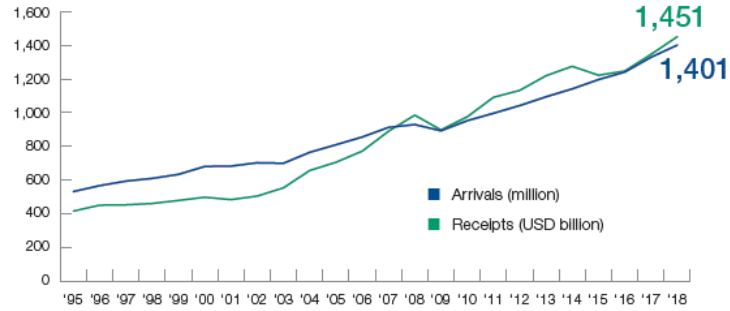
Tourism is recording a **continued expansion** over time, witnessing in 2018 the 9th consecutive year of sustained growth (UNWTO 2019). The sector accounted for 3,6% of global GDP in 2018. Based on current trends, a growth of 3% to 4% has been forecasted in international tourist arrivals worldwide in 2020 (UNWTO 2020).

Tourism has seen continued expansion over time, despite occasional shocks, demonstrating the sector's strength and resilience (UNWTO 2019:b).

Figure 1. International tourist arrivals and tourist receipts
Source: retrieved from UNWTO (2019:b)



International tourist arrivals and tourism receipts (% change)
Source: World Tourism Organization (UNWTO), July 2019.



International tourist arrivals (million) and tourism receipts (USD billion)
Source: World Tourism Organization (UNWTO), July 2019.

International tourist arrivals grew 7.0% in 2017, well above long- term forecast of 3.8% per year for the period 2010 to 2020 (UNWTO 2018). A total of 1,326 million international tourist arrivals were recorded in destinations around the world (UNWTO 2018).

Figure 2. International tourist arrivals
Source: retrieved from UNWTO (2018)

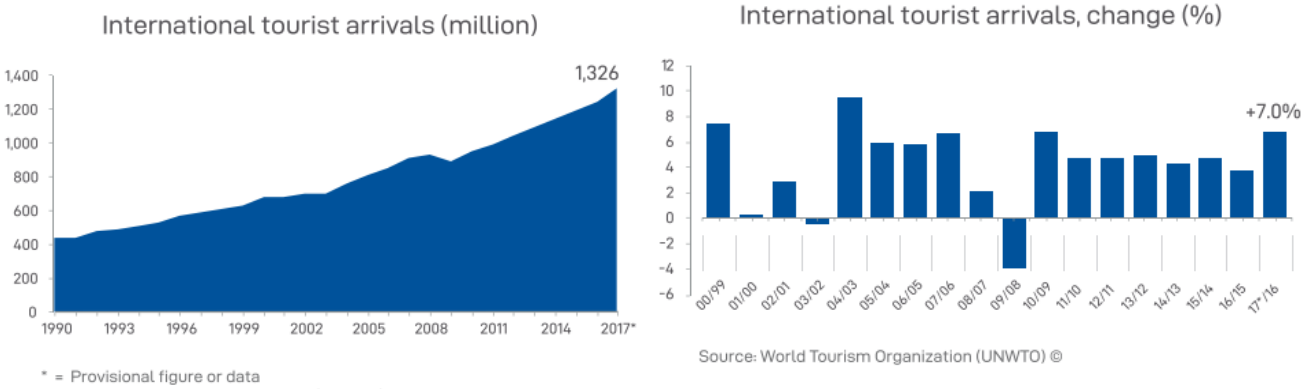
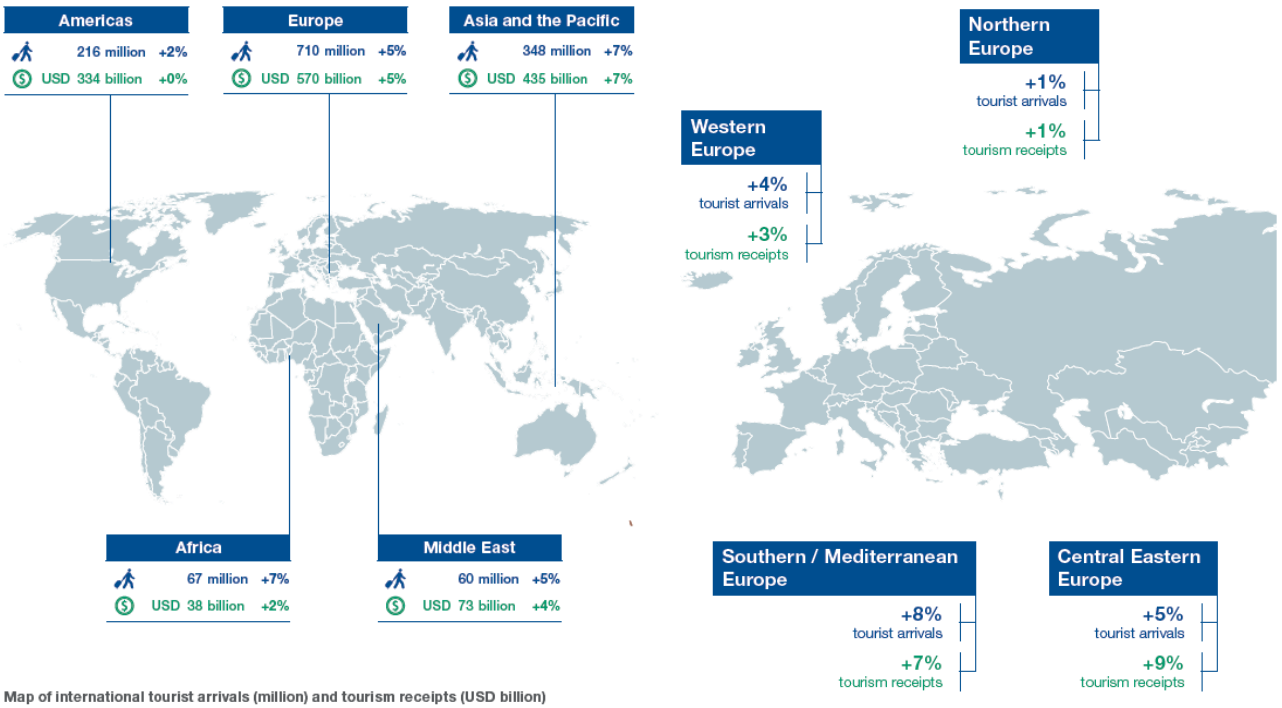


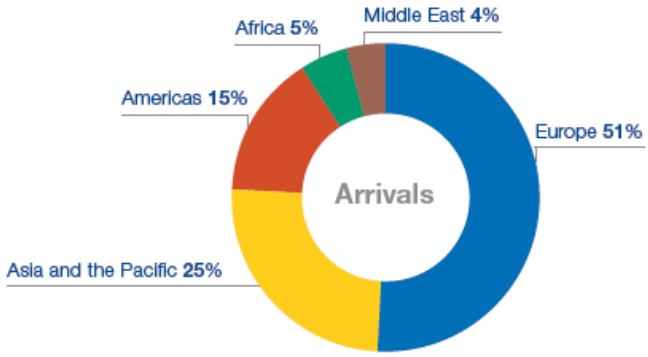
Figure 3. Tourism sector: tourist arrivals (million) and Tourism receipts (USD billion)
Source: retrieved from UNWTO (2019:b)



Map of international tourist arrivals (million) and tourism receipts (USD billion)
Source: World Tourism Organization (UNWTO), July 2019.

On the global scenario, **Europe covers a leading role in Tourism**, accounting for half of the world's international arrivals, recording 51% of market share in 2018 (UNWTO 2019:b). For the same year, Europe has recorded 710 million of tourist arrivals and 570 billion USD. Ranked according to international tourist arrivals, Europe has five destinations within the global top ten: France, Spain, Italy, Germany and United Kingdom (in order of magnitude in 2018). It is interesting to underline that **Southern Mediterranean destinations** led growth, with most destinations enjoying double-digit growth. Among the larger destinations, Italy, Greece, Portugal and Croatia saw robust performance (UNWTO 2019:b).

Figure 4. International tourist arrivals (% share)
Source: retrieved from UNWTO (2019:b)



International tourist arrivals, 2018 (% share)

2.1.2 How many tourism? A classification of tourism

As discussed above, tourism is a multi-dimensional activity with numerous impacts in terms of economic, social, environmental, cultural scale. Such complexity emerges also in relation to tourism classifications, that over time have been provided in order to identify specific and homogeneous groups of tourism.

The International Recommendations for Tourism Statistics (UNWTO 2008) provides a comprehensive methodological framework for collection and compilation of tourism statistics in all countries irrespective of the level of development of their statistical systems. Such document represents the landmark for tourism statistics. Accordingly, the first classification refers to the terms travel and tourism. **Travel** has been defined as the activity of travelers. **Traveler** is someone who moves between different geographic locations for any purpose and any duration. **Tourism** is a social, cultural and economic phenomenon related to the movement of people to places outside their usual place of residence, pleasure being the usual motivation. Tourism is considered a subset of travel and **visitors** are a subset of travelers. A visitor is classified as a **tourist** (or overnight visitor) if his/her trip includes an overnight stay, or as a same-day visitor (or excursionist) otherwise.
More specifically, in relation to a given area (e.g., region, country, groups of countries), three forms of tourism have been identified:

1. **Domestic tourism**, involving residents of the given area traveling only within that area;
2. **Inbound tourism**, involving non-residents traveling in the given area;
3. **Outbound tourism**, involving residents traveling in an area other than the given area.

Furthermore, such three basic forms of tourism may be combined in various ways to derive other forms of tourism (UNWTO 2008), as follows:

a) **Internal tourism**, which comprises domestic tourism and inbound tourism, that is, the activities of resident and non-resident visitors within the country of reference as part of domestic or international tourism trips;
b) **National tourism**, which comprises domestic tourism and outbound tourism, that is, the activities of resident visitors within and outside the country of reference, either as part of domestic or outbound tourism trips;
c) **International tourism**, which comprises inbound tourism and outbound tourism, that is, the activities of resident visitors outside the country of reference, either as part of domestic or outbound tourism trips and the activities of non-resident.

Moreover, a further classification refers to tourism trips according to the main purpose (UNWTO 2008). The main purpose of a trip indicates whether it qualifies as a tourism trip and the traveler qualifies as a visitor. The criterion of the main purposes is based on the main activities undertaken while on the trip. Accordingly, two broad groups are identified:

1. Personal motives. This category encompasses the following sub-groups:
    1.1. Holidays, leisure and recreation
    1.2. Visiting friends and relatives
    1.3. Education and training
    1.4. Health and medical care
    1.5. Religion/pilgrimages
    1.6. Shopping
    1.7. Transit

1.8. Other

2. Business and professional motives. This category includes the activities of the self-employed and employees as long as they do not correspond to an implicit or explicit employer employee relationship with a resident producer in the country or place visited, those of investors, businessmen.

Such taxonomies are fundamental for statistical assessment purposes, since they represent the point of reference at international scale.

Furthermore, recently the World Tourism Organization has formally defined **tourism types** (UNWTO 2019:a). Accordingly, the following classes have been foreseen:

1. **Cultural tourism** is a type of tourism activity in which the visitor's essential motivation is to learn, discover, experience and consume the tangible and intangible cultural attractions/products in a tourism destination. These attractions/products relate to a set of distinctive material, intellectual, spiritual and emotional features of a society that encompasses arts and architecture, historical and cultural heritage, culinary heritage, literature, music, creative industries and the living cultures with their lifestyles, value systems, beliefs and traditions.
2. **Ecotourism** is a type of nature-based tourism activity in which the visitor's essential motivation is to observe, learn, discover, experience and appreciate biological and cultural diversity with a responsible attitude to protect the integrity of the ecosystem and enhance the well-being of the local community. Ecotourism increases awareness towards the conservation of biodiversity, natural environment and cultural assets both among locals and the visitors and requires special management processes to minimize the negative impact on the ecosystem.
3. **Rural tourism** is a type of tourism activity in which the visitor's experience is related to a wide range of products generally linked to nature-based activities, agriculture, rural lifestyle / culture, angling and sightseeing. Rural tourism activities take place in non-urban (rural) areas with the following characteristics:
    - Low population density;
    - Landscape and land-use dominated by agriculture and forestry; and
    - Traditional social structure and lifestyle.
4. **Adventure tourism** is a type of tourism which usually takes place in destinations with specific geographic features and landscape and tends to be associated with a physical activity, cultural exchange, interaction and engagement with nature. This experience may involve some kind of real or perceived risk and may require significant physical and/or mental effort. Adventure tourism generally includes outdoor activities such as mountaineering, trekking, bungee jumping, rock climbing, rafting, canoeing, kayaking, canyoning, mountain biking, bush walking, scuba diving. Likewise, some indoor adventure tourism activities may also be practiced.
5. **Health tourism** covers those types of tourism which have as a primary motivation, the contribution to physical, mental and/or spiritual health through medical and wellness-based activities which increase the capacity of individuals to satisfy their own needs and function better as individuals in their environment and society. Health tourism is the umbrella term for the subtypes wellness tourism and medical tourism.
    a. **Wellness tourism** is a type of tourism activity which aims to improve and balance all of the main domains of human life including physical, mental, emotional, occupational, intellectual and spiritual. The primary motivation for the wellness tourist is to engage in preventive, proactive,

lifestyle-enhancing activities such as fitness, healthy eating, relaxation, pampering and healing treatments.

b. **Medical tourism** is a type of tourism activity which involves the use of evidence-based medical healing resources and services (both invasive and non-invasive). This may include diagnosis, treatment, cure, prevention and rehabilitation.

6. **Gastronomy tourism** is a type of tourism activity which is characterized by the visitor's experience linked with food and related products and activities while travelling. Along with authentic, traditional, and/or innovative culinary experiences, Gastronomy Tourism may also involve other related activities such as visiting the local producers, participating in food festivals and attending cooking classes. Eno-tourism (wine tourism), as a sub-type of gastronomy tourism, refers to tourism whose purpose is visiting vineyards, wineries, tasting, consuming and/or purchasing wine, often at or near the source.
7. **Coastal, maritime and inland water tourism.**
    a. **Coastal tourism** refers to land-based tourism activities such as swimming, surfing, sunbathing and other coastal leisure, recreation and sports activities which take place on the shore of a sea, lake or river. Proximity to the coast is also a condition for services and facilities that support coastal tourism.
    b. **Maritime tourism** refers to sea-based activities such as cruising, yachting, boating and nautical sports and includes their respective land-based services and infrastructure.
    c. **Inland water tourism** refers to tourism activities such as cruising, yachting, boating and nautical sports which take place in aquatic-influenced environments located within land boundaries and include lakes, rivers, ponds, streams, groundwater, springs, cave waters and others traditionally grouped as inland wetlands.
8. **Urban/city tourism** is a type of tourism activity which takes place in an urban space with its inherent attributes characterized by non-agricultural based economy such as administration, manufacturing, trade and services and by being nodal points of transport. Urban/city destinations offer a broad and heterogeneous range of cultural, architectural, technological, social and natural experiences and products for leisure and business.
9. **Mountain tourism** is a type of tourism activity which takes place in a defined and limited geographical space such as hills or mountains with distinctive characteristics and attributes that are inherent to a specific landscape, topography, climate, biodiversity (flora and fauna) and local community. It encompasses a broad range of outdoor leisure and sports activities.
10. **Education tourism** covers those types of tourism which have as a primary motivation the tourist's engagement and experience in learning, self-improvement, intellectual growth and skills development. Education Tourism represents a broad range of products and services related to academic studies, skill enhancement holidays, school trips, sports training, career development courses and language courses, among others.
11. **Sports tourism** is a type of tourism activity which refers to the travel experience of the tourist who either observes as a spectator or actively participates in a sporting event generally involving commercial and non-commercial activities of a competitive nature.

In terms of size of market demand, a further distinction between mass tourism and niche tourism emerges. The first form of **mass tourism** is born in England during the second half of the nineteenth century, when the first company *Thomas Cook & Son* has been established, organizing day trip excursions and international package

tours to the masses. The concept of mass tourism has been defined as pre-scheduled tours for groups of people who travel together with similar purposes (recreation, sightseeing etc.) usually under the organization of tourism professionals (Sezgin and Yolal 2012). The factors behind the success of mass tourism may be ascribed to two broad groups: constitutional and development factors (Sezgin and Yolal 2012). The first one refers to element that boost the constitution process of industrial tourism. The second group of factors includes the role of technology, production and management related changes in the progress. Thus, the relationship between tourism companies, transportation operators and hotels is a central feature of mass tourism.

Figure 5. Factors boosting mass tourism
Source: retrieved from Sezgin and Yolal (2012)

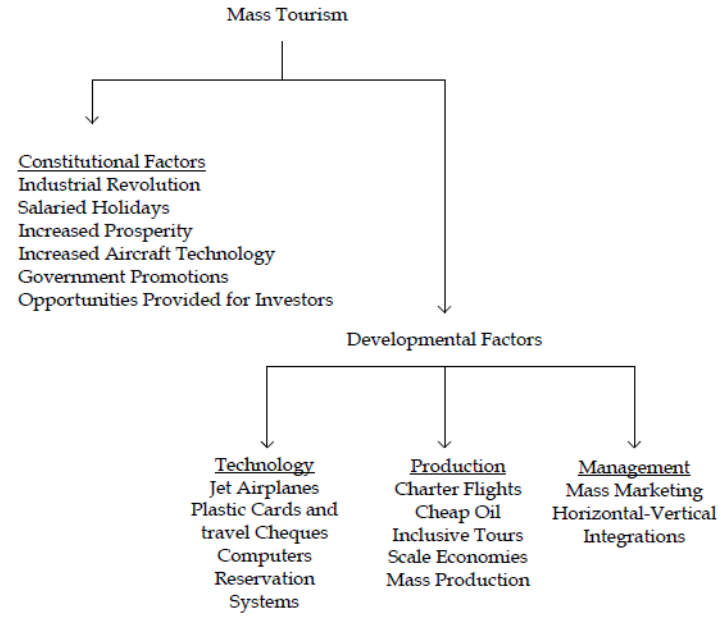


Fig. 2. The Constitutional and Developmental Factors for Mass Tourism in 20th Century

From one side, mass tourism has been related to the perception of ease and comfort for the tourists and the potentially large market base for countries, generating important economic benefits in terms of operators profits, infrastructure development and more. From the other side, over time, the term mass tourism has gained a negative connation, shedding the light on common issues arisen due to the movement of a large number of organized people towards popular holiday destinations for recreational purposes. Most common negative effects are related to environmental impacts, such as overcrowding, air and water pollution, depletion and degradation of natural resources, and litter (Poon 1993) and to social impacts, such as loss of authenticity, standardization and commercialization and destruction of preservation and heritage.

At the opposite of mass tourism, in recent years is emerged the concept of **niche tourism** (or focused tourism), that it implies a more sophisticated set of practices that distinguish and differentiate tourist offer. Niche tourism is defined as catering to the needs of specific markets by focusing on more diverse tourism products and is characterized by its heterogeneous nature with a higher demand for a more distinctive and unique product, born as a consequence of the shift in motivational factors for travelers (Marson 2011). The components in the definition of mass tourism are: i) continuing growth in niche tourism products to what eventually would be described as a mass product; ii) distinct qualities of niche tourism products; iii) importance of niche products

'specialization' of tourism, providing a conduit to access new and
varied markets; iv) market size being smaller and more specific (the product contains attractions that only appeal to a smaller group); v) being a more sustainable approach to tourism development than mass tourism (Marson 2011). Examples (by no means exhaustive) of niche tourism are:

- Adventure tourism
- Agri-tourism
- Cruise tourism
- Culture/heritage tourism
- Dark tourism
- Ecotourism
- Educational tourism
- Indigenous tourism
- Lesbian, gay, bisexual and transgendered (LGBT) tourism
- Medical tourism
- Music tourism
- Religious tourism
- Sports tourism
- Volunteer tourism

Each form of niche tourism mentioned above (as for instance, adventure tourism) may morph into various sub-sections (e.g. mountain tourism) and in turn these may morph into further forms, culminating in micro-niches within an activity (e.g. snowboarding).

Along with niche tourism, **alternative tourism** represents the turning point of conventional mass tourism. Alternative tourism encompasses products and activities that were thought to be more appropriate than conventional mass tourism and may be regarded as an early form of engagement with the idea of sustainability (Weaver 2006). In this regards, deliberate alternative tourism refers to the existence of the regulatory framework that deliberately keeps destinations alternative. Without these regulations, destinations are experiencing 'exploration' or 'involvement'-type, defined as circumstantial alternative tourism (Weaver, 1991). The following table provides a comparison between key characteristics of deliberate alternative tourism and mass tourism as ideal types. It is necessary to explicit that tourism destinations, business or products are leaning towards rather than conforming exactly to one ideal type or the other.

Figure 6. Mass tourism and alternative tourism
Source: retrieved from Weaver (2006)

Table 3.1
Unsustainable mass tourism and deliberate alternative tourism ideal types

Characteristics	Unsustainable mass tourism	Deliberate alternative tourism
Markets		
Segment	Psychocentric to midcentric	Allocentric to midcentric
Volume and mode	High; package tours	Low; FIT arrangements
Length of stay	Brief	Extended
Seasonality	Distinct high and low season	No distinct seasonality
Origins	One or two dominant markets	No dominant markets
Attractions		
Character	Generic, purpose built, 'contrived'	Idiosyncratic, pre-existing, 'authentic'
Emphasis	Highly commercialized	Moderately commercialized
Orientation	Tourists only or primarily	Tourists and locals
Accommodation		
Size	Large scale	Small scale
Spatial pattern	Concentrated; obvious tourism districts	Dispersed; no obvious tourism districts
Density	High	Low
Architecture	Obtrusive international style	Unobtrusive vernacular style
Ownership	Non-local; corporate	Local; community or small business
Economic status		
Tourist receipts	High	Low
Linkages	With non-local sectors	With local sectors
Leakages	High	Low
Multiplier effect	Low	High
Role of tourism	Dominant	Supplementary
Regulation		
Control	Non-local corporate	Local community
Amount	Low	High
Ideology	Free markets	Public intervention
Emphasis	Economic growth; profits	Community well-being
Timeframe	Short-term	Long-term

Source: adapted from Weaver, 1998, Ecotourism in the Less Developed World, CAB International, with permission.

A list of possible subtypes of alternative tourism are depicted in the following figure, on the basis of orientation toward attractions, accommodations or motivations (Weaver 2006). It emerges that many alternative tourism subtypes gravitate toward one of the three criteria, while several combine attraction and motivation. Main subtypes of alternative tourism are:

- Farm-based tourism:
- Volunteer tourism
- Guesthouse tourism
- Backpacking tourism
- Urban alternative tourism
- Education tourism

Figure 7. Types of alternative tourism
Source: retrieved from Weaver (2006)

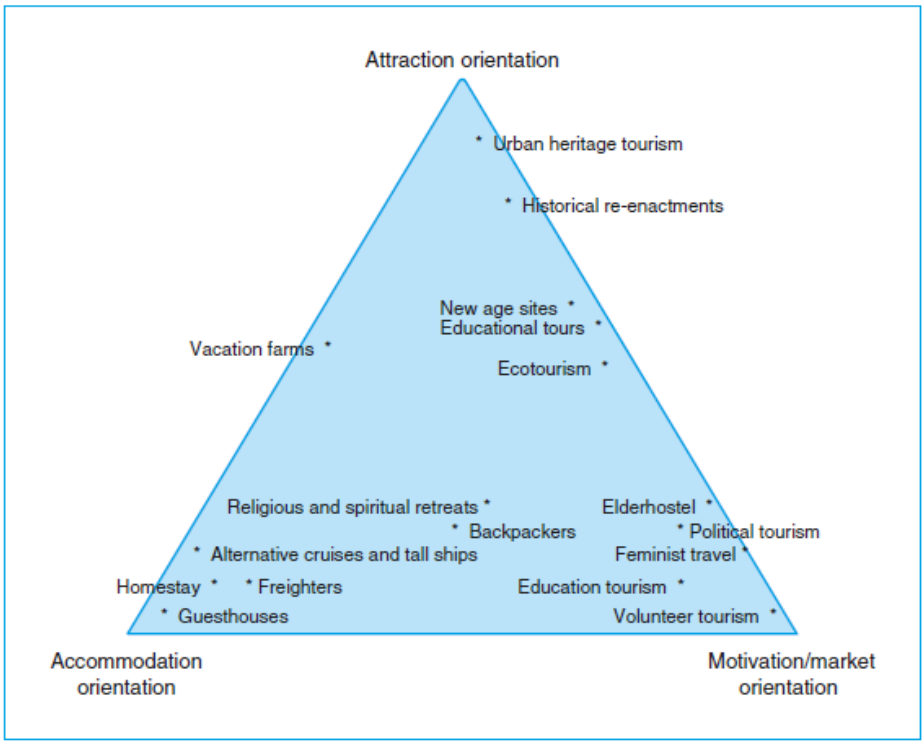


Figure 3.1
Types of alternative tourism.

Profiles of alternative tourism subtypes reveal commonalities as well as distinct characteristics. The vacation farm sector is long established, well organized, found mainly in the more developed countries and fundamentally coexistent with the agriculture sector. In contrast, volunteer tourism is defined by tourist motivation, is controlled mainly by social and environmental non-governmental organizations and is associated with tangible enhancement based accomplishments within local communities.

2.1.3 Classifying tourists' typologies

Similarly to the case of types of tourism, providing a taxonomy of tourists' typologies is not immediate. There exist numerous contributions dealing with tourists' clusters from economics and psychological behaviour studies.

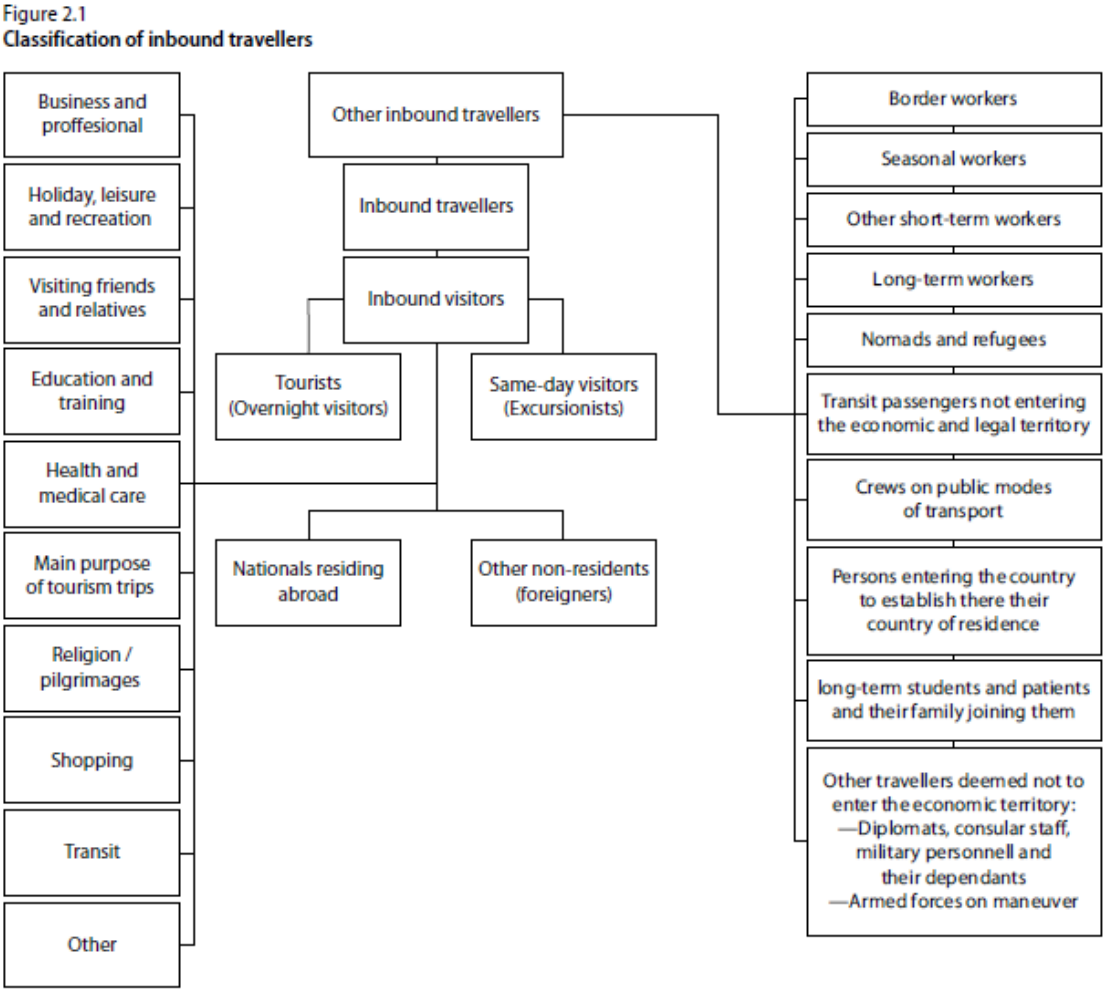
From a statistical assessment perspective, following the definition provided by the International Recommendations for Tourism Statistics (UNWTO 2008), the first distinction to bear in mind is between **visitors** and **other travelers**. The first category includes tourists and same-day visitors, namely a visitor (domestic, inbound or outbound) is classified as a **tourist** (or overnight visitor) if his/her trip includes an overnight stay, or as a **same-day visitor** (or excursionist) otherwise. The category "other travelers" encompasses persons traveling inside their usual environment (e.g., commuters), persons changing their place of residence (e.g., long-term migrants), persons without a fixed place of residents (e.g., nomads), persons traveling to places from which they are remunerated (e.g., seasonal workers), others excluded by convention (e.g., diplomats).
According to this definition, three criteria distinguish visitors from other travelers: 1) the trip should be to a place other than that of the usual environment; 2) the stay in the place visited should not last more than 12 consecutive

months; 3) the main purpose of the trip should be other than the exercise of an activity remunerated from within the place visited.

More specifically, **international traveler** (inbound or outbound) qualifies as an international visitor with respect to the country of reference if: (a) he/she is on a tourism trip and (b) he/she is a non-resident travelling in the country of reference or a resident travelling outside of it. Therefore, there are two categories of international travelers: international visitors (returning outbound visitors in the case of residents or arriving inbound visitors in the case of non-residents) and other international travelers who are not included in tourism.

A **domestic traveler** qualifies as a domestic visitor if: (a) he/she is on a tourism trip and (b) he/she is a resident travelling in the country of reference.

Figure 8. Classification of travelers
Source: retrieved from UNWTO (2008)



According to the socio-psychological literature, tourists have been classified since the 1970s.

In the Plog's psychographics model for tourist typologies (Plog 1974), types of tourists have been delineated according to personality-based, psychographic traits along a continuum with allocentrics on one end of the spectrum and psychocentrics on the other. In the middle of the continuum, mid-centrics are those travelers that have a balanced combination of both psychographic traits. The allocentric tourists seek new destinations, and are prepared to take risks in searching for new cultures and places. On the other hand psychocentric tourists

seek the familiar, and are happier in an environment where there
are many likeminded tourists. They are not risk takers and adhere to the proven product, being conservative in choice.

In the same years, Cohen (1972), a sociologist of tourism, classified tourists into four types, based on the degree to which they seek familiarity and novelty. According to this taxonomy, it exist two non-intitutionalized types as drifter and explorer, and two institutionalized types, namely organized mass tourists and individual mass tourists.

1. Organized mass tourist. Such category refers to the least adventurous tourists and remains largely confined to their "environmental bubble" throughout their trip. They adhere to an itinenary fixed by the tour operators, and even their trips out of the complex are organised tours. They make few decisions about their holiday.
2. Individual mass tourist. This type of tourist role is similar to the previous one, except that the tour is not entirely preplanned, the tourist has a certain amount of control over his time and itiner- ary and is not bound to a group.
3. Explorer. This type of tourist arranges the trip alone; trying to get off the beaten track as much as possible, but using comfortable accommodations and reliable means of transportation.
4. Drifter. This type of tourist has no fixed itinerary or timetable and no well-defined goals of travel. Drifter is immersed in host culture. Novelty is here at its highest, familiarity disappears almost completely.

Furthermore, Cohen (1979) proposed a phenomenological typology of tourist experiences based on the so called “quest for the centre”, namely the degree of interest and appreciation of culture, social life and natural environment of others. Five main modes of tourist experiences have been identified:

1. Recreational mode. The emphasis of the tourist is on physical recreation.
2. Diversionary mode. Tourist loses recreational significance and aims at escaping from everyday life at home.
3. Experiental mode. Tourist looks for authentic experiences.
4. Experimental mode. Tourist’s desire is to be in contact with local people.
5. Existential mode. Tourist aims to become totally immerse in the culture and lifestyles of the destination.

Furthermore, Smith (1977) described the demographic aspects of tourism, according to the following levels:

1. Explorers. This groups includes a very limited number of people looking for discovery and involvement with local people, traveling as anthropologist.
2. Elite. This category encompasses special individually tailored visits, generally very expensive.
3. Off-beat. In this group are included tourists that aim to get away from the crowds of other tourists.
4. Unusual. It consists in making side trips from organized tours to experience local culture.
5. Incipient mass. Such group includes a steady flow travelling alone or in small organized groups using some shared services in destinations where tourism is not totally dominant.
6. Mass. Mass tourists generally expect the sane things they are used to at home and this category encompasses the general packaged tour market leading to tourist enclaves overseas.
7. Charter. It consists in mass travel to relaxion destinations which incorporate as many standardized western facilities as possible, with food, entertainment and accommodation standards tourists expect.

Later, during the 1990s, a broader sets of typologies have been constructed, bridging the links between lifestyle and consumption patterns (Gratton 1990; Cooper et al. 1998; Shaw and Williams [2002).

In addition, emerging environmental concerns have been included into tourists' typologies in relation to alternative tourism, such as ecotourists or green tourists (Smith and Eadington 1992). Even if in literature the definition of ecotourists is still debated (Wight 2001), a common agreement is emerging regarding the three criteria related to ecoturism: 1) ecotourism attractions should primarily involve the natural environment; 2) the interaction between the ecotourist and the environmental attraction should be based on education, learning, and appreciation; 3) ecotourism is expected to be environmentally, socioculturally, and economically "sustainable" (Weaver & Lawton 2002). The current literature broadly distinguishes between hard, soft, and intermediate ecotourists on the basis of their level of environmental commitment and affinities with wildernesstype experiences (Weaver & Lawton 2002).

Moreover, tourists categorizations may encompass further typologies according to different criterion of analysis. Other tourist types may include (by no means exhaustive):

- Cultural tourist
- Leisure tourist
- Adventure tourist
- Health tourist
- Business tourist
- Youth traveler/ backpacking tourist
- Sun-and-sand tourism
- Winter tourism

2.1.4 Tourism Actors

The tourism sector is characterized by the coexistence of numerous different actors, working at different levels of the value chain and providing specific services to tourists. In order to identify such categories of actors, it is deemed necessary to discuss the definition of tourism destinations and tourism products.

Following the definition contained in the International Recommendations for Tourism Statistics (IRTS) (UNWTO 2008), a **destination** of a tourism trip is defined as the place visited that is central to the decision to take the trip and a **tourism product** is a combination of different aspects, such as for instance characteristics of the places visited, modes of transport, types of accommodation, specific activities at destination, around a specific centre of interest, such as nature tours, life on farms, visits to historical and cultural sites, visits to a particular city, the practice of specific sports, the beach, etc.
Moving beyond the statistical definition, a **tourism destination** has been defined as *"a physical space with or without administrative and/or analytical boundaries in which a visitor can spend an overnight. It is the cluster (co-location) of products and services, and of activities and experiences along the tourism value chain and a basic unit of analysis of tourism"* (UNWTO 2019:a, p.14). Similarly, a **tourism product** is *"a combination of tangible and intangible elements, such as natural, cultural and man-made resources, attractions, facilities, services and activities around a specific center of interest which represents the core of the destination marketing mix and creates an overall visitor experience including emotional aspects for the potential customers"* (UNWTO 2019:a, p.18).

On the basis of the IRTS (UNWTO 2008), the Tourism Satellite Account: Recommended methodological framework (TSA) (UNWTO 2010) provides the classification of products by foreseeing two main groups:

consumption products and non-consumption products. With regards to consumption products, **tourism-related products** consists of two subcategories: tourism characteristic products and tourism connected products (UNWTO 2008).

Tourism characteristic products are those that satisfy one or both of the following criteria:

1. Tourism expenditure on the product should represent a significant share of total tourism expenditure (share-of-expenditure/demand condition);
2. Tourism expenditure on the product should represent a significant share of the supply of the product in the economy (share-of-supply condition). Therefore, tourism characteristic activities are the activities that typically produce tourism characteristic products.

Tourism connected products encompass a list of products country specific.

Figure 9. Classification of products: consumption and non-consumption products
Source: retrieved from UNWTO (2010)

A. **Consumption products**:
A.1. **Tourism characteristic products** comprising two subcategories:
A.1.i. *Internationally comparable tourism characteristic products*, which represent the core products for international comparison of tourism expenditure;
A.1.ii. *Country-specific tourism characteristic products* (to be determined by each country by applying the criteria mentioned in IRTS 2008, para. 5.10, in their own context). For both products mentioned above, the activities producing them will be considered as tourism characteristic, and the industries in which the principal activity is tourism characteristic will be called tourism industries;
A.2. **Other consumption products** made up of two subcategories, both to be determined by each country and, consequently, country-specific:
A.2.i. *Tourism connected products* comprising other products according to their relevance for tourism analysis but that do not satisfy the criteria mentioned in IRTS 2008, para. 5.10;
A.2.ii. *Non-tourism-related consumption products comprising* all other consumption goods and services that do not belong to the previous categories.
B. **Non-consumption products**: This category includes all products that by their nature cannot be consumption goods and services and, therefore, can neither be a part of tourism expenditure, nor a part of tourism consumption, except for valuables that might be acquired by visitors on their trips. Two subcategories are defined:
B.1. **Valuables** (see IRTS 2008, para. 4.2);
B.2. **Other non-consumption products** comprising those products associated with tourism gross fixed capital formation and collective consumption.

Figure 10. Tourism characteristic consumption products and tourism characteristic activities
Source: retrieved from UNWTO (2010)

Figure 3.1
List of categories of tourism characteristic consumption products and tourism characteristic activities (tourism industries)

Products	Activities
1. Accommodation services for visitors	1. Accommodation for visitors
2. Food- and beverage-serving services	2. Food- and beverage-serving activities
3. Railway passenger transport services	3. Railway passenger transport
4. Road passenger transport services	4. Road passenger transport
5. Water passenger transport services	5. Water passenger transport
6. Air passenger transport services	6. Air passenger transport
7. Transport equipment rental services	7. Transport equipment rental
8. Travel agencies and other reservation services	8. Travel agencies and other reservation services activities
9. Cultural services	9. Cultural activities
10. Sports and recreational services	10. Sports and recreational activities
11. Country-specific tourism characteristic goods	11. Retail trade of country-specific tourism characteristic goods
12. Country-specific tourism characteristic services	12. Other country-specific tourism characteristic activities

Within this framework, the definitions of tourism industry and establishments have been provided.
A *tourism industry* is the grouping of the establishments whose main activity is the same tourism characteristic activity. In supply-side statistics, establishments are classified according to their main activity, which is determined by the activity that generates the most value added. Furthermore, an *establishment* is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (UNWTO 2010 p.39).

In relation to **types of accommodations**, they may be provided on a commercial (market) basis as a paid service, and on a non-commercial (non-market) basis, namely as a service provided by family, friends or relatives, without charge, or on own account (owner occupied vacation homes).

Similarly, according to the Methodological manual for tourism statistics (Eurostat 2014), four statistical units have been identified in relation to accommodation statistics:

1. Enterprise (e.g. hotel chain);
2. Establishment (local unit);
3. Local kind-of-activity unit (KAU);
4. Dwelling used for non-rented accommodation to visitors.

In this way, there exist two broad categories of accommodations: non-rented and rented accommodations.
In the case of **non-rented accommodations**, the statistical unit is the dwelling where a visitor (on a tourism trip) can stay without charge.
Tourist accommodation establishments provide as a paid service short-term or short-stay accommodation services and are grouped according to NACE Rev. 2 classification as follows:

- 55.1 (hotels and similar accommodation);
- 55.2 (holiday and other short-stay accommodation);
- 55.3 (camping grounds, recreational vehicle parks and trailer parks).

Hotels and similar accommodations (NACE 55.1) includes the provision of accommodation, typically on a daily or weekly basis, principally for short stays by visitors. This group includes hotels and bed & breakfast, resort hotels, suite/apartment hotels and motels. Such accommodations offer as standard services daily cleaning and bed-making and additional services may be provided, such as food and beverage services, parking, laundry services,etc.

Holiday and other short-stay accommodations (NACE 55.2) encompass the provision of accommodation, typically on a daily or weekly basis, principally for short stays by visitors, in self-contained space consisting of complete furnished rooms or areas for living/dining and sleeping, with cooking facilities or fully equipped kitchens. This group includes holiday homes for children and other holiday homes, visitor flats and bungalows, cottages and cabins without housekeeping services, youth hostels and mountain refuges.

The third group (NACE 55.3) include the provision of accommodation in campgrounds, trailer parks, recreational camps and fishing and hunting camps for short stay visitors and the provision of space and facilities for recreational vehicles.

In relation to **modes of transport**, it usually refers to the main mode used by the visitor on the trip (UNWTO 2008), as for instance:

1. The mode on which the most miles/kilometres are travelled;
2. The mode on which most time is spent;
3. The mode which has the highest share of the total transport cost

Figure 11. Classification of modes of transport
Source: retrieved from UNWTO (2008)

Figure 3.2
Standard classification of modes of transport

Major groups	Minor groups	
1. Air	1.1.	Scheduled flight
	1.2.	Unscheduled flight
	1.3.	Private aircraft
	1.4.	Other modes of air transport
2. Water	2.1.	Passenger line and ferry
	2.2.	Cruise ship
	2.3.	Yacht
	2.4.	Other modes of water transport
3. Land	3.1.	Railway
	3.2.	Motor coach or bus and other public road transportation
	3.3.	Vehicle rental with driver
		(i) Taxis, limousines and rental of private motor vehicles with driver
		(ii) Rental of man or animal drawn vehicles
	3.4.	Owned private vehicle (with capacity for up to 8 persons)
	3.5.	Rented vehicle without operator (with capacity for up to 8 persons)
	3.6.	Other modes of land transport: horseback, bicycle, motorcycle, etc.
	3.7.	On foot

2.1.5 The Value Chain of Tourism Sector

The tourism industry, as part of the service sector, is the set of all business activities which serves the needs tourists while they visit different places by way of tourism, touring or travelling. Tourism industry therefore can be defined as the set of industries which make possible travelling for different purposes and to different places, by providing infrastructures, products and services. Tourism industry is all about providing necessary means to assist tourists throughout their travelling.

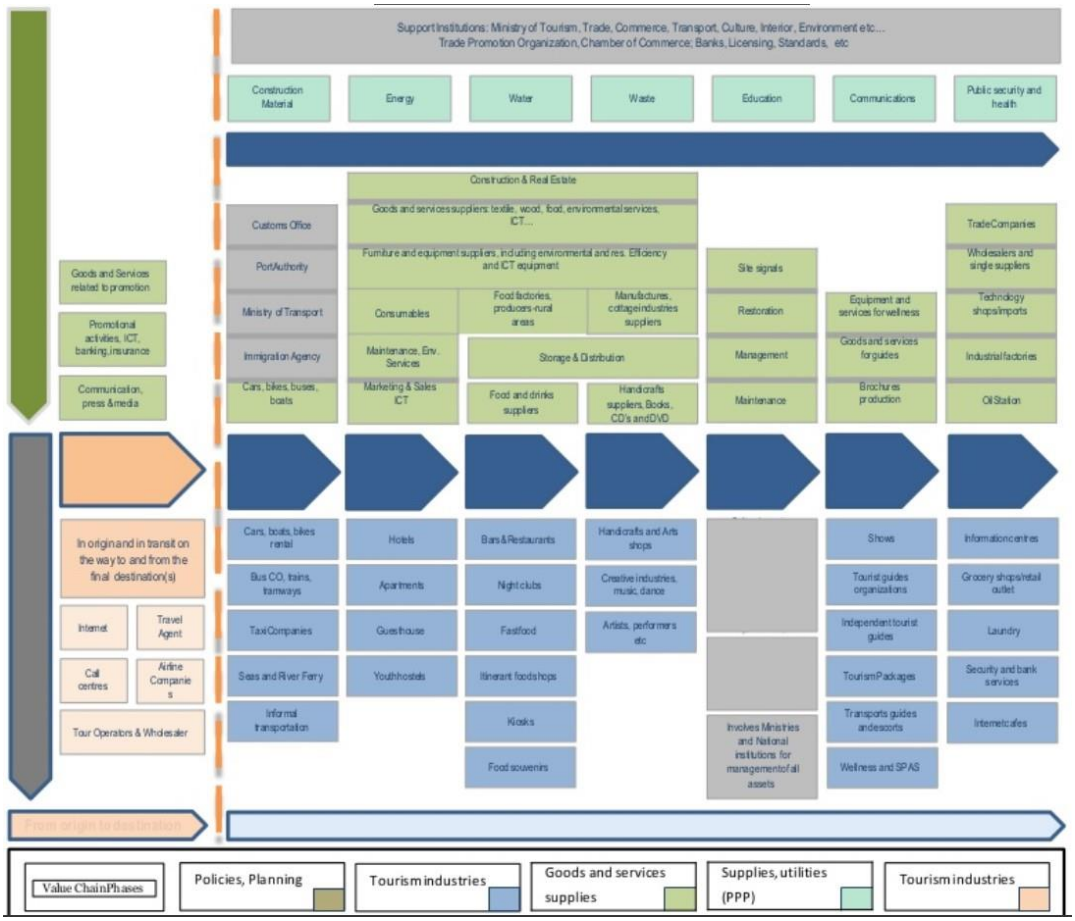
From a demand side, the tourism industry refers to tourists and tourism markets that make use of tourism products and/or services. As largely discussed in the previous paragraph, numerous typologies of tourists do exist, most of them recently emerged due to new needs and changes in personal and behavioral attitudes.

From a supply side, all the industries which provide products and services for tourists are included in tourism industry. *"The supply chain comprises the suppliers of all the goods and services that go into the delivery of tourism products to consumers. It includes all suppliers of goods and services whether or not they are directly contracted by tour operators or by their agents (including ground handlers) or suppliers (including accommodation providers)"* (Tapper & Font 2004). Tourism supply chains involve many components, not limited to accommodation, transport and excursions, including also bars and restaurants, handicrafts, food production, waste disposal, and the infrastructure that supports tourism in destinations. As all other supply chains, tourism operates through business-to-business relationships with the relevant distinction that, in case of tourism, tourists travel to the product, and the product that they buy has a particularly high service component, involving a higher proportion of people in the production of the holiday experience (Tapper & Font 2004).

Since the industry of tourism operates through a vast network of inter-connected and related industries, its **supply chain** is very broad and widespread across industries and sectors. Consequently, existing literature is plenty of contributions related to the definition of tourism supply chain.

According to the definition provided by the World Tourism Organization (2019), the **tourism value chain** is *"the sequence of primary and support activities which are strategically fundamental for the performance of the tourism sector. Linked processes such as policy making and integrated planning, product development and packaging, promotion and marketing, distribution and sales and destination operations and services are the key primary activities of the tourism value chain. Support activities involve transport and infrastructure, human resource development, technology and systems development and other complementary goods and services which may not be related to core tourism businesses but have a high impact on the value of tourism"* (UNWTO 2019:a, p.20).

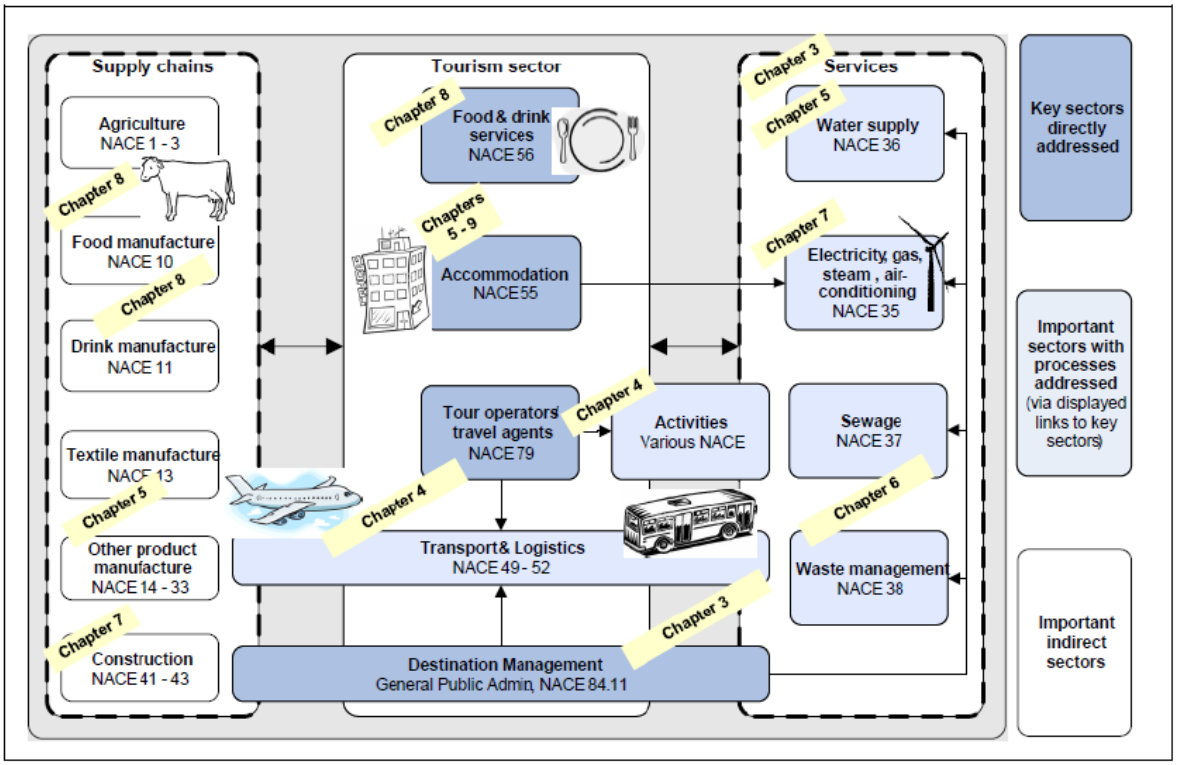
Figure 12. Tourism value chain
Source: retrieved from UNWTO (2016)



In addition, tourism value chain may consist of a set of actors interlinked with a variety of other sectors (Styles et al. 2013). In terms of tourism as a product, the activities that a tourist participates in whilst on holiday are also an important part of the tourism value chain, and are of potential environmental interest. Such representation results interesting as it includes three level of analysis:

1. the first one is defined as “important indirect sectors” and encompasses a series of industries connected with the tourism industry within the supply chain, as agriculture, food and drink manufacture, textile manufacture, construction;
2. the second one, defined as “key sectors”, refers to the tourism sector itself with the classical four activities of analysis: food and drink sectors, accommodation, tour operators and travel agents, transport and logistics;
3. the third level, defined as “important sectors”, regards the services related to tourism industry: water supply, electricity, gas, steam and air-conditioning, sewage and waste management.

Figure 13. Tourism value chain
Source: retrieved from Styles et al. (2013)



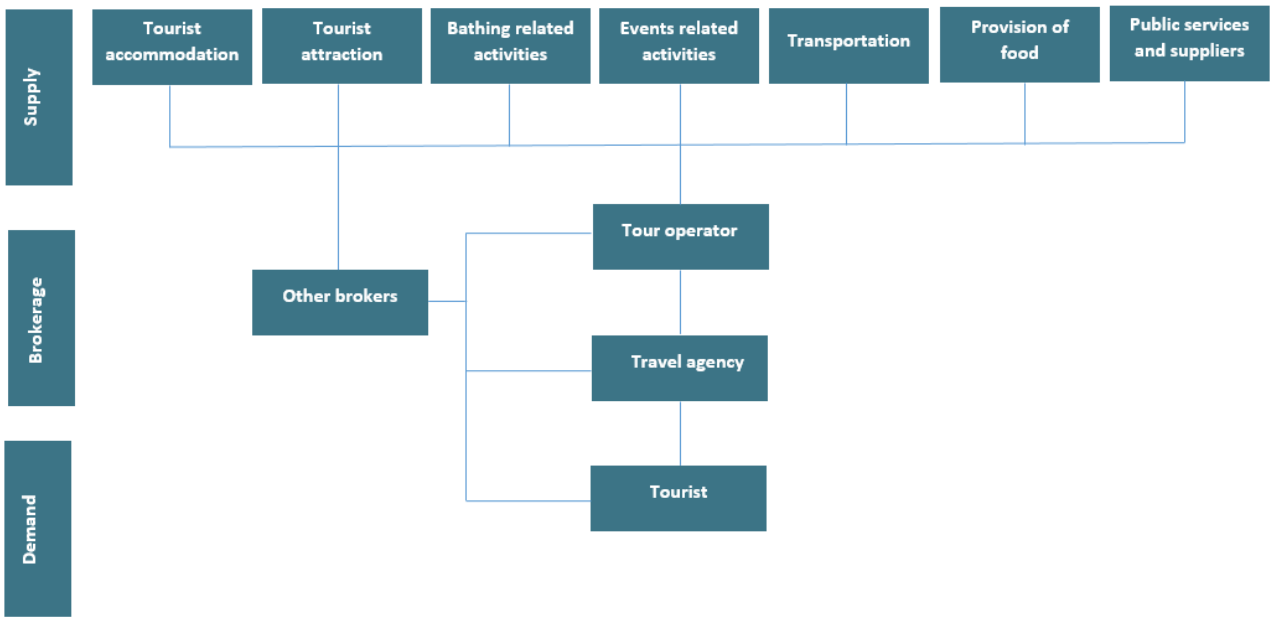
Overview of inputs and outputs of the tourism sector

Other scholar proposes that the tourism supply chain is constituted by the tourism companies as a whole, that is the way through which the goods and services reach the end customer (Garibaldi 2008). Such definition relies on the identification of **tourism businesses** as those companies related to activities organized for tourists, namely **economic operators** and **tourist brokerage**. The first group includes all the companies, active in multiple sectors, that provide services to the end customers in the destinations. The second group encompasses all the companies that in different way allow demand and supply to meet (Garibaldi 2008). Within such definition, the following main typologies of tourism businesses are identified:

- Tourist accommodation: any facility that regularly (or occasionally) provides overnight accommodation for tourists;
- Tourist attraction: private or public companies managing the attractions are part of this group, as for instance museum or archaeological park management companies;
- Bathing related activities: companies managing bathing establishments or structures for nautical Tourism are part of such category;
- Events related activities: this group encompasses all the companies operating in the organization of congresses, fairs and more;
- Transportation: it includes air, sea, rail and road transport;
- Provision of food: companies serving food and drinks as restaurants and bar;
- Public services supporting Tourism: it includes public bodies operating at local, regional and national level for Tourism promotion, coordination and control;
- Suppliers: any suppliers of the above mentioned categories have to be considered, as for instance catering and laundry services, consultants and more.

Figure 14. Tourism supply chain

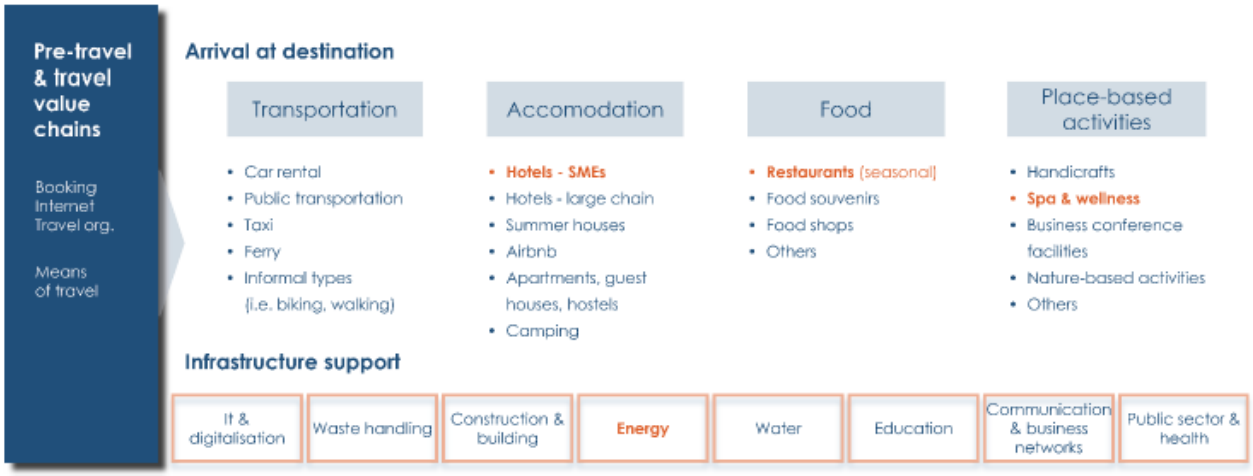
Source: adapted from Garibaldi (2008)



Other researchers propose a representation of the tourism value chain with a specific focus on the phase of arrival at destination, by involving the classical four main tourism activities: transportation, accommodation, food and place-based activities (Manniche et al. 2017). Such interpretation of value chain does not include pre-travel activities and travel value-chains.

Figure 15. Tourism supply chain
Source: retrieved from Manniche et al. (2017)

Figure 4: CIRTOINNO focus areas within the tourism value chain



Source: own depiction based on a classic tourism value chain structure.[10]

Many other scholars attempted to define a tourism supply chain (TCS). According to Kaukal et al. (2000), a typical Tourism value chain consists of four components: tourism supplier, tour operator, travel agent and customer, which are in a single linked chain. Yilmaz and Bititci (2006) develop a Tourism value chain model to manage the Tourism product as an end-to-end seamless entity. Still others offer a definition that encompasses the suppliers of all the goods and services that converge into the delivery of Tourism products to consumers (Tapper and Font 2004). A comprehensive definition of Tourism supply chain is the one provided by Zhang et (2009) as a network of Tourism organizations engaged in different activities ranging from the supply of different components of Tourism products/services such as flights and accommodation to the distribution and marketing of the final Tourism product at a specific Tourism destination, and involves a wide range of participants in both the private and public sectors.

2.2 Assessment of Tourism

Tourism, as described in previous paragraphs, represents a complex phenomenon. "Tourism" can be configured, indeed, as a blanket term under which we strive to include an incredible number of entities, behaviors, activities, sectors or subjects, all more or less related to the movement of people across places or countries. Despite this complexity, a wealth of actions, strategies, policies, at local or global level, depend on some kind of measurement of the phenomenon or of its effects (UNStats, 2008a; Baggio, 2008; Baggio, 2018). Measuring Tourism is necessary for designing marketing strategies, strengthening inter-institutional relations, evaluating the efficiency and effectiveness of management decisions (UNStats, 2008a).

Now, whenever an action is needed or wanted that concern a phenomenon or a system, our cultural tradition call for the need of a definition of the object and some measurement of its characteristics and evolution in time. This is what we mean by "scientific" approach (Andersen & Hepburn, 2016). When Tourism comes into play, however, we have to consider several difficulties that come, essentially, from the fact that we deal with complex adaptive systems. The complexity derives not much from the number or diversity of the items we consider, but rather from the characteristics of the phenomenon and its associated systems, that are relatively easy to recognize. They consist, essentially, of the presence of a certain (large) number of components of different nature that have often non-trivial relationships between them and with the external environment, and whose evolution (individually and as a group) is highly sensitive to the initial conditions.

In the following paragraphs we examine the most common approaches and methods used in the Tourism domain for measuring its aspects and impacts (mainly economic) and discuss their limitations.

2.2.1 Defining the Unit of Analysis

There is a widespread conviction that managing, governing, controlling or simply understanding phenomena, cannot be achieved without some kind of quantitative measurement, especially since our socio-economic environment has become heavily performance oriented. In Tourism this translates into the need of unified data-driven bases for making decisions, designing plans and strategies, be accountable of the investments made (Baggio, 2018).

Whether real objects or abstract models, an obvious prerequisite for the measurability is the possibility to define the object of study or at least to frame it by delimiting what we want to measure. In many cases (especially psychology or social sciences) this is not possible; therefore, we resort to an operationalization process that allows expressing fuzzy or ill-defined concepts so that they become measurable and understandable in terms of empirical observations. Then, the act of measuring essentially consist of the assignment of a number to a certain feature, object or event so that it can be compared with others (Stevens, 1946).

Modern measurement theory calls for two important characteristics: *accuracy*, the absence of systematic errors, and *precision*, the smallness of random measurement errors. In other words, measurements are accurate if they are close to the *true* value of what we measure, and precise if all measurements of a quantity are close to each other (Tal, 2016).

Defining Tourism is a complicated matter. Actually, as well known,
the discussion on "what is Tourism?" and on what elements should be considered as belonging to this domain is quite old and many works have been devoted to the analysis of the problem. Practically any book on the subject start with a chapter in which it is possible to find some discussion on these difficulties followed by what a scientist would call an *operational definition*. The fact is that a formal conceptual definition does not exist, and probably will never exist, so we need to resort to something that can allow some kind of practical treatment, mainly for what concerns the decision on what to consider and therefore measure (Baggio, 2018).

This is the case of UNWTO which defines Tourism as comprising: "the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited." (UNStats, 2008a and 2008b) Even in this case, however, the fuzziness of the terms used poses a number of issues for an *accurate* and *precise* measurement of the phenomenon, for what attains to both the 'tourists' and the entities that provide products and services (that which many call 'the Tourism Industries'). In the latter case, for example, not having a common, shared and agreed, delimitation generates an incredible and often non compatible variety of classifications, so that, practically, no country has been able to clearly and fully define what elements (companies, groups, services, products) belong to the *Tourism sector* and no easy way of measuring the activities exist (Baggio, 2018).

However, even in this situation many methods have been devised for assessing the extent and the impacts of Tourism in a geographically (or administratively) defined area.

One of the most common approaches adopted by many national and international organizations, such as UNWTO, EUROSTAT and the UN statistical division, is that to use an economic terminology, describing the Tourism Sector in terms of demand and supply (UNStats, 2008a and 2008b; EUROSTAT 2014).

Demand is made of all those travelling to some place (tourists and destination). As a demand-side phenomenon, the economic contribution of Tourism has to be approached from the activities of visitors and their impact on the acquisition of goods and services (UNStats, 2008a and 2008b; EUROSTAT, 2014). It can be measured by taking into account four elements: people (tourists), money (expenditure, receipts), time (stays and travels durations) and space (distances, lengths of trips) (UNStats, 2008a and 2008b; EUROSTAT, 2014). The first two classes of measurements are by far the most common (Baggio, 2018).
However, the Tourism can also be viewed from the supply side, and it will then be understood as a set of productive activities that cater mainly to visitors or for which an important share of their main output is consumed by visitors (UNStats, 2008a).

According to Baggio, 2018, despite the efforts of many national and international, though, sources and collection methods for demand data differ, often substantially, across countries. Data come often from border counts (police, immigration), supplemented by surveys at entry points (airports, ports); in other cases, measurements are taken at Tourism accommodation establishments. In some cases, peculiar areas are sampled and the results extended by estimation, in other cases counts reflect an actual coverage of all the establishments. Moreover, same people may be counted several times if they travel across a country and stay at different accommodations. In addition, most of the collection procedures are performed at some local level and must then be aggregated, following the administrative hierarchy, with all the issues related to possible transcription errors, missing items

or wrong assessments. Biaggio (2018) also highlights that the issues are the same for both international and domestic travels.

When it comes to measuring the supply side of Tourism, the situation is even more complicated. One of the reasons is that Tourism is mainly a consumption phenomenon; the supply side is defined and measured in terms of the demand side. In other terms demand guides the identification of its suppliers, and the characteristics of Tourism supply may vary greatly from destination to destination. Moreover, in a single place the distinction between Tourism and non-Tourism activities can be extremely difficult since there is no possibility to separate fully these types of activities. We can only resort to the Classification of Tourism Activities proposal, put forward by the UN Statistical Division, that attempts to classify activities distinguishing those that would not exist without travels and those that continue to exist even if there were no travel, albeit at a reduced level (UNStats, 2008a). However, in most cases supply is measured by resorting to counts of accommodation or catering (food and drink) companies thus excluding many components of the Tourism system from the national statistics when Tourism is considered. It is no surprise then to find that the supply side of Tourism has not received much attention and that, apart from routine counts (hotels, travel agents and similar establishments), not much is done for measuring this component in its entirety (Baggio, 2018).

As previously anticipated, other types of approaches to describe Tourism in order to assess its characteristics, flows and behaviors to support the development of actions, strategies, policies, at local or global level, have been developed. According to many scholars three levels of investigations can be individuated within Tourism, even if these scholars are not fully concordant about the definition of such scales: macro, meso and micro levels (Cooper and Hall, 2008; Cunha & Cunha 2005; Styles et al. 2013; Paniccia and Baiocco 2019; Weaver 2006 and 2014). These levels can support the development of proper metrics or measurement approaches, relevant for Tourism.

Cooper and Hall (2008) propose an approach based on three levels of analysis to investigate the factors that determine the patterns, flows and behaviors of contemporary tourists (Table 3). In relation to this, at **macro-level** the analysis is based on the movement of people in aggregate form, focusing on the spatial aspects of Tourism, i.e. tourist patterns and flows, and on different forms of Tourism, i.e. broad accounts of Tourism that have been defined on the basis of activity or cultural and social trends as well as the way the social, economic and technological structures influence how people travel and consume. **Micro-level** analyses of Tourism explain individual tourist behaviors on the basis of theories of tourist psychology and motivation as well as growing interests in the habits of Tourism consumers. The **meso-level** integrates aggregate and individual accounts of tourist behavior, i.e. by including the use of time-geography techniques that chart the movement of individuals over space and time as well as the means by which social practices and consumer culture affect tourist behavior and consumption.

Figure 16. Scales of analysis of tourism
Source: retrieved from Cooper and Hall (2008)

Table 3.1: Scales of analysis of tourism

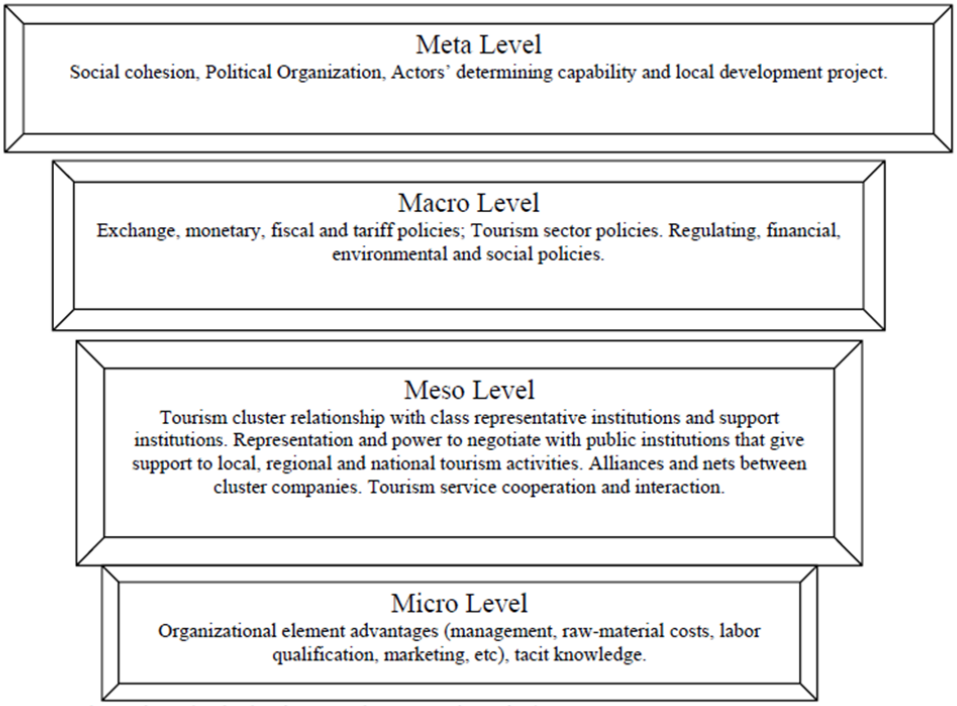
Scale of analysis and description of tourism	Focus	Key concepts
Macro	Aggregate	• Distribution, Patterns, Flow • Activity • PEST (political, economic, environmental, socio-cultural and technological trends) • Socio-technical regimes (also referred to as socio-technological regimes)
Meso	Combines aggregate and individual analysis	• Mobility, trip stage, life course, travel career, socialisation, practices
Micro	Individual	• Personality, psychographics/lifestyle • Motivation, expectation, satisfaction • Habits

From a study regarding the measure of the impact of Tourism on local development (Cunha & Cunha 2005), four levels of analysis have been identified (see the following Figure):

1. **Meta level**: comprising socio-cultural factors that define the articulating ability of social actors to formulate strategies and policies demanded by local society;
2. **Macro level**: macroeconomic strategies and stability determined by policies: fiscal, monetary, foreign exchange, commercial and competition policies;
3. **Meso level**: supporting structures that facilitate interaction and cooperation among companies (suppliers, customers and competitors), R&D institutions, financial supports institutions, support and disclosure institutions (marketing, exports, fairs, etc.), labor training and training institutions and infrastructure (transport, communications and energy);
4. **Micro level**: the capability of a company or company net to be competitive by offering goods and services that optimize cost efficiency relationships, quality and variety and the capability to respond to new market opportunities and changes.

Figure 17. Tourism cluster systemic competitiveness levels
Source: retrieved from Cunha and Cunha (2005)

Figure 2: Tourism Cluster Systemic Competitiveness Levels



Source: the authors (and Altenburg et al., 1998, adaptation).

Furthermore, an in-depth report about the best environmental management practices in the Tourism sector (Styles et al. 2013) presents an analysis covering the whole value chain of the Tourism sector, from supply chain to services provided. Even in this case, a multiple level approach has been used. The **micro level** is represented by economic operators active in the Tourism sector, **meso level** is applied to the range of relationships that take place within the Tourism sector and represents the Tourism itself and the **macro level** refers to the upper scale, namely municipality, region, country (compressively recognizable as Destination).

More generally, **a tourism destination is a complex social organization, that to be managed needs multiple levels of intervention: micro scale (companies), meso scale (territories) and macro scale (destination).** Likewise, tourist businesses are complex social entities within which multiple organizational and decision-making levels are identified: micro scale (operations), meso scale (management) and macro scale (governance) (Paniccia and Baiocco 2019). Numerous studies confirmed the virtuous relationship between tourist destination competitiveness and sustainable Tourism development (Weaver 2006 and 2014). Accordingly, Tourism sustainability can be achieved at certain conditions of tourist intensity, as for instance relationship between tourist presence and residents, number of Tourism workers, accommodation capacity and average stay, and regulation, as for instance Tourism legislation, laws on safeguarding natural environment, respect of residents' needs, protection of local, artistic and cultural heritage. These conditions are the primary factors to evaluate the competitive positioning of a tourist destination.

As it will be described in the chapters related to Sustainable Tourism and Circular Tourism, this last approach, based on the description of Tourism as a "multilayer system" made up by three main different levels, represents

the most common one used when the assessment of Tourism is
"holistic", according to which, at the same time, social, economic and environmental impacts are taken into account.
In this regard, it has usually been assumed that:

- **micro level** refers to the economic tourist operators, as for instance tourist establishments/facilities and to individual tourists;
- **meso level** refers to the multiple relations existing within the sector and between the micro and macro levels, as for instance suppliers, waste management companies etc;
- **macro level** refers to tourist destinations as a whole, considering municipal, regional or national scales.

In light of the above discussion, it clearly appears how important is defining units of analysis in order to measure Tourism characteristics and its evolution patterns.

2.2.2 The importance of using indicators

As concern the most used tools to measure Tourism impacts "indicators" clearly appear as ones of the most important.

The UNWTO (1995) defines "indicators" as quantitative tools that facilitate the analysis and assessment of information so that managers can take sound decisions. This definition emphasizes the importance of indicators for public management.

Thus, given their crucial role in planning and management processes, indicators need to be capable of supplying information, while at the same time being methodologically and scientifically valid. They must also be easily applied and their results readily disseminated. In general, indicators need to be simple and directionally clear.
A good indicator should be respectful of the following conditions (Torre-Delgado and Saarinen, 2014):

- *Relevance*: relevant to the research programme;
- *Scientific precision*: scientifically well founded;
- *Measurability:* containing the necessary and reliable data to proceed to its calculation;
- *Transparency:* clear as regards its methodology and the selection of parameters;
- Adaptability: adaptable to specific characteristics of the territory;
- *Comparability*: producing comparable results;
- *Updating*: using updated data;
- *Cost efficiency well balanced:* efforts expended in data collection well balanced with information ultimately obtained;
- *Territorial representation:* possibility of mapping using georeferenced data;
- *Temporal representation:* showing trends over time;
- *Sensitivity*: sensitive to spatial and temporal changes;
- *Communication:* results easily communicated and understandable to all;
- *Participation*: meeting the needs and interests of target audience.

There are basically two types of indicators: **simple** and **complex indicators** (or **indices**), the choice of which depends on the quality of the information available. While simple indicators provide statistics directly from the field or involve a simple data treatment, complex indicators are adimensional measures resulting from the

combination of several simple indicators through a weighting system that organizes components into a hierarchy (Sanchez & Pulido, 2008). The information associated with each type of indicator clearly differs, and its usefulness depends on the working scale and the assessment that is required. Simple indicators can be most useful for detecting specific impacts and for applying partial solutions, whereas indices provide a broader, integrated overview. Lying at a point between these two types of indicators, we can locate **sets of indicators**, which are able to combine several simple indicators and provide joint interpretations. In this latter it is required the presence of a framework for organizing such indicators in a coherent structure and for providing guidelines for data collection, communication with stakeholders and report production (Torre-Delgado and Saarinen, 2014).

Indicators, as previously introduced, can support information-based decision making in all levels of tourism planning and management (UNWTO, 2004):

- **National level** - to detect broad changes in tourism at the national level, compare with other nations, provide a baseline for the identification of changes at more localized levels and support broad level strategic planning;
- **Regional level** - as input into regional plans and protection processes, to serve as a basis for comparison between regions and to provide information for national level planning processes;
- **Specific destinations** (e.g. coastal zones, local municipalities and communities) to identify key elements of assets, state of the tourism sector, risks, and performance;
- **Key tourist use sites within destinations** (e.g. protected areas, beaches, historic districts within cities, areas of special interest) where specific indicators may be key to decisions on site control, management and future development of tourist attractions (e.g., national parks, theme parks) where management level indicators can support site planning and control;
- **Tourism companies** (e.g. tour operators, hotel-, transport- and catering companies) who may access indicators to feed their strategic planning process for the destinations;
- **Individual tourism establishments** (e.g. hotels, restaurants, marinas) to monitor the impact and performance of their operation.

Indicators generated at different scales are often strongly interrelated. If aggregated, many can be used to create higher-level indicators. Related to other sites or regions, they can contribute to comparative analysis or benchmarking.

The different means to be used to portray indicators include the following (UNWTO, 2004):

- **Quantitative measurements** (where comparable numbers can be obtained over time):
  - Raw data: as for instance, number of tourists visiting a site/year/month, or volume of waste generated /month/week expressed in tonnes;
  - Ratios, where one data set is related to another showing a relationship (e.g. ratio of the number of tourists to local residents in high season - showing whether tourists outnumber locals, and if so by how much);
  - Percentage, where data is related to total, a benchmark or an earlier measure (e.g., % of waste water receiving treatment, % of local population with educational degrees of different levels, % change in tourist arrivals and expenditures over last year).
- **Qualitative/normative measurements:**

- Category indices - which describe a state or level of attainment on a graded list (e.g., level of protection of natural areas according to the IUCN Index, Grades in the scales of environmental certification systems);
- Normative indicators - related to existence of certain elements of tourism management and operation (e.g., existence of tourism development plan, or plan with tourism components at local, regional and national levels, "Yes or No" questionnaires of evaluation in certification systems, such as existence of beach clean-up programmes, beach zoning, first aid booths, pet control etc.);
- Nominal indicators which are in essence labels (e.g., Blue Flag certification, which is based on an extensive independently applied checklist in beach management and safety but that appears to users as a single Nominal Yes/No indicator);
- Opinion-based indicators (e.g., level of tourists' satisfaction or level of satisfaction of local residents relative to tourism or specific elements). These are normally based on questionnaires and may be expressed as numbers, percentages as above - where essentially qualitative data is quantified.

It is worthy to note that often, where good data is not readily obtainable at an affordable cost, an alternative indicator may be available to measure the same risk or issue indirectly, but at lower cost.

Tourism occurs in a spectrum of destinations ranging from those which are well established to those which may be new and even outside any planning process. Indicators can be of use both where there is a plan in place and where none exists. In each case, the process of establishing and using indicators can be a catalyst for improvement of the decision process, and create greater participation in solutions and accountability for the results. Where there is already a plan, good indicators can help strengthen it. Where no plan is in place, indicators development can be the catalyst to initiate the process, or a key component in an iterative planning process.

2.2.3 Measuring the Tourism Sector: economic and competitiveness focus

In this paragraph we describe some of the most common methods and tools (some based on indicators) developed by researchers and national and international organizations to assess Tourism impact at global and local levels on the social and economic conditions.

The most popular are the Input-Output model, the Social Accounting Matrix, the Computable General Equilibrium model and the Tourism Satellite Account, which is the first specialized tool born in the Tourism field and the framework for measuring competitiveness in tourism:

- The **input-output (IO) model** was first introduced by Leontief (1986) and is a quantitative method to represent, in general, the relationships between different industries of a national economy or different regional economies. Essentially, the model consists in building a table (a matrix) containing the relationship between producers and consumers as well as the interdependencies among industries for a given period (a year) thus reflecting the technical relationship between the level of output and the required inputs, and the balancing of supply and demand for each type of good or service. Relatively simple matrix calculations provide then the so-called multipliers, that show the intensity of interactions by assessing how changes in demand generate changes in output, labor earnings, and employment (Fletcher, 1989; Frechtling & Horvath, 1999). In this way, an input-output model allows estimating direct,

indirect and induced impacts of the Tourism activities in a
defined region. It must be noted here that the model is based on a (strong) assumption linearity in the relations between inputs and outputs from different sectors as well as between outputs and final demand. Additionally, all businesses in a given industry are supposed to employ the same production technology.

- A **Social Accounting Matrix (SAM)** represents the flows of the economic transactions existing in an economy (regional or national). Here too, a matrix is used to represent the national accounts (even if it can be extended to include other accounting flows) and is created for whole regions or areas. SAMs refer to a single year and provide a static picture of the economy. SAMs have been used, when appropriate data were available or could be reasonably estimated, to estimate the weight of Tourism and the redistribution effects of tourists' expenditures (Akkemik, 2012; Wagner, 1997).
- **Computable general equilibrium (CGE)** are simulation models that use actual economic data to estimate how changes in policy, technology, production or even external factors might impact the general behavior of an economy. They build upon a general theory that combines the assumptions on rational economic agents with the investigation of equilibrium conditions. These conditions are usually specified as a system of equations where the functional forms are calibrated to benchmark data. Different methods exist for writing these equations so that their coefficient can be given even when the calibration of the parameters is complicated by their inherent dynamicity (Dixon & Parmenter, 1996).
  The model comprises the equations with their variables and parameters, and a database (usually large and detailed) of transaction values and elasticities consistent with the model equations. These are often expressed by IO tables or SAMs. Market clearance, zero profit and income balance are used as conditions to solve the system for the set of prices and the allocation of goods and factors that support a general equilibrium. In some cases, however, the equilibrium conditions may be relaxed and the model may accept non-market clearing (e.g. for labor or commodities), imperfect competition (e.g. monopoly pricing) or demands not influenced by price (e.g. by government). CGE models are widely used for evaluating the impact of economic and policy changes (reforms) because they are reputed to reproduce in the most realistic way the structure of a whole economy and hence the nature of the existing economic transactions among diverse economic agents. Despite their computational complexity and the requirements for great amounts of reliable data, CGE models have seen a good interest in the Tourism community and their importance has been stated several times (Dwyer, 2015).
- The **Tourism Satellite Account (TSA)** is a statistical framework jointly developed by a number of international organizations (UNWTO, OECD, Eurostat, UN Statistical Division) as a standardized tool to assess the measurement of the economic impacts of Tourism (UNStats, 2008b). Essentially, a TSA consist of a set of tables that account for the use of resources, the assets, the liabilities of the Tourism activities in a certain region for a certain period of time. The different tables contain data on international and domestic Tourism expenditures (in- and out-bound), employment, investments (private and public), accounts of Tourism industries, and the gross value added (GVA) and gross domestic product (GDP) attributable to Tourism plus some non-monetary indicators (same-day trips, overnight stays). The *Tourism Satellite Account: Recommended Methodological Framework* (UNStats, 2008b) provides the conceptual framework and the guidelines (definitions, classifications, tables, aggregates etc.) for creating a TSA. All the guidelines are in line with the international standards for reporting national economic activities (SNA). The purpose of a TSA is that of harmonizing Tourism statistics from an economic perspective in the framework of the national accounts, taking into account the balance between

demand-side (acquisition of goods and services by tourists on a trip) and supply-side (value of the production by industries). In this way Tourism economic data become comparable with other economic statistics. A TSA is a powerful and useful tool and many countries and regions have put their efforts in building such reports (see e.g. EUROSTAT, 2017). However, also in this case the solution is far from optimal. Many issues have been raised with the methodology (heavily data-hungry) and with the conceptual approach that seems to adopt a too simplified view of the economic relationships between Tourism and the rest of the activities (Baggio, 2018).

- The **framework for measuring competitiveness in Tourism** developed by OECD (Dupeyras and MacCallum, 2013). Understanding country competitiveness in Tourism is a major consideration for policy makers and a major challenge for professionals in providing evidence to inform decision making. Various indicators have been developed by different organizations over the years to address particular aspects of competitiveness but there has remained a lack of an overall measurement framework for competitiveness in Tourism for the use of governments. The OECD's work identifies a set of indicators that can be applied within an overall framework to assess country competitiveness. The OECD approach is to create a limited set of meaningful and robust indicators useful for governments to evaluate and measure Tourism competitiveness in their country over time and to guide them in their policy choices. The aim of the framework is not to produce an index or a ranking of the most competitive countries, but to provide a tool guide for countries to analyze Tourism competitiveness and inform policy. The agreed definition is based upon a common understanding of the key elements defining competitiveness in Tourism: Tourism competitiveness for a destination is about the ability of the place to optimize its attractiveness for residents and non-residents, to deliver quality, innovative, and attractive (e.g. providing good value for money) Tourism services to consumers and to gain market shares on the domestic and global market places, while ensuring that the available resources supporting Tourism are used efficiently and in a sustainable way.

  As a result, key indicators have been developed to address common challenges in the analysis of competitiveness in Tourism. The indicators are organized around four categories:

  - Indicators measuring the Tourism performance and impacts;
  - Indicators monitoring the ability of a destination to deliver quality and competitive Tourism services;
  - Indicators monitoring the attractiveness of a destination;
  - Indicators describing policy responses and economic opportunities.

  The measurement framework comprises three types of indicator that can be applied to measure competitiveness in Tourism – core, supplementary and for future development (see the following Figure). The final list of indicators has been kept short and focused in order to be practical, manageable and relevant to immediate needs of countries.

The methods described above are not to be seen as alternative tools, but they are often used in combination for better assessing economic Tourism impacts (see e.g. Chou et al. 2016).

Figure 18. The framework for measuring competitiveness in tourism
Source: retrieved from Dupeyras and MacCallum (2013)

Table 2. List of Core, Supplementary and Future Development Indicators

Core indicators	
Tourism performance and impacts	1 *Tourism Direct Gross Domestic Product* A leading international measure of the tourism contribution to GDP
	2 *Inbound tourism revenues per visitor by source market* A measure of the economic activity of visitors
	3 *Overnights in all types of accommodation* A measure of tourism flows in accommodation
	4 *Exports of tourism services* A measure showing the contribution of tourism to exports
Ability of a destination to deliver quality and competitive tourism services	5. *Labour productivity in tourism services* A measure providing evidence of the productive potential of the tourism economy
	6. *Purchasing Power Parity (PPPs) and tourism prices* A measure showing tourism price competitiveness using PPPs
	7. *Country entry visa requirements* A measure of entry visa requirements including methods of visa issuance
Attractiveness of a destination	8. *Natural resources and biodiversity* A measure of a country's stock of natural assets
	9. *Cultural and creative resources* A measure of a country's cultural and creative attractions, activities and events
	10. *Visitor satisfaction* A measure of demand side attractiveness value, based on current and future competitiveness
Policy responses and economic opportunities	11. *National Tourism Action Plan* A measure indicating effectiveness in assisting to improve the competitiveness of tourism
Supplementary Indicators	
Tourism performance and impacts	*Market diversification and growth markets* A measure to capture the broad basis of performance in several source markets. Countries with a wide range of source markets and a focus on growth markets would receive higher scores than countries with a narrow market dependency focus
Ability of a destination to deliver quality and competitive tourism services	*Employment in tourism by age, education levels and type of contracts* A measure that would assess ability to attract, retain and develop talent in the industry to enable improved competitiveness
	Consumer Price Index for tourism A complementary measure to others such as PPPs
	Air connectivity and inter-modality A measure of competitiveness revealed in air routes, flight time from main markets and passenger numbers
Attractiveness of a destination	*OECD Better Life Index* A measure using a tourism focused version of the index
Future Development Indicators	
Ability of a destination to deliver quality and competitive tourism	*Government budget appropriations for tourism* A measure of national government tourism expenditure per capita
	Company mortality rate A measure of the enterprise activity and business churn
Policy responses and economic opportunities	*Use of e-tourism and other innovative services* An Index measure on innovation and use of social media in the tourism industry
	Structure of tourism supply chains An Index measure of industry thickness, clusters and competitiveness, existing/potential

3. Tourism and Sustainability

The relationship between tourism and sustainability has been investigated in order to provide an in-depth analysis of the current main issues. The role of sustainable development and the contribution of tourism industry to the achievement of the Sustainable Development Goals (SDGs) are presented to outline the effective pathway that may be undertaken. Moreover, a comprehensive overview about the main positive and negative impacts of tourism industry is discussed, as well as the numerous definitions of sustainable tourism and its assessment. As concluding remark, a set of existing best practices related to sustainable tourism at global scale is provided.

3.1 Sustainable Development

Following the highly cited definition provided by the Bruntland report (1987), **sustainable development** refers to the *"development that meets the needs of the present without compromising the abilityof future generations to meet their own needs"* (Brundtland et al., 1987, p. 15). Such definition contains within it the notion of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of 'limitations' imposed by the state of technology and social organization on the environment's ability to meet present and future needs. Thus, such definition shares common general features and a strategic framework for achieving sustainable development and at the same time it implies a certain degree of interpretations among different countries. Accordingly, it aims at maintianing the economic advancement and progress while protecting the long-term value of the environment, by involving a progressive transformation of economy and society through the identification of a framework for the integration of environment policies and development strategies (Brundtland et al. 1987).

The **2030 Agenda for Sustainable Development**, adopted by all United Nations Member States in 2015, is a plan of action for people, planet and prosperity. At its heart are the 17 **Sustainable Development Goals** (SDGs), which are an urgent call for action by all countries in a global partnership. The ambitious set of 17 SDGs and 169 associated targets is people-centred, transformative, universal and integrated. The bold agenda sets out a global framework to end extreme poverty, fight inequality and injustice, and fix climate change until 2030. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests (United Nations 2015).

Figure 19. The Sustainable Development Goals (SDGs)
Source: retrieved from United Nations (2015)

Sustainable tourism is firmly positioned in the 2030 Agenda. Tourism has the potential to contribute, directly or indirectly, to all of the goals. In particular, it has been included as targets in Goals 8, 12 and 14 on inclusive and sustainable economic growth, sustainable consumption and production (SCP) and the sustainable use of oceans and marine resources, respectively. In details:

- GOAL 1: NO POVERTY. Sustainable tourism development may foster economic growth and development at all levels and provide income through job creation, promoting entrepreneurship and small businesses, and empowering less favored groups, particularly youth and women.
- GOAL 2: ZERO HUNGER. Tourism can spur agricultural productivity by promoting the production, use and sale of local produce in tourist destinations and its full integration in the tourism value chain. In addition, agro-tourism, a growing tourism segment, can complement traditional agricultural activities.
- GOAL 3: GOOD HEALTH AND WELL-BEING. Tourism's contribution to economic growth and development can also have a knock-on effect on health and well-being. Foreign earnings and tax income from tourism can be reinvested in health care and services, which should aim to improve maternal health, reduce child mortality and prevent diseases, among others.
- GOAL 4: QUALITY EDUCATION. A well-trained and skillful workforce is crucial for tourism to prosper. The sector can provide incentives to invest in education and vocational training and assist labor mobility through cross-border agreements on qualifications, standards and certifications.
- GOAL 5: GENDER EQUALITY. Tourism can empower women in multiple ways, particularly through the provision of jobs and through income-generating opportunities in small and larger-scale tourism and hospitality related enterprises.
- GOAL 6: CLEAN WATER AND SANITATION. Tourism can play a critical role in achieving water access and security, as well as hygiene and sanitation for all. The efficient use of water in the tourism sector, coupled with appropriate safety measures, wastewater management, pollution control and technology efficiency can be key to safeguarding our most precious resource.
- GOAL 7: AFFORDABLE AND CLEAN ENERGY. As a sector that requires substantial energy input, tourism can accelerate the shift toward renewable energy and increase its share in the global energy mix. Tourism can help to reduce greenhouse gas emissions, mitigate climate change and contribute to innovative and new energy solutions in urban, regional and remote areas.
- GOAL 8: DECENT WORK AND ECONOMIC GROWTH. Tourism is one of the driving forces of global economic growth and currently provides for 1 in 11 jobs worldwide. By giving access to decent work opportunities in the tourism sector, society –particularly youth and women – can benefit from increased

skills and professional development. As stated in Target 8.9, "By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products".

- GOAL 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE. Tourism development relies on good public and privately supplied infrastructure and an innovative environment. The sector can also incentivize national governments to upgrade their infrastructure and retrofit their industries, making them more sustainable, resource-efficient and clean, as a means to attract tourists and other sources of foreign investment.
- GOAL 10: REDUCED INEQUALITIES. Tourism can be a powerful tool for community development and reducing inequalities if it engages local populations and all key stakeholders in its development. Tourism can contribute to urban renewal and rural development and reduce regional imbalances by giving communities the opportunity to prosper in their place of origin. Tourism is also an effective means for developing countries to take part in the global economy.
- GOAL 11: SUSTAINABLE CITIES AND COMMUNITIES. A city that is not good for its citizens is not good for tourists. Sustainable tourism has the potential to advance urban infrastructure and universal accessibility, promote regeneration of areas in decay and preserve cultural and natural heritage, assets on which tourism depends. Greater investment in green infrastructure (more efficient transport facilities, reduced air pollution, conservation of heritage sites and open spaces, etc.) should result in smarter and greener cities from which not only residents, but also tourists, can benefit.
- GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION. A tourism sector that adopts sustainable consumption and production (SCP) practices can play a significant role in accelerating the global shift towards sustainability. As set in Target 12.b of Goal 12, it is imperative to "Develop and implement tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture and products". The Sustainable Tourism Programme (STP) of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) aims at developing such SCP practices, including resource efficient initiatives that result in enhanced economic, social and environmental outcomes.
- GOAL 13: CLIMATE ACTION. Tourism contributes to and is affected by climate change. It is, therefore, in the sector's own interest to play a leading role in the global response to climate change. By lowering energy consumption and shifting to renewable energy sources, especially in the transport and accommodation sector, tourism can help tackle one of the most pressing challenges of our time.
- GOAL 14: LIFE BELOW WATER. Coastal and maritime tourism, tourism's biggest segments, particularly for Small Island Developing States' (SIDS), rely on healthy marine ecosystems. Tourism development must be a part of Integrated Coastal Zone Management in order to help conserve and preserve fragile marine ecosystems and serve as a vehicle to promote a blue economy, in line with Target 14.7: "by 2030 increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism".
- GOAL 15: LIFE ON LAND. Majestic landscapes, pristine forests, rich biodiversity, and natural heritage sites are often main reasons why tourists visit a destination. Sustainable tourism can play a major role, not only in conserving and preserving biodiversity, but also in respecting terrestrial ecosystems, owing to its efforts towards the reduction of waste and consumption, the conservation of native flora and fauna, and its awareness-raising activities.

- GOAL 16: PEACE AND JUSTICE. As tourism revolves around billions of encounters between people of diverse cultural backgrounds, the sector can foster multicultural and inter-faith tolerance and understanding, laying the foundation for more peaceful societies. Sustainable tourism, which benefits and engages local communities, can also provide a source of livelihood, strengthen cultural identities and spur entrepreneurial activities, thereby helping to prevent violence and conflict to take root and consolidate peace in post-conflict societies.
- GOAL 17: PARTNERSHIPS FOR THE GOALS. Due to its cross-sectorial nature, tourism has the ability to strengthen private/public partnerships and engage multiple stakeholders – international, national, regional and local – to work together to achieve the SDGs and other common goals.

In such view, harnessing tourism's benefits is deemed critical to achieving the sustainable development goals and implementing the post-2015 development agenda.

Figure 20. Tourism and the Sustainable Development Goals (SDGs)
Source: retrieved from United Nations (2015)

UNWTO is responsible for the promotion of responsible, sustainable and universally accessible tourism geared towards the achievement of the universal 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). UNWTO offers leadership and support to the tourism sector in advancing knowledge and tourism policies worldwide, advocating for responsible tourism and promoting tourism as a driving force towards economic growth, inclusive development and environmental sustainability.With a current membership of 156 countries, UNWTO encourages the implementation of the Global Code of Ethics in Tourism, in order to maximize tourism´s socio-economic contribution while minimizing its possible negative impacts. Furthermore, UNWTO has an online platform dedicated to SDGs implementation, accessible online at: http://tourism4sdgs.org/, providing a roadmap for the tourism sector towards 2030, to build a smarter, competittive, inclusive and sustainable sector for the the people and planet.

3.2 The main impacts of Tourism

Tourism is in a special position in the contribution it can make to sustainable development and the challenges it presents. Firstly, this is because of the dynamism and growth of the sector, and the major contribution that it makes to the economies of many countries and local destinations. Secondly, it is because tourism is an activity which involves a special relationship between consumers (visitors), the industry, the environment and local communities. This special relationship arises because, unlike most other sectors, the consumer of tourism (the tourist) travels to the producer and the product (UNWTO, 2005).

This leads to three important and unique aspects of the relationship between tourism and sustainable development:

- *Interaction*: The nature of tourism, as a service industry that is based on delivering an experience of new places, means that it involves a considerable amount of interaction, both direct and indirect, between visitors, host communities and their local environments.
- *Awareness*: Tourism makes people (visitors and hosts) become far more conscious of environmental issues and differences between nations and cultures. This can affect attitudes and concerns for sustainability issues not only while travelling but throughout people's lives.
- *Dependency*: Much of tourism is based on visitors seeking to experience intact and clean environments, attractive natural areas, authentic historic and cultural traditions, and welcoming hosts with whom they have a good relationship. The industry depends on these attributes being in place.

This close and direct relationship creates a sensitive situation, whereby tourism can be both very damaging but also very positive for sustainable development.
On the **positive side**, tourism can:

- Provide a growing source of opportunities for enterprise development and employment creation as well as stimulating investment and support for local services, even in quite remote communities.
- Bring tangible economic value to natural and cultural resources. This can result in direct income from visitor spending for their conservation, and an increase in support for conservation from local communities.
- Be a force for inter-cultural understanding and peace.

Conversely, tourism can:

- Place direct pressure on fragile ecosystems causing degradation of the physical environment and disruption to wildlife.
- Exert considerable pressure on host communities and lead to dislocation of traditional societies.
- Compete for the use of scarce resources, notably land and water.
- Be a significant contributor to local and global pollution.
- Be a vulnerable and unstable source of income, as it is often very sensitive to actual or perceived changes to the environmental and social conditions of destinations.

The net result is that all those involved in tourism have a huge responsibility to recognize the importance of its sustainable development. Tourism has immense power to do good. Yet it can also be the vector for the very pressures that may destroy the assets on which it relies. Developed without concern for sustainability, tourism can not only damage societies and the environment, it could also contain the seeds of its own destruction.

According to many academics (Sunlu, 2003; Gossling et al. 2012;
Styles et al., 2013; Lemma, 2014; Ciangă and Sorocovschi, 2017) and to national and international organizations (see UNEP, 2011; UNEP, 2014; UNWTO, 2004; UNWTO, 2005; UNWTO, 2008), the consequences and effects of tourism highlight common features that allow systematize its impact in three main categories:

- **(I) Impact on the physical environment** (UNEP, 2011; UNEP, 2014; Gossling et al., 2012; UNWTO, 2008; Sunlu, 2003; Styles et al., 2013; Lemma, 2014)
  The UNEP highlights three main impact areas of tourism on the environment, namely depletion of natural resources, pollution and tourism's physical impacts.

  1. Depletion of Natural Resources

  Where tourism increases pressure on natural resources where they may already be scarce, manifested through the use o f water and the use of local resources.

  - ***Water Resources***: Overuse of water by tourism enterprises i.e. for tourist use, swimming pools, garden maintenance etc. In dry regions, the use of water is particularly concerning especially as tourists tend to consume twice as much water on holiday as they do at home (440 litres against 220 litres: this is almost double what the inhabitants of an average Spanish city use.)(UNEP, 2014). In some popular South Asian resort areas, potable water is diverted away from local villages and supplied to nearby hotels, leaving villagers only a few hours per day to use water (UNEP, 2011). Tourism water use typically accounts for 5% of total national water use, although in some countries it can be significantly higher i.e. around 40% in Mauritius or 35% in Cyprus (Gossling et al. 2012).
  - ***Local Resources***: Tourism can create great pressure on local resources like energy, food, and other raw materials that may already be in short supply. Greater extraction and transport of these resources exacerbates the physical impacts associated with their exploitation. Because of the seasonal character of the industry, many destinations have ten times more inhabitants in the high season as in the low season. A high demand is placed upon these resources to meet the high expectations tourists often have (proper heating, hot water, etc.). Tourism can also negatively effect of biodiversity (UNEP, 2011), especially in coastal areas (such as coral reefs or coastal wetlands), rainforests as well as arid and semi-arid regions and mountainous areas. Trekking, over-fishing, the construction of tourism resorts etc. can all contribute negatively to the biodiversity of these areas which can in-turn negatively affect the attractiveness of such areas for tourism activities. Forests often suffer negative impacts of tourism in the form of deforestation caused by fuel wood collection and land clearing (UNEP, 2014).

  2. Pollution

  Tourism can contribute to pollution in the same way as many other economic sectors i.e. through air pollution, solid waste and wastewater.

  - ***Air and Noise Pollution***: Increases in tourist numbers (and subsequent demand in tourism travel demand) means that the sector is becoming an increasingly important source of emissions. Transport emissions and emissions from energy production and use are linked to acid rain, global warming and photochemical pollution. Air pollution from tourist transportation has impacts on the global level, especially from carbon dioxide (CO_2) emissions related to transportation energy use. And it can contribute to severe local air pollution. Some of these impacts are quite specific to tourist activities. For example, especially in very hot or cold countries, tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to

return to a comfortably air-conditioned bus. The
UNWTO (2008) has undertaken an analysis of the impact of tourism on carbon emissions based on 2005 data, highlighting how the sector (globally) accounted for close to 5% of total carbon emissions. The UNWTO (2008) also provides a breakdown of tourism carbon emissions, a result which shows that domestic tourism was actually a larger contributor to greenhouse gas emissions than international tourism (although the data stems from 2005 so may be subject to change over time). For both domestic and international tourism, aviation transport and accommodation account for a significant part of the emission process, whilst land transport is the largest contributor for domestic tourism.

Noise pollution from airplanes, cars, and buses, as well as recreational vehicles such as snowmobiles and jet skis, is an ever-growing problem of modern life. In addition to causing annoyance, stress, and even hearing loss for it humans, it causes distress to wildlife, especially in sensitive areas. For instance, noise generated by snowmobiles can cause animals to alter their natural activity patterns.

- ***Litter and Solid Waste***: In areas with high concentrations of tourist activities and appealing natural attractions, waste disposal is a serious problem and improper disposal can be a major despoiler of the natural environment - rivers, scenic areas, and roadsides. (UNEP, 2011). Cruise ships operating in the Caribbean are estimated to produce around 70,000 tons of solid waste per year (Sunlu, 2003) which can increase and harm coastal waters and the marine life within it. Similarly, expeditions in mountainous areas can leave a trail of litter behind them, negatively impacting local flora and fauna and degrading the physical appearance of trekking routes (UNEP, 2014).
- ***Sewage***: Construction of hotels, recreation and other facilities often leads to increased sewage pollution. Wastewater has polluted seas and lakes surrounding tourist attractions, damaging the flora and fauna. Sewage runoff causes serious damage to coral reefs because it stimulates the growth of algae, which cover the filter-feeding corals, hindering their ability to survive. Changes in salinity and siltation can have wide-ranging impacts on coastal environments. And sewage pollution can threaten the health of humans and animals (UNEP, 2011).
- ***Aesthetic Pollution***: Aesthetic pollution occurs where tourism activities fail to integrate buildings and infrastructure into natural features and local architectural practices, hence features may not be deemed to be compatible with the natural environment and cultural architectural practices.

3. Physical Impacts

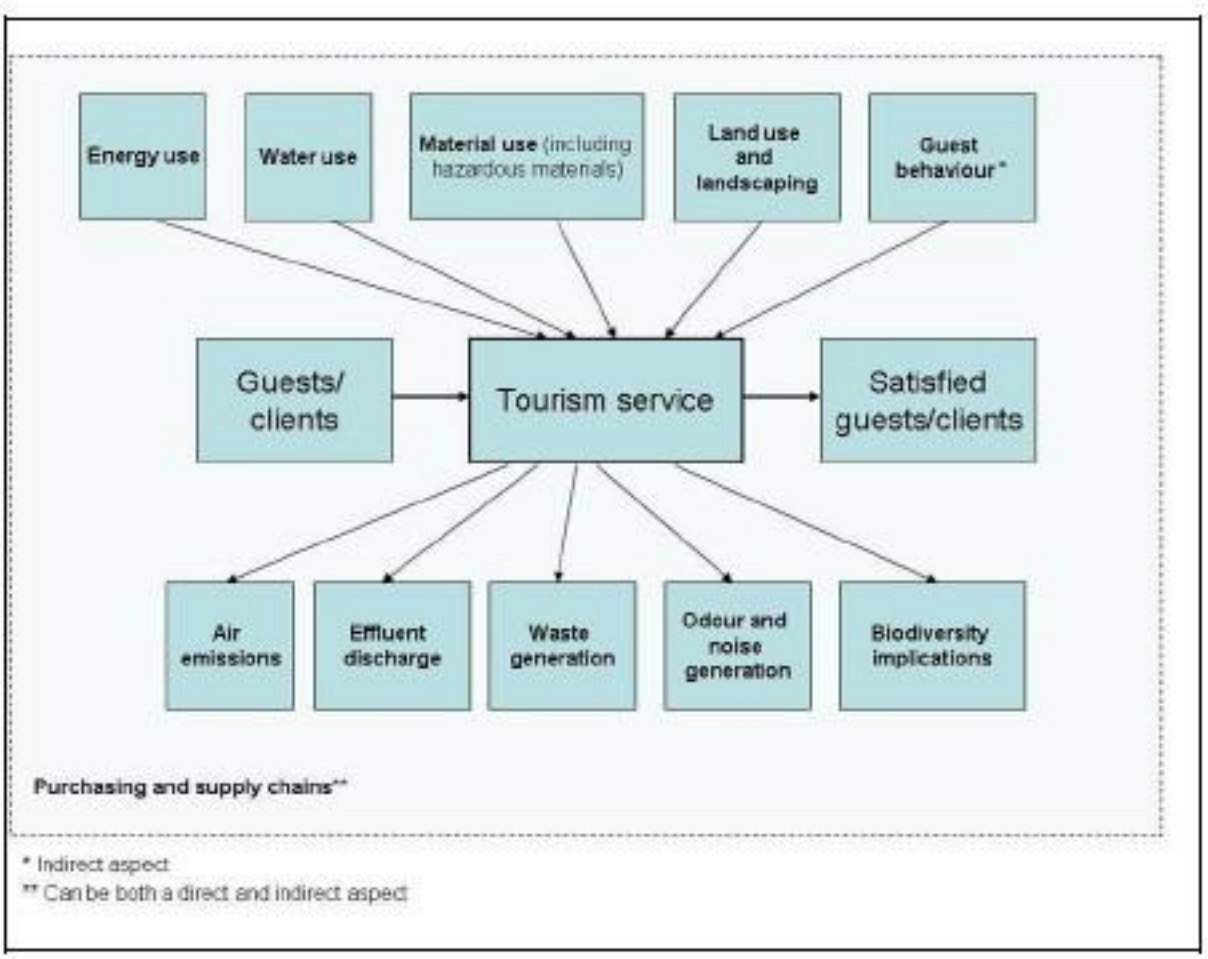
Physical impacts, by tourists and by tourism enterprises can impact.

- ***Tourism Development***: The construction of tourism infrastructure (including facilities such as hotels, restaurants and recreation facilities) can lead to land degradation (i.e. soil erosion) and the loss of biodiversity and wildlife habitats. Tourism can also lead to increased deforestation whilst development on marine localities can cause changes in coastlines and currents, negatively affecting local fauna and flora. Coral reefs are especially fragile marine ecosystems and are suffering worldwide from reef-based tourism developments. Evidence suggests a variety of impacts to coral result from shoreline development, increased sediments in the water, trampling by tourists and divers, ship groundings, pollution from sewage, overfishing, and fishing with poisons and explosives that destroy coral habitat (UNEP, 2014).

- ***Tourism Activities***: Tourism activities can also lead to negative on the environment. Such activities include trampling damage from trekking trails where trekkers cause damage to vegetation and soil which in turn can lead to a loss of biodiversity. Other impacts such as those from marine activities (boat anchoring, sport fishing and scuba diving) can damage the environmental integrity of tourism areas (Sunlu, 2003). Interaction with local wildlife can also increase stress to local wildlife as well as the degradation of land i.e. by using safari trucks to track wildlife (UNEP, 2014).

According to Styles et al. (2013) the tourism services – accommodation, food and beverage and tour operators and travel agents – involve a wide range of activities that give rise to various environmental pressures and impacts (see the following Figure).

Figure 21. Tourism service input and outputs
Source: retrieved from Styles et al. (2012)



Referring to EMAS regulation (REGULATION (EC) No 1221/2009), an "environmental aspect" "means an element of an organization's activities, products or services that has or can have an impact on the environment", whereas an "environmental impact" is defined as "any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activies, products and services" such as the emission of greenhouse gases or air pollution. Keeping in mind both definitions, the

following table lists the main environmental aspects and associated environmental pressures arising from Tourism industries (Table 1):

Table 1. Activities in tourism enterprises (hotels, restaurants and tour operators) and associated environmental aspects and pressures
Source: information retrieved from Styles et al. (2012)

Service/activity	Main environmental aspects	Main environmental impacts
Administration	Office Management Reception of clients	Energy, water and raw materials (mainly paper) consumption Generation of municipal waste (large amounts of paper) and hazardous waste (e.g. toner cartridges)
Technical services	Producing of hot water and space heating/cooling Lighting Elevators Swimming pools Green areas Pest and rodent control Repair and maintenance	Energy and water consumption Consumption of a range of hazardous products In some cases use of CFCs and HCFCs Air emissions Generation of a wide range of potentially hazardous waste types such as empty chemical containers Generation of waste-water
Restaurant/bar	Breakfast, dinner, lunch Beverages and snacks	Supply chain pressures (see 'Purchasing') Energy, water and raw materials consumption Generation of municipal waste (especially food waste and packaging waste)
Kitchen	Food conservation Food preparation Dish washing	Supply chain pressures (see 'Purchasing') Important consumption of energy and water Generation of municipal waste (especially food waste and packaging waste) Generation of vegetable oil waste Generation of odours
Room use	Use by guests Products for guests' use Housekeeping	Energy, water and raw materials consumption Use of a wide range of hazardous products Generation of waste packaging and small amounts of municipal waste Generation of wastewater
Laundry	Washing and ironing of guests' clothes Washing and ironing of	Important consumption of energy and water Use of hazardous products Generation of waste-water
Purchasing	Selection of products and suppliers Storage of products	Supply chain pressures (land occupation, degradation or destruction of ecosystems, disturbance of wildlife, energy and water consumption, air and water emissions, waste generation) Generation of packaging waste Hazardous substance leakages
Activities	Indoor activities Outdoor activities	Energy, water and raw materials consumption Local impacts on ecosystems Noise Generation of municipal waste

		Infrastructure pressures (see 'Building and construction')
Transport	Transport of guests Transport of employees Transport by suppliers	Energy (fuel) consumption Air emissions Infrastructure pressures (see 'Building and construction')
Additional services	E.g. medical services, supermarkets, souvenir shops, spa and wellness, hairdresser, etc.	Energy, water and raw materials consumption Generation of municipal waste, and some specific hazardous waste types (e.g. sanitary waste)
Building and construction	Construction of new areas or services Repair of existing areas or services	Land occupation Degradation or destruction of ecosystems Disturbance of wildlife Energy and water consumption Significant consumption of raw materials and hazardous products Significant generation of construction waste Generation of hazardous waste

As we have debated above Tourism strongly impacts on the environment. Neverthless, Tourism itself can be also affected by environmental factors (i.e. by extreme weather events or). According to UNWTO (2008), tourist destinations can be subject to the foolowing four main types of climate change impacts:

- ***Direct Climate Impacts***: Changes in weather patterns can have important impacts on tourism in destinations that depend on particular weather patterns (i.e. sunshine in beach destinations or snowfall in winter tourism destinations). Any changes in weather patterns could shift the competitive advantage certain destinations have over others, threatening established tourism industries.
- ***Indirect Environmental Change Impacts***: Changes in environmental conditions (i.e. agricultural productivity, water availability or biodiversity) will impact tourism. Any changes to the environment are potentially going to be negative in terms of their impact, especially for areas that base their tourism activities on environments that are considered to be particularly sensitive (such as Coral Reefs).
- ***Impacts of Climate Mitigation Policies***: Climate change mitigation policies (at the national or international level) may impact international tourist flows, through changes in transportation costs or attitudinal changes by tourists who could change travel patterns with the aim of reducing environmental impacts (i.e. by taking less long-haul flights).
- ***Indirect Societal Change Impacts***: Climate change may impact long-term development prospects by impacting growth trajectories i.e. reducing rural livelihoods through reduced crop growth.

- **(II) Socio-cultural impact** (UNWTO, 2005; Ciangă and Sorocovschi, 2017; UNWTO, 2004)
  The **social impact** of tourism is manifested in various aspects, highlighting the necessity of an interdisciplinary research with the contribution of specialists from many research fields (sociology, history, demography, psychology, geography, etc.). The social impact is manifested through the influence that tourism has on the traditional livelihood of inhabitants, on widening their spiritual and professional horizon.
  Tourism through its various manifestation forms has *positive effects* through: increase of social and professional opportunity by creating new jobs in tourism services and infrastructure; creating new seasonal or permanent jobs, especially for young people (scholars, students, etc.) and women; the decline of depopulation process in some mountain or coastal reception areas leads to demographic revitalization of these areas (the Alps, the Mediterranean and the Spanish coasts, Balearic Islands, etc.);

ensuring and development of social progress, increase of
cleanliness and public hygiene, of general comfort in tourist localities; decreasing of disparities between socio-professional categories in terms of revenues.
The *negative effects* of tourism activities are also many, and can be materialized by: the disruption and gradual destruction of traditional lifestyles related to various activities (pastoral, forestry, handicrafts and small industries, etc.) and often to the manifestation of mercantilismuilui imposed by the market economy; the acceptance by the local population of the negative social influences; the occurrence in many reception areas of demographic aging resulting from the migration of old people and their settling in holiday homes from tourist resorts or surrounding areas. Beside social problems, in destination areas arise problems with cultural and anthropological background. The cultural impact is dominated by the relationship between tourists and local population, which is not always beneficial for the locals.
The **cultural impact** is dominated by the relationship between tourists and local population, which is not always beneficial for the locals.
The *positive aspects* are given by: the development and revival of cultural and religious traditions; diversification of artisanal valorifications forms of guaranteed bio agricultural products; encouraging the increase of local people interest in maintaining and preserving natural and cultural tourist objectives, which may thus be capitalized; initiating new cultural action in religious plan - pilgrimage to monasteries in order to satisfy the sentiment of Christian sacredness and respect for moral values; contacts and cultural exchanges between local communities and tourist groups, facilitated by learning foreign languages.
The *negative aspects* are also numerous, and their appearance and manifestation is felt after a relatively longer time: the appearance of changes of mind-sets, moral values under the influence of tourists, keeping of customs and traditions just for tourists, appearance of bad taste products; adaptation and copying by residents of attitudes and behaviours attributed to tourists; appearance of potential conflicts and antagonisms when tourism becomes a mass, supersaturated phenomenon, leading to the disappearance of a sense of pride to their own culture; increased cost of living, ultrafast developing of a consumer society model, the gradual destruction of local social spontaneity.

- **(III) Economic impact** (Ciangă and Sorocovschi, 2017; Lemma, 2014; UNWTO, 2004)
  Tourism has direct, indirect and induced impacts on local economies, these can often be largely divergent between countries, based on the structure of the sector but most importantly on how well linked tourism activities are with the local economy. Greater linkages generally translate into higher levels of local economic activity (and growth), which tend to occur when tourism enterprises source their goods and services (including labour) locally whilst low levels of economic linkages occur where tourism enterprises are dependent on imports (including staff) to supply their demands. The overall impacts of the sector are the sum of the direct, indirect and induced effects (see the following Figure):
  - Direct Impacts: Represents the GDP generated by activities that directly deal with tourism such as hotels, travel agents, airlines and tour operators as well as restaurants and other activities that cater to tourists.
  - Indirect Impacts, impacts which accrue due to the activities undertaken by the sector, and are a function of three different factors:
    1. Capital Investment in tourism: Includes capital investment within all sectors that are directly involved in the tourism industry as well as spending by enterprises in other sectors on tourism assets such as transport or accommodation.
    2. Government Spending for Tourism: Government spending to support the tourism sector, which can include both national and local spending. Activities include tourism promotion, visitor services, administration etc.
    3. Supply Chain Effects: These represent the purchase of domestic goods and services, as inputs to the production of their final outputs, by enterprises within the tourism sector.

- Induced Impacts: Represents the wider contribution of tourism through the expenditures of those who are directly or indirectly employed by the tourism sector.

In total economic impact is equal with the effects of indirect impact plus the impact of tourist spending. Logically, the multiplier effect of tourism is expressed by summing the three impacts, reported to the direct impact.

Figure 22. Components of direct, indirect and induced tourism contribution to GDP
Source: retrieved from WTTC (2012)

Direct Contribution of Tourism	*Industries*	• Accommodation Services • Food & Beverage Services • Retail Trade • Transportation Services • Cultural, Sports & Recreational Services
	Commodities	• Accommodation • Transportation • Entertainment • Attractions
	Sources of Spending	• Resident's Domestic Spending • Business Domestic Travel Spending • Visitor Exports • Individual Government Tourism & Travel Spending
Indirect Contribution of Tourism		• Private tourism investment spending • Government collective tourism spending • Impact of Purchases from Suppliers
Induced Contribution of Tourism (spending of direct and indirect tourism employees)		• Food & Beverages • Recreation • Clothing • Housing • Household Goods

3.3 Sustainable Tourism

Tourism has been one of the first sectors to establish definitions and principles for 'sustainable tourism', strategies and action plans, through a long tradition in sustainability-related initiatives (World Travel and Tourism Council 1998). The term sustainable tourism emerged in the late 1980s and has become firmly established in both tourism policies and strategies and tourism research (Hall 2013, Budeanu et al. 2016). Among tourism academics and organizations, the term sustainable tourism first emerged in the early 1990s (among others, Pigram 1990; Inskeep 1991; Eber 1992). Since such pioneering works, the amount of research and literature related to sustainable tourism has increased exponentially, as the concepts of sustainable development and sustainable tourism have been officially 'institutionalized' (Frazier, 1997) in organizations both internal and external to the tourism sector (Weaver 2006).

According to the definition provided by the World Tourism Organization, sustainable tourism refers to *"tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities"* (UNWTO 2005, p.12). Moreover, *"sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems"* (UNWTO 1998, p.21). Thus, sustainable tourism should:

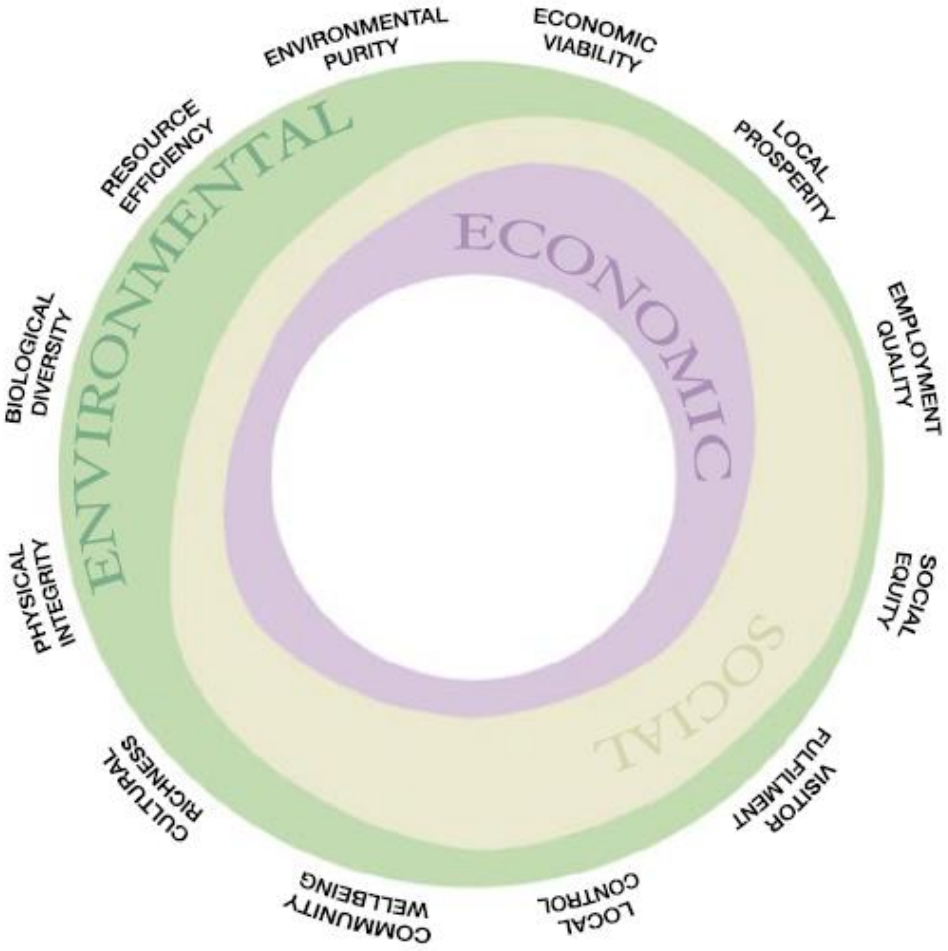
- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural resources and biodiversity.
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

Furthermore, 12 aims for sustainable tourism have been identified (UNWTO 2005):

1. ECONOMIC VIABILITY. To ensure the viability and competitiveness of Tourism destinations and enterprises, so that they are able to continue to prosper and deliver benefits in the long term.
2. LOCAL PROSPERITY. To maximize the contribution of Tourism to the prosperity of the host destination, including the proportion of visitor spending that is retained locally.
3. EMPLOYMENT QUALITY. To strengthen the number and quality of local jobs created and supported by Tourism, including the level of pay, conditions of service and availability to all without discrimination by gender, race, disability or in other ways.
4. SOCIAL EQUITY. To seek a widespread distribution of economic and social benefits from Tourism throughout the recipient community, including improving opportunities, income and services available to the poor.
5. VISITOR FULFILLMENT. To provide a safe, satisfying and fulfilling experience for visitors, available to all without discrimination by gender, race, disability or in other ways.
6. LOCAL CONTROL. To engage and empower local communities in planning and decision making about the management and future development of Tourism in their area, in consultation with other stakeholders.
7. COMMUNITY WELLBEING. To maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation.
8. CULTURAL RICHNESS. To respect and enhance the historic heritage, authentic culture, traditions and distinctiveness of host communities.
9. PHYSICAL INTEGRITY. To maintain and enhance the quality of landscapes, both urban and rural, and avoid the physical and visual degradation of the environment
10. BIOLOGICAL DIVERSITY. To support the conservation of natural areas, habitats and wildlife, and minimize damage to them.
11. RESOURCE EFFICIENCY. To minimize the use of scarce and non-renewable resources in the development and operation of Tourism facilities and services.

12. ENVIRONMENTAL PURITY. To minimize the pollution of air, water and land and the generation of waste by Tourism enterprises and visitors.

Figure 23. Relationship between the 12 aims and the pillars of sustainability
Source: retrieved from UNWTO (2005)



Basically, sustainable tourism may be considered as the application of the sustainable development idea to the tourism sector, through a wise use of resources in order to maintain their long-term viability thanks to the minimization of negative impacts and the maximization of positive impacts of tourism activities (Weaver 2006). Sustainable tourism is based on policies able to create relationships and produce synergies among local government, local community, private sector, nonprofit organizations, academic institutions (Girard & Nocca 2017).

Sustainable tourism needs to be regarded as a condition of the tourism sector as a whole, which should work to become more sustainable and not as as a separate component of tourism, as a set of niche products (UNWTO 2013). Sustainable tourism is not a special form of tourism, instead all forms of tourism should strive to be more sustainable.In fact, sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Making tourism more sustainable is not just about controlling and managing the negative impacts of the industry,

but tourism has the opportunity to benefit local communities,
economically and socially, and to raise awareness and support for conservation of the environment (UNWTO 2005).

Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability. In fact, tourism sector has the capacity to link those dimensions of sustainability by contributing to their mutual improvement, since tourism is an economic activity strictly depending on the presence of environments, cultures and communities and in turn, this puts tourism sector at the heart of the challenge to social, cultural and environmental impacts (Girard & Nocca 2017).

The terms sustainable tourism and responsible tourism are not synonym, even though they present similarities. According to the Center for Responsible Tourism, responsible tourism may be defined as *"tourism that maximizes the benefits to local communities, minimizes negative social or environmental impacts, and helps local people conserve fragile cultures and habitats or species"* (CREST 2016). Moreover, according to the Cape Town Declaration on Responsible Tourism (International Conference on Responsible Tourism in Destinations 2002), responsible tourism presents the following characteristics:

- minimises negative economic, environmental, and social impacts;
- generates greater economic benefits for local people and enhances the well-being of host communities, improves working conditions and access to the industry;
- involves local people in decisions that affect their lives and life chances;
- makes positive contributions to the conservation of natural and cultural heritage, to the maintenance of the world's diversity;
- provides more enjoyable experiences for tourists through more meaningful connections with local people, and a greater understanding of local cultural, social and environmental issues;
- provides access for physically challenged people;
- and is culturally sensitive, engenders respect between tourists and hosts, and builds local pride and confidence.

Both sustainable tourism and responsible tourism rely on a three-pillared approach to sustainability, considering economical, sociocultural and environmental impacts of travel. While sustainable tourism seeks to change the tourism industry as a whole, responsible travel focuses more on the individual actions and individual destinations. It seems that responsible tourism is regarded as a behaviour, as an approach to engaging with tourism, emphasizing that all stakeholders are responsible for the kind of tourism they develop or engage in.

Guiding approaches towards the development and implementation of policies for sustainable tourism have been identified in the following principles (UNWTO 2005):

1. *Setting the course*
   - Taking a holistic view: tourism should be considered as part of the sustainable development of communities and other activities, taking account of all impacts and relationships within the tourism sector itself.
   - Pursuing multi-stakeholder engagement: sustainable tourism is about local control, but also about working together. All those implicated by tourism should have an opportunity to influence its development and management. This may involve formal partnerships or looser arrangements, as well as strengthening and utilizing local democratic structures.

- Planning for the long term: short term approaches should be avoided and the long-term view encouraged, with resources committed accordingly.
- Addressing global and local impacts: even though impacts on the local environment and communities are often apparent, the sustainable development of tourism should pay equal attention to global impacts, especially with respect to pollution from tourism and the use of nonrenewable resources.
- Promoting sustainable consumption: sustainability refers equally to the supply side and demand side. Equal consideration should be given to influencing the pattern and impact of consumption, in terms of volume and nature of tourism demand, choices made by tourists, and their activities and behaviour.
- Equating sustainability and quality: it should be increasingly accepted that a quality tourism destination or product is one that addresses the full range of sustainability issues rather than simply concentrating on visitor satisfaction.

2. *Developing the approach*
   - Reflecting all impacts in costs - polluter pays principle: under the polluter pays principle it is the perpetrator of environmental impacts who bears the responsibility for costs incurred which, where possible, should be reflected in financial costs. In tourism this principle has implications, for example, for charges for activities such as transport, admission to sites and waste disposal.
   - Minimizing risk taking - precautionary principle: careful risk assessment is an important component of sustainable tourism development. The precautionary principle means putting in place measures to avoid damage before it occurs rather than trying to repair it afterwards.
   - Taking a life cycle perspective: life-cycle assessment means taking full account of impacts over the entire life of a product or service, including initial resources used, siting and design, development and construction, all inputs to its operation, and disposal and after-use implications.
   - Considering functional alternatives: consideration should be given to whether the same function can be performed and the same result achieved by doing things in a way that has more positive and less negative impacts on resources. For example, in a strategy to improve visitor satisfaction by adding further recreational opportunities, preference should be given to those options that bring the least environmental and social impacts and the highest economic returns.
   - Respecting limits: the readiness and ability to limit the amount of tourism development or the volume of tourist flows in a destination or site are central to the concept of sustainable tourism. Limiting factors may be ecological resilience, resource capacity, community concerns, visitor satisfaction, etc. These factors should be taken into account in setting limits that are respected by all concerned.
3. *Ensuring ongoing progress*
   - Adapting to changing conditions: adaptive response and management is an important aspect of sustainable development. Tourism is sensitive to external conditions in terms of its performance and the level of its impact. Global threats, such as climate change and terrorism need to be considered in planning for future tourism and in introducing risk management policies.
   - Undertaking continuous monitoring using indicators: sound management of tourism requires readily available evidence of changes in impact over time, so that adjustments to policies and actions can be made. Indicators that relate to sustainability aims and objectives should be established to monitor the condition, performance and impact of tourism. Cost effective monitoring programmes should be put in place.

With regards to tourism products, in general, few tourism products are inherently unsustainable. Different types of product have different strengths and weaknesses in terms of their relevance to sustainability, since impact

depends on the nature and location of the development and operation (UNWTO 2005). Tourism strategies should consider the balance of products in a destination, in order to reduce the potential disadvantages and reinforce the advantages of the different tourism products.

Figure 24. Potential advantages and disadvantages of different types of tourism in terms of sustainability
Source: retrieved from UNWTO (2005)

Tourism type	Potential advantages	Potential disadvantages
Larger resorts and hotels, or similar enterprises	• Generation of significant employment • Resources to support training • Business and marketing skills; financial stability • Ability to invest in environmental management systems and new technology • Potential for market diversification to reduce seasonality • Can absorb large visitor volumes	• Land and resource hungry • Potentially large ecological footprint • May not relate readily to local community • Potentially greater economic leakages, including repatriation of profits • Anonymity and lack of authenticity • Potential for exploitation of community/environment and lack of local influence • Possible lack of long term commitment to the local area
Medium, small and micro enterprises	• Individually owned and potentially responsive to local circumstances • May be located in areas of economic need • Flexible, with potential to grow • Able to deliver authentic experience • Profits may be retained in community	• Moderate to low levels of employment • Variable quality • Lack of resources to make investments in quality and environmental management • Lack of business skills • Difficulty in securing market access
Community-based tourism	• Products owned/operated by community, with sharing of economic and social benefits • Wider community awareness stimulating local support for conservation of culture and nature • Delivery of authentic experiences based on local knowledge • Increased visitor awareness of, and support for, community issues	• Any uncertainty over ownership, and lack of entrepreneurial motivation, may lead to weak economic sustainability • Challenge to ensure fair distribution of benefits • Lack of business skills and difficult access to markets • Can be difficult to break dependency on outside assistance
Ecotourism enterprises	• Growing market interest • All ecotourism products by definition should be specifically designed to minimize environmental impact, and to support conservation and communities • Suited to sensitive/protected areas	• Location in natural areas, and possibly indigenous communities, opens potential for intrusive impact • Potential to abuse term 'ecotourism', with positive impacts not assured • Visitor appeal often seasonal
Activity tourism enterprises	• Growing market interest • Strong recreational benefits • Potential to extend season • Can generate new tourism in remote rural areas • Some environmentally benign activities—walking, cycling	• Can be seriously environmentally damaging if not properly managed/controlled • Potential concerns with visitor safety
Cultural tourism enterprises	• Supporting conservation of heritage and cultural richness • Potential to extend season • Increases visitor awareness	• Term difficult to define • Potential to degrade culture unless well handled

3.4 Assessment of Sustainable Tourism

The management of tourism affects the conditions of destinations and host communities, and more broadly, the futures of ecosystems, regions and nations. Informed decisions at all scales are needed so that tourism can be a positive contributor to sustainable development in keeping with its role as a significant source of both benefits and potential stresses. During the decade since the 1992 Rio conference, planners and academics in many nations and specific destinations have been working to develop indicators suitable for their management needs. These indicators have focused both on issues of impact and sustainability for tourism, and on more traditional management indicators that respond to particular needs at many scales. As Hunter (1997) and Wheeller (1993) note, **sustainable tourism as a concept is meaningless without indicators and other monitoring tools that can inform us about the impacts of tourism and determine whether they are acceptable or not** (see McCool et al., 2001). As such, the development of indicators is fundamental to both the research and practices of sustainable tourism development.

As previously introduced within section 2.2 of the present report, indicators represent key-instruments to analyze Tourism. Indicators are, indeed, measures of the existence or severity of current issues, signals of upcoming situations or problems, measures of risk and potential need for action, and means to identify and measure the results of our actions. Indicators are information sets which are formally selected to be used on a regular basis to measure changes that are of importance for tourism development and management. They can measure: a) changes in tourism's own structures and internal factors, b) changes in external factors which affect tourism and c) the impacts caused by tourism. Both quantitative and qualitative information can be used for sustainability indicators. An indicator is normally chosen from a range of possible data sets or information sources because it is meaningful with regard to the key issues to which tourism managers must respond. Use of that indicator can lead to actions to anticipate and prevent undesirable (or unsustainable) situations at destinations (UNWTO, 2004).

Tourism sector decision-makers need to know the links between tourism and the natural and cultural environments, including the effects of environmental factors on tourism (possibly expressed as risks to tourism) and the impacts of tourism on the environment (which may also be expressed as risks to the product). Responsibility requires knowledge. Using existing and newly gathered data, changes in environmental, social and economic conditions can be detected. The objective is to reduce future risks to the tourism industry and to destinations. Some of the benefits from good indicators include:

1. better decision-making - lowering risks or costs;
2. identification of emerging issues - allowing prevention;
3. identification of impacts - allowing corrective action when needed;
4. performance measurement of the implementation of plans and management activities – evaluating progress in the sustainable development of tourism;
5. reduced risk of planning mistakes - identifying limits and opportunities;
6. greater accountability - credible information for the public and other stakeholders of tourism fosters accountability for its wise use in decision-making;
7. constant monitoring can lead to continuous improvement - building solutions into management.

A broad-based participation of key stakeholders during sustainable tourism indicators development is strongly recommended by past studies (UNWTO, 2004; Miller, 2001; Chris & Sirakaya, 2006; Torres-Delgado, 2014;

Asmelash and Kumar, 2019; Agyeiwaah et al., 2017). The development of sustainable tourism indicators is necessarily a participatory process. While the impetus may come from a local authority, from the community itself, the tourism operators or as a response to a specific proposal, early involvement of other government departments, local stakeholders and community organizations, those who will help define issues and sources of information for indicators, is considered essential. The complexity of stakeholder groups, their interests and relationships, at the local level cannot be underestimated. UNWTO (2004), for example, identifies the following potential stakeholders: at Community level (e.g. Local community groups; native and cultural groups; traditional leaders; private sector employees; property and building owners; tenants; etc.); at Public level (e.g. Municipal authorities; regional authorities, e.g. planning areas, conservation authorities, coastal zone, regional parks, etc.; National ministries responsible for tourism and its key assets; other ministries and agencies in areas affecting tourism; agencies with an interest in the planning or maintenance of specific attractions, e. g. parks, protected areas, museums, marketplaces, cultural sites and events; etc.); at Private level (e. g. Tour operators and travel agents; accommodation, restaurants and attractions and their associations; transportation and other service providers; guides, interpreters and outfitters; suppliers to the industry; tourism and trade organizations; business development; etc.); at Non-Governative Organizations level (e.g. environmental groups; conservation groups, e.g. wetlands, native species, parks, cultural heritage; other interest groups, e.g. hunters, fishers, sports and adventure associations; etc.); at tourists level (e. g. organizations representing tourists' interests at the points of origin; international tourism bodies; etc.). In order to reach a broad consensus in the selection process of the most suitable indicators, Delphi method is one of most commonly adopted (Torres-Delgado, 2014; Agyeiwaah, 2017). Delphi Method, which came into being since the 1960s, is a very helpful technique which circulates questionnaire among a board of experts who are not aware of the identity of fellow members of the panel. It is an imperative means of eliciting and refining group decision based on the justification that group of experts are better than one expert when exact knowledge is lacking (Asmelash and Kumar, 2019).

How many indicators are quite enough to assess the sustainability of tourism remained obscure (Cernat and Gourdon, 2012). As noted by UNWTO (2004), though there is no ideal number, 12 to 24 indicators are optimal because using only few numbers of indicators is unrealistic for the fact that it fails to incorporate all important aspects and using more than 100 is impractical since it buries individual indicators. Sors (2001), on his part, argues that 20 to 50 indicators are quite enough. However, the quest for sustainable indicators has to take into account the various interpretations of sustainable tourism elaborated by academics and national/international organizations. Sustainable indicators must be indeed based on the multidimensional nature of this concept. Traditionally, sustainable tourism development contains economic, socio-cultural and environmental dimensions. Recent debates suggest that sustainable tourism development should involve more dimensions. Without doubt sustainable tourism is a compromise of ecological, social, economic, institutional/political, cultural and technological dimensions at the international, national, regional and local community levels and within agriculture, tourism, political sciences, economics and ecology. If the focus is represented by the enterprise level, economic, social, environmental and cultural dimensions have to take into account in the development process of sustainable indicators. Political, managerial and technological issues are not indeed under full control by tourism industries. Moreover, introducing politics, especially, but also management and technology, as core dimensions essentially provides operators an excuse to avoid taking any personal responsibility (Agyeiwaah et al., 2017). Nevertheless, all these dimensions are always interdependent and mutually reinforcing. In addition, a proper development of sustainable indicators requires the identification of

the most suitable core areas for each sustainable dimension to monitor (UNWTO, 2004). In a recent study (Asmelash and Kumar, 2019), through an extended literature review, the following core areas have been identified as the most relevant for sustainable tourism development at the destination level: in terms of economic sustainability, employment quality, economic viability and local prosperity are the most relevant characteristics; in the environmental dimension, physical integrity, biological diversity, resource efficiency and environmental purity are considered the most relevant in his field; as regards the socio-cultural dimension of sustainability, social equity, visitor fulfillment, local control, community wellbeing and cultural richness are indispensable variables to take into account for a proper development strategy; finally, in terms of institutional sustainability, local-oriented control policy, political participation, local planning policy and political support at different levels of government are the key-areas. A similar study (Agyeiwaah et al., 2017) has identified for Tourism industry level which indicator themes should be taken into account for sustainable tourism development: in the economic dimension, revenues and profitability, employment and visitor satisfaction are the most relevant; as regards the social dimension, residents involvement, participation and awareness, congestion and overcrowding and community satisfaction are indispensable; within environmental dimension of sustainability, water quality and management, solid waste discharge and management, recycling rate, air/atmospheric quality and energy consumption are key-issues to monitor; finally, in terms of cultural sustainability, retention of local customs and language, maintenance of cultural sites and actions taken to promote indigenous culture are the most important.

As detected in literature (Agyeiwaah et al., 2017; Asmelash and Kumar, 2019; Torre-delgado and Saarinen, 2014), in the past decades, great efforts have been made in developing sustainable tourism indicators.

The European Community Models of Sustainable Tourism project was one of the first studies of tourism to be conducted from a sustainable perspective and to include indicators. Published in 1994 by the International Federation of Tour Operators, it drew up a list of indicators of the local environment and the long-term sustainability of the profitability of a tourist activity. It included such factors as safeguarding economic effectiveness, the prosperity of local residents, cultural identity and the upgrading of accommodation. Later, in 1995, the WTO published the guide that has probably oriented most recent indicators – *What Tourism Managers Need to Know: A Practical Guide to the Development and Use of Indicators of Sustainable Tourism* (UNWTO, 1995) – which was updated in 2004 as the *Guidebook on Indicators of Sustainable Development for Tourism Destinations* (UNWTO, 2004). In 1996, Agenda 21 for the travel and tourism industry made it its priority "to fix realistic indicators, applied at the local and national levels, for assessing and monitoring progress in sustainable tourism development" (UNWTO, 1996). At a later date, the European Commission's (EC) communication – *Basic Orientations for the Sustainability of European Tourism* – reiterated the "urgent need for reliable carrying capacity analysis techniques, development of user-friendly sustainability reporting mechanisms, and better statistical monitoring and indicator systems to provide information for managing tourism supply and demand" (EC, 2003). The same need has also been identified by many academics. Thus, Butler (1999) wrote that "the greatest research need is to develop measures of sustainability and to apply these to existing and new forms of tourism development to help determine what affects sustainability and how it can be achieved". In addition, Ko (2005) stressed that "if sustainable development is one of the tourism industry's major contemporary objectives, then the industry needs to be able to measure its performance and impacts". Hence, indicators are being increasingly called upon to guide the tourism sector to sustainability, but they are not without their problems.

Firstly, "indicator effectiveness to achieve the ideals of sustainable tourism development is affected by the ambiguity in the definition of the concept of sustainable tourism and problems associated with data availability and baseline knowledge" (Torre-delgado and Saarinen, 2014).

In addition, sustainable tourism development is not easy to measure without breaking it down into small issues represented by indicators. Since there is no "one-size-fits-all" approach in assessing a progress towards sustainable tourism development, a comprehensive methodology is highly demanding (Asmelash and Kumar, 2019). Although the first action of every country should be measuring the level of sustainability (Fernández & Rivero, 2009) using systematic and scientific methods of sustainability assessments (Ko, 2005), very little progress has been made in monitoring and measuring sustainable tourism development. It is hardly possible to easily decide whether a given tourist site is progressing toward or away from its sustainability goal (Mahdav et al., 2013). One of the main obstacles to attain sustainable tourism is the failure to measure its sustainability level due to absence of mutually accepted assessment methodology. Thereby, in place of an "universal" approach we should think about sustainable tourism not necessarily assuming that the issues are the same in different destinations or in different tourist activities, but keeping in mind the importance and peculiarity of each context. Only with this approach it will be possible to design suitable indicators for sustainable tourism development.

Moreover, key features of effective indicators are relevance, availability of data to evaluate them, and the feasibility of comparing results over time. Simplicity is the key feature for a good suistanble tourism indicator. The tendency to develop overly ambitious sets of indicators may be politically appealing but accomplish little more than greenwashing. In addition, the combination of funding constraints, lack of commitment and support, lack of proper implementation and action framework, unclear goals and outcomes, unclear definition of stakeholder roles, and little development of systematic measures of assessment for enterprises is a recipe for failure (Marzo-Navarro et al., 2015; McCool and Stankey, 2004; Miller and Twining-Ward, 2005; Schianetz et al., 2007; Larson and Poudyal, 2012). According to Asmelash and Kumar (2019) the time has come to take a step back and look at what has already been proposed, rather than constantly creating new indicators. Much excellent research has been conducted and little attempt has been made to integrate these studies to see what common themes and sub-themes emerge that may be useful in identifying a smaller set of core, actionable sustainable tourism indicators that can be adopted by tourism destinations and industries.

The path to a more sustainable tourism sector is a journey that consists of many small steps, where progress is made incrementally. Overwhelming industry with too many choices serves only to delay real progress. Instead, adopting a smaller set of cores, yet manageable actions represents a powerful first step, and the definition of a core set of unambiguous and universal indicators by which these actions can be guided and assessed is an essential step in enabling this.

3.4.1 The most common methods used to assess Sustainable Tourism

Even if it is not easy to assess the suistainable tourism development, many researchers and organizations have tried to fill this gap. In this paragraph we describe some of the most common set of indicators or methods developed by researchers and national and international organizations to assess this particular journey.

In terms of organizations and institutions the following ones are the most notable to worthy:

- **World Tourism Organization (UNWTO):** WTO has been promoting the use of sustainable tourism indicators since the early 1990s, as essential instruments for policy-making, planning and management processes at destinations.

  The ***Guidebook on Indicators of Sustainable Development for Tourism Destinations***, firstly published in 1995 and then updated in 2004, is the most comprehensive resource on this topic elaborated by WTO. This guidebook represents the result of an extensive study on indicator initiatives worldwide which involved 62 experts from more than 20 countries. This guidebook is over 500 pages long, identifies 13 broad dimensions of sustainability covering over 40 major sustainability issues, ranging from the management of natural resources (waste, water, energy, etc.), to development control, satisfaction of tourists and host communities, preservation of cultural heritage, seasonality, economic leakages, or climate change, to mention just a few. For each issue, indicators and measurement techniques are suggested with practical information sources and examples. It identifies more than 150 sub-components and defines over 700 possible indicators (768 indicators, 29 of which are basic. These 29 basic indicators are ranked by main issues in sustainable tourism and result to be applicable to all types of destinations). The publication also contains a procedure to develop destination-specific indicators, their use in tourism policy and planning processes, as well as applications in different destination types (e.g. coastal, urban, ecotourism, small communities). Numerous examples and 25 comprehensive case studies provide a wide range of experiences at the company, destination, national and regional levels from all continents (UNWTO, 2014).

  Recently, with the support of the United Nations Statistics Division, UNWTO launched the ***Statistical Framework for Measuring Sustainable Tourism initiative*** (MST Framework), which aims to integrate current economic focused frameworks and environmental, social and cultural dimensions (UNWTO, 2017). This is a long-standing and important step towards stabilizing international standards in the measurement of tourism sustainability, capable of supporting the development of reliable, internationally comparable quality statistics.

- **European Commission (EC):** Sustainable development was an important topic in all the policies adopted by the European Commission in the field of tourism. In this regard, one can mention a first official document focused entirely on sustainable development in the field of tourism entitled *Basic orientations for sustainability of European tourism*, which has been adopted by the European Commission in 2003 (COM (2003) 716). One year later, the Tourism Sustainability Group (TSG) has been created which adopted in 2007 the document entitled *Action for More Sustainable European Tourism, 2007* (TSG, 2014). In the same year, the European Commission approved the document "Agenda for a sustainable and competitive European tourism" (COM(2007)621 Final). It is also worth mentioning, that in 2006, the Statistical Office of the European Union—Eurostat—developed a Manual on Sustainable development indicators of tourism where a set of 20 core indicators for sustainable tourism, including descriptions of each indicator were included (EUROSTAT, 2006).

At the same time, the European Environment Agency (EEA) acknowledged that "despite the difficulties of quantifying the real impact of tourism on the environment, any increase in the number of tourists undoubtedly has an impact on environmental variables such as waste generation and energy consumption (in terms of volume and local level)" (EEA, 2015). EEA has also launched the so-called ***Tourism and Environment Reporting Mechanism*** (**TOUERM**), which is based on the use of indicators that have to be able to reflect both environmental impacts and sustainability trends at the European level (COM(2007)621 Final). These indicators are policy relevant, feasible and regularly updated in order to be able to reflect both environmental impacts (baseline and threshold) and sustainability trends at a European scale. Some of the indicators may also address specific geographical contexts, such as coastal zones, rural areas and urban areas. Some relevant information deriving from destinations might also be included if relevant (EU, 2016).

"Developing as system of indicators for sustainable management of destination" represented the first action within the second axis of the "Promote the development of sustainable, responsible and high-quality tourism" which is found in the political document entitled *Europe, the world's no 1 tourist destination—a new political framework for tourism in Europe*, launched by the European Commission in 2010 (COM (2010) 352). This action was achieved in February 2013, when the European Commission officially launched system of indicators for the sustainable management of tourism destinations called ***The European Tourism Indicators System for Sustainable Destinations*** (**ETIS**) as a toolkit. ETIS was reviewed and updated in March 2016 after a 2-year pilot phase and is now the official system adopted by the European Commission to implement sustainable policies in the tourism sector. It builds on the set of indicators TOUERM, above mentioned, with some of which there is a correspondence in the ETIS framework, but also on the indicators developed at international level by the UNWTO and by the Global Sustainable Tourism Council (GSTC). The main issues about this kind of indicators are connected to the multiple interlinked sectors (such as transports and mobility, waste production and management, water and energy use and management, urban and territorial planning, management of natural and cultural heritage,…) where tourism impacts in environmental and sustainability terms and to the difficulty in some cases in finding the relevant statistical data with the necessary level of detail. Building a coherent framework of reference is essential to monitor and evaluate the extent to which tourism is sustainable and circular and to identify areas of intervention for policymaking. Being able to manage tourism sustainably means enhancing the attractiveness of territories based on natural resources, which otherwise would be impoverished, but also to develop integrated strategies covering different sectors.
This is the ratio behind ETIS approach, whose aim is to help destinations monitor and measure their sustainable tourism performance using a common comparable approach on a voluntary basis. ETIS is meant as a management, information and monitoring tool based on self-assessment, observations, data collection and analysis carried out by the destination itself.
The ETIS set consists of 43 core indicators and an indicative set of supplementary indicators, whose use and application are quite "free", in the sense that destinations can choose which ones are relevant, needed and appropriate for their use. The system can also be integrated into

already existing monitoring systems. The flexibility of the system is an added value that makes it more feasible and at the same time more successful.

The 43 core indicators are divided into four sections :

a. Destination management
b. Economic value
c. Social and cultural impact
d. Environmental impact.

Here follows also an indicative list of supplementary indicators:

1. Maritime and coastal tourism
2. Accessible tourism
3. Transnational cultural routes.

The European Commission suggests the implementation of ETIS can be covered in seven steps as follows, outlining the governance of the process, which has been adopted and adapted in INCIRCLE (see paragraph 6 and 6.1), which is to be started by a local "champion" or local destination coordinator:

1. Raise awareness among stakeholders and policy makers
2. Create a destination profile using the destination profile form
3. Form a Stakeholder Working Group (SWG) where organisations and individuals involved and interested in the tourism industry are included
4. Establish roles and responsibilities by means of an agreement shared by stakeholders on targets and related actions
5. Collect and record data also conducting targeted surveys where needed[1]
6. Analyse results in order to prioritise needs and set an action plan
7. Enable ongoing development and continuous improvement by means of a targeted strategy, continuous and expanded use of ETIS and identification of proper funding sources.

Finally, the ETIS as a management tool and TOUERM as a reporting mechanism can complement each other as initiatives to better inform about tourism sector sustainability performances.

Furthermore, the European Commission promotes sustainable development of tourism in Europe also through the the **EU eco-management and audit scheme** (**EMAS**) and the **EU Ecolabel**. EMAS (Commission Decision (EU) 2016/611) is a tool developed by the Commission allowing actors in the tourism sector to improve their environmental performance and promote the quality of their services. This voluntary tool and certification scheme aims to help its users to achieve enhanced performance. Registered organisations also gain credibility and transparency thanks to a verification of performance and the validation of external communication (the EMAS environmental statement) by a third-party verifier. The European Commission, in consultation with EU Member States and other stakeholders, has developed **sectoral reference documents** (**SRDs**). The objective of SRDs is to provide additional guidance and inspiration to organisations aiming to improve and communicate their performance. The

[1] A selection of sample survey forms is annexed to the ETIS Toolkit and is available on the European Commission's website

SRD for the tourism sector covers best environmental management practices within organisations in the tourism sector that provide accommodation, food and beverage services, manage tourism destinations or provide travel, accommodation or activities for tourism (travel agents and tour operators) (Styles et al., 2013). The **EU Ecolabel** is a voluntary label of environmental excellence of the European Union. It helps consumers identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw material through to production, use and disposal. The EU Ecolabel is recognised throughout Europe. Specific EU Ecolabel criteria have been developed for tourist accommodation and campsite services (Garrido et al., 2016).

- **Global Sustainable Tourism Council (GTSC)**: GSTC is an independent and neutral organization, established in 2010, which represents a diverse and global membership, including UN agencies, NGO's, national and provincial governments, leading travel companies, hotels, tour operators, individuals and communities – all striving to achieve best practices in sustainable tourism.
  GSTC has developed 2 sets of criteria to provide a common understanding of sustainable tourism:
  - The **GSTC Destinations Criteria** – known informally also as "**GSTC-D**" -- (GTSC, 2019) are the minimum that any tourism destination should aspire to reach. They are organized around four main themes: sustainable management; socio-economic impacts; cultural impacts; and environmental impacts. They have applicability to the entire tourism sector. In addition, application of these criteria will help a destination to contribute towards the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals. Against each of the criteria, one or more of the 17 SDGs is identified, to which it most closely relates.
  - The **GSTC Industry Criteria** (GTSC, 2016) for hotels and tour operators are the guiding principles and minimum requirements that any tourism business should aspire to reach. They are organized around four main themes: effective sustainability planning, maximizing social and economic benefits for the local community, enhancing cultural heritage, and reducing negative impacts to the environment. They have applicability to the entire tourism industry.

  Some of the uses of both standard criteria include the following:
  - Serve as the basis for certification for sustainability
  - Serve as basic guidelines for businesses of all sizes to become more sustainable, and help businesses choose sustainable tourism programmes that fulfill these global criteria
  - Provide greater market access in the growing market for sustainable products, serving as guidance both for travellers and for travel agencies in choosing suppliers and sustainable tourism programmes
  - Help consumers identify sound sustainable tourism programmes and businesses
  - Serve as a common denominator for information media to recognize sustainable tourism providers
  - Help certification and other voluntary programmes ensure that their standards meet a broadly-accepted baseline

- **Global Reporting Initiative (GRI)**: GRI is an independent international organization that has pioneered sustainability reporting since 1997. GRI helps businesses and governments worldwide understand and communicate their impact on critical sustainability issues such as climate change, human rights, governance and social well-being. This enables real action to create social, environmental and economic benefits for everyone. The GRI Sustainability Reporting Standards are developed with true multi-stakeholder contributions and rooted in the public interest. The GRI Sustainability Reporting Standards (**GRI Standards**) are the first and most widely adopted global standards for sustainability reporting.

  GRI has never developed specific standards for sustainable tourism. Neverthless, in the 2002, collaborated with the *Tour Operators' Initative - TOI* (TOI is a network of tour operators committed to introducing sustainability into their business practices established in 2000. The Initiative has been developed with the support of the United Nations Environment Programme (UNEP), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Tourism Organization (WTO/OMT), who are also full members of the Initiative) for the development of the **Tour Operators' Sector Supplement** (GRI, 2002), a document which offered a set of supplemental sustainability performance indicators for use in conjunction with the *GRI 2002 Sustainability Reporting Guidelines ('the Guidelines')*. The indicators have been grouped under five categories: Product management and development (PMD) includes actions related to the choice of the destination as well as the type of services to be included (e.g., the use of train vs. plane).
    - Internal management (IM) reflects all the operations and activities that take place in the headquarters or country offices (e.g., use of office supplies, production of brochures, direct employment).
    - Supply chain management (SCM) addresses actions related to the selection and contracting of service providers.
    - Customer relations (CR) summarises the actions taken to deal with customers, not only with regards to the responsibility to serve them and reply to their comments, but also the opportunity to provide information and raise consumer awareness regarding sustainability.
    - Co-operation with destination (D) includes all activities and decisions related to destinations that tour operators make beyond the production and delivery of their holiday package. This mainly includes efforts made by tour operators to engage in dialogues with destination operators about the impacts of tour packages, and philanthropic activities.

  In the 2013, GRI published **Sustainability Topics for Sectors: What do stakeholders want to know?** (GRI, 2013). This report identifies the main sustainability topics considered to be relevant by different stakeholders, in relation to the different business activity group. Within this report Tourism has been analyzed (Section number 40: Hotels, Restaurants and Leisure, and Tourism Services).

- **Other initiatives**

A. Green Destinations – Standard and Reportinh System

The **Green Destinations Standard** is a tool to measure, monitor and improve the sustainability profile of destinations and regions. The Green Destinations Standard for sustainable destination development and management satisfies the need to make sustainable development concrete, objective and demonstrable. Destinations worldwide can adapt their sustainability management system and implementation actions to the requirements the Green Destinations standard and obtain recognition of their efforts (Green destinations, 2017).

This standard is inspired by internationally recognised standards such as ETIS, ISO 14001, EMAS and the Global Reporting Initiative. In addition, it is "Recognised" by the Global Sustainable Tourism Council (GSTC) and it originates from an assessment system to gauge sustainability and quality of coastal destinations: the QualityCoast programme. Based on this system, an initial Global Sustainable Tourism Review (GSTR) was developed to cover also non-coastal destinations. Through a consultation round in the months of July-August 2015 under Green Destinations partners, the current Green Destinations Standard was developed.

The Green Destinations Standard consists of 100 criteria, covering the following 6 main themes:

1. Destination Management
2. Nature & Scenery
3. Environment & Climate
4. Culture & Tradition
5. Social Well-being
6. Business & Hospitality

Moreover, this standard has several 'special' criteria:

- "Optional" these criteria are not mandatory
- "Optional: can be required by specific certification programmes": these are not mandatory by the 'base' standard, but may be required by specific countries or programmes, such as ecotourism destination programmes, or by countries where community development is of high importance
- "Extra": these criteria show where the 'base' standard goes beyond GSTC requirements
- "Not Applicable": these criteria are important enough to be included in the base standard, but may in certain circumstances not apply to certain destinations.

In order to comply with the Green Destinations standard, destinations should comply with every criterion except those marked 'Optional' or in case 'Not Applicable' is justified (Green destinations, 2017).

B. Global destination sustainability index (GDS-Index)

The **Global Destination Sustainability Index** (**GDS-Index**) is a destination level programme that measures, benchmarks and improves the sustainability strategy and performance of meetings, events and business tourism destinations. The mission of the programme is to engage, inspire and enable destinations to become more sustainable places to visit, meet in and thrive in. The

GDS-Index is not owned by any one organization
and was created in 2015 by fifteen visionary Scandinavian Cities, MCI and the International Congress and Convention Association (ICCA). It is operated as a multi-stakeholder partnership founded and endorsed by IMEX, MCI, the International Congress and Convention Association (ICCA) and European Cities Marketing. Gubi Consulting and Guy Bigwood is responsible for the management of the Secretariat (GDS-Index, 2019).
The 2019 GDS-Index uses 70 indicators that evaluate the destinations across four key areas (GDS-Index, 2019):

- Environmental Performance: 17 questions – includes a city's performance pertaining to its policies and infrastructure, such as climate change commitment, recycling availability, public transport options and air pollution levels.
- Social Progress Performance: 10 questions – indicates the performance of the city against indicators of Personal Safety, Access to Information and Communications, Health and Wellness, Inclusiveness of the Social Progress Index, and over tourism.
- Supplier Performance: 14 questions – addresses the sustainability commitment and performance of the local meetings' industry supply chain, including airports, events agencies, hotels, venues and restaurants.
- Destination Management Performance: 29 questions – indicates the sustainability commitment of the convention bureau or destination management organisation, including questions pertaining to maturity of the destinations sustainability strategy, leadership, communication of sustainability initiatives to support client planners, and the rigorousness of their reporting on sustainability operations.

Each performance indicator is assigned a number of maximum points and according to how well the destination fulfils each indicator, it gets some of these points, no points or all points (a full score) (GDS-Index, 2019).

Regarding Academics, an elevated number of sets of indicators or indices has been developed in sustainable tourism research, as debated in the previous paragraph.

However, according to Torres-delgado and Saarinen (2014) some noteworthy are the following:

- **Set of indicators**:
  - McCool et al. (2001) provided tourism industry perspective on what items could be sustained and what indicators should be used to monitor for sustainability policies. This study evaluated 26 indicators at to three levels of destination marketing: the state, tourism region, and local community.
  - Chris and Sirakaya (2006) developed a set of indicators to measure community tourism development (CTD) within a sustainable framework. 125 indicators were developed: political (32), social (28), ecological (25), economic (24), technological (3), and cultural dimensions (13).
  - Moore and Polley (2007) identified six potential indicators according to visitors' experience for the future sustainable management of protected areas as tourist destinations.
- **Indices:**

- One of the first sustainable tourism indices to be designed was the **tourism penetration index**. It was proposed by McElroy (1998) on realising that mass tourism was threatening the sustainability of small Caribbean islands. Based on perceptions of the situation, he sought to build a composite indicator that might measure the economic, social and environmental impact of the tourism industry. Due in the main to a paucity of data, his index was based on just three indicators (visitor spending per capita, daily visitor densities per 1000 population and hotel rooms per square kilometre).
- Sanchez and Pulido (2008) developed **the sustainable tourism index**, which they then calculated for several Spanish autonomous communities using the weighted sum of 14 simple indicators.
- Similarly, Castellani and Sala (2010) produced a **sustainable performance index (SPI)** for tourism policy development based on 20 indicators concerned with demographic dynamics, economic and social conditions of local communities, environmental factors and tourism characteristics of the region under investigation. The SPI was used to assess the implementation of the European Charter for Sustainable Tourism by the Alpi Lepontine Mountain Community (Italy).
- Blancas et al. (2010) have assessed sustainable tourism by developing and applying a multidimensional index that comprised 32 simple indicators. They applied their index to Spanish coastal destinations and their results served as a guideline for tourism planning.
- In addition, other well-known environmental indices have been applied to tourism, for example, the carrying capacity (see Garrigos et al., 2004) and the **ecological footprint** (see Hunter and Shaw, 2007).

In addition to these examples, it is also noteworthy the work of Asmelash and Kumar (2019) which defines a set of 53 sustainable tourism indicators specific to monitor tourism activities and its impacts. There are some important contributions of this study. First, the involvement of many stakeholders, including university faculty members, tourists, local residents and heads and experts of culture and tourism bureau and offices is worth mentioning. Second, unlike most previous studies, this study considered the DPSIR framework during the indicator development process. This would help destination managers to have a clear image about the driving forces, pressures caused by tourism, destination sate of healthy, impacts and effectiveness of responses undertaken to mitigate negative impacts of tourism and to maximize the positive results of the tourism industry. Third, this study departs from the existing literature dealing with tourism sustainability. Because, unlike other studies, it considered the twelve (12) aims of sustainable tourism recommended by the UNWTO (2004) and it extended the triple bottom principle through the inclusion of institutional sustainability represented by four (4) sub-dimensions. This is another contribution of this study for the fact that it is hardly possible to maintain balance between the three traditional dimensions of sustainable tourism with the exclusion of the institutional dimension.

For a more exhaustive in-depth ragarding which indicators are present in each set of indicators analyzed in this paragraph, a dedicated database has been developed (**Annex A**).

3.5 From assessment to actions: best practices around the world

The present chapter introduces and describes a list of **best practices related to sustainable tourism** around the world. In order to offer an overview as comprehensive as possible, different sources have been consulted, including scientific papers, reports from international bodies, books and handbooks. From all these studies, best practices dealing with sustainable tourism and its three components, environmental, social and economic, have been mapped.

Several typologies of sustainable tourism initiatives have been reported concerning numerous aspects related to the impacts of the presence of tourists in a given area, the interaction with the local communities and the territories, as well as economic impacts on local economies. In particular, key topics refer to water and waste management, mobility, accessibility of places, respect for local communities and protected areas, increased awareness about sustainability themes as well as information and involvement of all actors on sustainability issues.

As shown in the following table, the mapped best practices are implemented at different levels, from single operator, accommodation facility or local association promoting specific interventions, to groups of tourist structures, tourist destinations, entire regions or nations by proponing, for instance, interventions of policy implementations or other policy instruments related to the development of sustainable tourism.

Table 2. Sustainable Tourism Best practices
Source: authors' elaboration

	Name of the initiative	Brief description	Place of implementation	Subjects involved	Document references
Source: Wei, F., (2013). *Compendium of Best Practices in Sustainable Tourism.* United Nations Department of Economic and Social Affairs.					
1	The Long Run Initiative (LRI)	The LRI is built around Global Ecosphere Retreats® (GER) certified Long Run Destinations, Long Run Alliance Members and Long Run Supporters. By enhancing ecosystems management and building recognition and support for the 4Cs approach to sustainability, the LRI is creating a driving force to promote and encourage sustainable thinking globally.	Southern Africa	Zeitz Foundation	Pg 3-4
2	Air New Zealand Environment Trust (ANZET)	The initiative support biodiversity conservation projects in New Zealand, in partnership with other organizations and companies, encouraging donations from other potential resources and customers. Air New Zealand sponsors projects of environmental education to help kids understand the importance and to protect the cultural heritage of Maori.	New Zealand	Air New Zealand	Pg 5-6
3	Andaman Discoveries	Andaman discoveries is a Thai social enterprise that, after 2004 tsunami,	Thailand	Andaman Discoveries	Pg 7-9

		implement over 120 projects in a dozen villages. All projects have focused on creating realistic economic opportunities for local communities. Andaman Discoveries has placed long-term social, economic, and environmental sustainability as its top priority in all of its projects.			
4	Caribbean Tourism Organization (CTO)	The CTO serves as the tourism development representative office for more than 30 countries and territories, and a myriad of allied private sector members from the Caribbean. the CTO is missioned to provide service and information needed for developing sustainable tourism for the social and economic benefits of the Caribbean countries.	Caribbean	Caribbean Tourism Organization	Pg 9- 10
5	Crosswaters Ecolodge	The aim for Crosswaters Ecolodge was to become the first ecolodge in China. During the planning stage, the design team of the lodge conducted extensive observations and research to ensure the buildings had minimal negative impact on the environment and surrounding communities. The Crosswaters Ecolodge has provided an example of sustainable buildings and ecotourism.	China	Crosswaters Ecolodge	Pg 11-12
6	Experiencias Xcaret	It is a Mexican sustainable entertainment group of businesses. Its products and services are famous for travel experiences for the tourists. It has organized awareness and conservation programs to help educate children and young people. Xcaret was awarded in 2012 with the "Ulyses Prize" for the United Nations World Tourism Organization (UNWTO) for the excellence in his best practices in sustainable tourism.	Mexico	Group of businesses	Pg 13-14
7	Feynan Ecolodge	Feynan Ecolodge is the first ecolodge in Jordan. It is situated in the Dana Biosphere Reserve and is designed to contribute to local socio-economic development in total harmony with its environment. With an exemplary level of environmental sustainability demonstrated through the design and the operation of the lodge, it should serve as a model for many other future ecotourism developments across the Middle East.	Jordan	Feynan Ecolodge	Pg 15-16
8	Frégate Island Private Eco resort	Frégate Island Private (FIP) was built in 1998 as an eco-resort to operate with	Seychelles	Frégate Island Private	Pg 17-18

		sustainable tourism and environment conservation strategies. Its focus is on energy and carbon reduction, habitat and ecosystem improvement, water and general resources management, and economic, social and welfare investments for the local population.			
9	Hidden Valley Inn Reserve	The resort is the natural habitat to several endangered animal species. Through strategic planning, the resort and with the numerous innovative tourism products offered, the resort also creates economic opportunities to empower local communities and showcases the rich heritage.	Belize	Hidden Valley Inn Reserve	Pg 19-20
10	Matin Abad Desert Camp & Organic Farm	The essential purposes of building Matin Abad EcoCamp were to demonstrate, educate and to help promote the ideas of "Consider, respect and conduct the ethic codes" and guidelines by the international organizations of Tourism and Ecotourism, so as to practice the CSR and SRB models and to build sustainable Tourism in Iran.	Iran	Matin Abad Desert Camp & Organic Farm	Pg 21-22
11	Huangshan Scenic Area Administrative Committee	Mt. Huangshan is a UNESCO World Heritage Site and recorded in the World Geopark Network. Huangshan Scenic Area Administrative Committee (HSAC) is committed to promoting responsible and sustainable tourism in the area through conservation measures, environmental protection actions and cultural activities.	China	Mt. Huangshan Scenic Area Administrative Committee	Pg 23-24
12	Premiki institute for counseling, promotion and development of accessible tourism	Premiki has placed offering tourism products to everyone. offers accessible travel products, certifies tourism facilities which are "disability friendly", and provide trainings to tourism professionals on accessible tourism.	Slovenia	Premiki Institute	Pg 25-26
13	Rivers Fiji	Rivers Fiji it's a tour operator and champion of ecotourism. The company strives to help promote sustainable tourism and responsible travel worldwide. Respecting and protecting the environment has been the foundation of Rivers Fiji's vision. It provides economic alternatives to rural highland communities, creating a unique conservation and sustainable tourism model now and for future generations.	Fiji	Rivers Fiji	Pg 27-28
14	Shamwari Game Reserve	The reserve has been a showcase project of conservation and tourism in synergy.It takes a systematic and scientific approach to ensure that re-stocking	Eastern Cape	Shamwari Game Reserve	Pg 29-30

		procedures are gradually and strictly followed so no resources would be over-stressed.			
15	The Blue Yonder	It's a travel company idea to promote sustainable development with tourism. It uses tourism as an approach to solve challenges of development. Besides that, TBY has a strong belief in and is also trying to help the people, culture, heritage, lifestyle, livelihood and the future of the community. Programs of collaboration with locals and eco-initiatives to promote sustainable waste management and eco restoration are implemented.	India	Nila Foundation	Pg 31-32
16	Bushcamp Company	It's a safari operator in six safari camps in South Luangwa National Park. has always been making efforts towards responsible tourism, environmental conservation and sustainable income generation, through partnering closely with both the local community and conservation NGOs.	Zambia	Bushcamp Company	Pg 33-34
17	The Tryall Club	It is a resort that protect and enhance the environment through operation. The club maintains a high level of service for members, guests, and at the same time minimizes environmental impact on the residents of Jamaica. It has invested in raising awareness of environmental issues and support education and health programs.	Jamaica	The Tryall Club	Pg 35-36
18	Wilderness Foundation	It was the first South African non-profit organization dedicated to provide wilderness expeditions to people of all races, genders, and nationalities. Since foundation, this organization has spawned a network of conservationists from around the world to commit to saving the wilderness and wildlife.	Eastern Cape	Wilderness Foundation	Pg 37 -39
Source: Styles, D., Schönberger, H., & Galvez Martos, J. L. (2013). Best environmental management practice in the tourism sector. Publications Office of the European Union, Luxembourg.					
19	Ecocamping	It is an association of campsites in Europe that implement EMS, promote environmental practices, and advertise environmentally aware camping. Encourage EMAS registration.	Europe	Ecocamping	Pg 26
20	Hostelling International	It is a non-profit organisation that promotes sustainable development of hostels around the world, and awards HI-Q accreditation. The HI-Q Quality Management System relates to service and environment related objectives.	World	Hostelling International	Pg 26

21	Tour Operators' Initiative for Sustainable Tourism Development	It is an international association of tour operators facilitated by the UNWTO, which currently hosts the TOI Secretariat, the UNEP and UNESCO to identify and disseminated best environmental, social and economic management practices across the industry.	World	Tour Operators' Initiative for Sustainable Tourism Development	Pg 26
22	Travel Foundation	It is an UK charity established to provide support for implementation of EMS and best environmental practice across tour operators and their supply chains. Provides extensive best practice information and case studies to accommodation and acts as intermediary between tour operators and destination mangers.	UK	Travel Foundation	Pg 26
23	Travelife	It is an initiative that provides training and certification on EMS implementation for tour operators, travel agents and suppliers including accommodation.	World	Tour operators, travel agents, suppliers, accommodation.	Pg 26
24	Hotel Gavarni	is a small 25 room hotel in Paris that has implemented green procurement extensively, and even influenced local suppliers to change their processes.	Paris (France)	Hotel Gavarni	Pg 44
25	Global Sustainable Tourism Council (GSTC)	It acts to promote increased knowledge, understanding and adoption of sustainable tourism practices. The GSTC compiles and provides tools and training to encourage sustainable tourism.	World	Global Sustainable Tourism Council (GSTC)	Pg 51
26	EC Tourism Sustainability Group (TSG)	It has developed an 'indicator system for sustainable tourism destinations' that includes a core set of 75 destination level sustainability indicators.	World	EC Tourism Sustainability Group (TSG)	Pg 51
27	European Destinations of Excellence project (EDEN)	Promotes sustainable management of destinations and provides a list of good practice case studies online.	Europe	European Union	Pg 51
28	Turisme de Barcelona consortium	It is a DMO (Destination Management Organisation) who coordinated an ad-hoc working group called 'the Plan Office'. Fifteen programmes are included within the plan, all of which have some bearing on tourism sustainability.	Barcelona (Spain)	Turisme de Barcelona consortium	Pg 57
29	Cornwall AONB (Area of Outstanding Natural Beauty)	It is a DMO that promotes the development of communities and economic activity in ways that enhance the landscape character of the AONB.	Cornwall (UK)	Cornwall AONB Partnership and Unit	Pg 59

	Partnership and Unit				
30	National Ecotourism Strategy and associated five-year Action Plan (NESAP)	The objective of the NESAP is to stimulate economic growth for communities situated near protected areas, strengthen local support for conservation and contribute to rural sustainable development. Crucially, the Bulgarian government ensured that the NESAP was integrated into relevant policies and agency remits, and engaged relevant stakeholders.	Bulgaria	Bulgarian government	Pg 68
31	Local action plan	Local action plan for integrated sustainable development in the region of Majorca, with an emphasis on tourism, that culminated in the Calvià Local Agenda 21 Action Plan being approved in 1997. The plan contained 40 initiatives under ten strategic lines.	Calvià, Majorca (ES)	Forum of industry, government and community	Pg 69
32	State-level Tourism strategic framework and Local level tourism development master plans	Plans in order to manage this tourism in Croatia. The master planning process incorporated four key principles: local focus, stakeholder involvement, increasing competitiveness, pragmatic orientation.	Croatia	Croatian Government and local authorities	Pg 69
33	Tourism Garrotxa	It is a private non-profit association that has as its main objective the boosting and promotion of a model of sustainable tourism development of quality and respect for the environment, while following the criteria and strategic directives of the European Charter of Sustainable Tourism.	La Garrotxa Territory (Spain)	Tourism Garrotxa	Pg 70
34	Cairngorms Action plan	It is an Action Plan for sustainable tourism. Several objectives have been identified in the Strategy including growth in the value of tourism generated and retained in the Park and the needs of customers to be understood and addressed.	Scotland (UK)	Cairngorms National Park	Pg 94
35	Regional Strategy for Biodiversity Master Plan	The Master Plan contains actions across local authorities, the private sector and citizens. It identifies desirable social, economic and environmental outcomes. Related objectives are incorporated into public procurement, legislation, taxation and subsidies. Ten goals are contained within the Master Plan, such as maintain and restore ecological communities or reduce pressure on natural habitats.	Île de France (France)	The Conseil Régional of the Île de France	Pg 95
36	Dorset and East Devon Coast World Heritage Site	Sustainable tourism is encouraged and promoted throughout the Site. Sustainable transport options are offered to the visitor through literature,	Jurassic Coast (UK)	Dorset and East Devon Coast World Heritage Site	Pg 95

		websites and an on-going commitment to improvement of services.			
37	Müritz National Park Plan	This provides an important mechanism for integrating conservation with rural development of the region. Special monitoring of biodiversity indicators (species and habitats) are being enacted on sites identified critical to visitor impact.	Müritz National Park (Germany)	National Parks Association of Local Communities and District Councils, working groups and local stakeholders	Pg 95
38	Project for the implementation of hiking trails	It is a project for the implementation of 10 new hiking trails, guided by PDAs with inbuilt GPS, in the Peneda-Gerês National Park. Monitoring of the environmental impact of use of the tracks is planned, based on environmental indicators.	Portugal	Association for the Development of the Regions of Peneda-Gerês National Park	Pg 97
39	Syöte National Park	Syöte National Park is managed respecting the nature and the history of land use in the area. The buildings are being renovated or rebuilt, the traditional agricultural landscapes are being restored, and the recovery of plant populations there is being studied.	Syöte National Park	Syöte National Park (Finland)	Pg 97
40	Association for Car Free Tourism Destinations in Switzerland (GAST)	Nine Swiss villages have formed the Association for Car Free Tourism Destinations in Switzerland. This association's goal is to position car free tourism as a high quality product. A ban on vehicles with internal combustion engines, as well as a general speed limit of 15 – 20 km/hour for electro-buses, electro-cars and electro-taxis, helps to ensure a relaxed atmosphere and preserve the natural surroundings.	Switzerland	Nine swiss villages	Pg 115
41	Morizine's mobility and incentives	Morizine offers a complete linked free shuttle bus services running every day during winter and summer seasons from 8 am to 8 pm. Two of the shuttles are electric buses. Morzine operates also the 'charte architecturale' to make new building as environmentally friendly as possible. The resort offers financial incentives to encourage the installation of solar power facilities on roofs.	Morizine (France)	Morizine resort	Pg 115
42	Soft Mobility – Car Free Tourism	Thanks to the project visitors receive a card allowing free use of electro-mobiles, electro-bicycles, electro-scooters and fun riders. In addition, the night bus and taxi service can be used at no charge.	Werfenweng and Badhofgastein (Austria)	Werfenweng and Badhofgastein Municipalities	Pg 115
43	Hilton Slussen Hotel's sorting	The Hilton Slussen in Stockholm sorts waste into 26 different bins.	Stockholm (Sweden)	Hilton Slussen Hotel	Pg 342

	and recycling scheme	Introduction of a sorting and recycling scheme in 1997 reduced the 125 tonnes per month sent to landfill by 76 %, to 0.3 kg per guest-night.			
44	The Savoy hotel's waste program	The program included extensive and ongoing staff training – daily staff briefings incorporate environmental management topics, including waste separation, reuse and recycling. Consequently, over 95 % of non-food waste is now diverted from landfill and unsorted waste generation is equivalent to approximately 0.3 kg per guest-night	London (UK)	The Savoy hotel	Pg 343
45	Best Western Premier Hotel Victoria's refurbishment	Refurbishment of the Hotel improves the building envelope with regard to the thermal transmissivity of the walls, windows and doors, the roof and the basic ceiling. These upgrades are close to recommendations to comply with the Passive House standard.	Friburg (Germany)	Best Western Premier Hotel Victoria	Pg 388
45	NH Laguna Palace Hotel	The hotel zones are served by independent modular water- and air-sourced heat pumps. Heat pump units include built-in heat recovery that increases system efficiency by avoiding the efficiency losses associated with pressure drops arising in separate plate heat exchangers. Ventilation is powered by low consumption fans.	Venice (Italy)	NH Laguna Palace Hotel	Pg 405
46	Crowne Plaza Copenhagen Towers	Geothermal heat pumps were installed. Cold groundwater is pumped up during the summer and is then returned into the ground, where the water accumulates heat during the summer for use in the winter.	Copenhagen (Denmark)	Crowne Plaza Copenhagen Towers	Pg 419
47	The Zetter Hotel	The Hotel installed seven heat recovery air conditioning units that use groundwater from a 130 m borehole sunk below the hotel. Condensing units are interlinked via the building's water loop, enabling heat recovery from indoor units on the same refrigerant circuit in addition to transferring energy between circuits.	Clerkenwell (London)	The Zetter Hotel	Pg 420
48	Huerta Cinco Lunas organic farm	Farm certified as organic. From the organic garden Crops are fertilised using animal manure from a neighbouring organic farm compost from the kitchen. Breakfast provided to guests is comprised of approximately 80 % organic ingredients, many of which are produced onsite.	Andalucia (Spain)	Huerta Cinco Lunas farm	Pg 472

49	Le Manoir aux Quat'Saisons restaurant	An on-site organic garden of 0.8 hectares provides 90 types of vegetable and 70 varieties of herb used in the kitchen. A responsible fish sourcing policy involves collaboration with the Marine Stewardship Council. Fish from Cornwall are caught by day boats certified under the Responsible Fishing Scheme.	Oxforshire (UK)	Le Manoir aux Quat'Saisons	Pg 473
50	Otarian restaurant chain	It offers a 100 % vegetarian menu Sourcing policy is based on the principle 'as close to home as sustainable' to reduce transport-related impacts, and air freight is avoided. Otarian cooperate with suppliers to reduce packaging.	World	Otarian restaurant chain	Pg 474
51	Thomson resort hotels jungle jams	The hotels provide guests with 'jungle jams' for breakfast. These jams are made by a cooperative of Mayan women from the peninsula. In addition to environmental benefits arising from the use of sustainably harvested local produce, procurement of these jams achieve social benefits by empowering local women.	Mexico	Thomson resort hotels	Pg 474
52	SuperClubs "Eat Jamaican" campaign	Launched by several Jamaican associations and businesses to promote locally produced goods to residents, visitors and exporters. SuperClubs is a global all-inclusive tour operator that engaged with the 'Eat Jamaica' campaign, coordinating local procurement and promotion of local food across its Jamaican hotels.	Jamaica	Jamaican associations	Pg 474
Source: UNTWO (2018). Tourism for Development Volume II: Good Practices. Madrid.					
53	Green Supply Chains project	It aims to increase the percentage of locally produced food and drinks available in hotels and restaurants in and around Ljubljana by offering these stakeholders the possibility of purchasing 100% locally produced foods and drinks via a uniquely managed, centralized and easy-to-use online system. The project enables tourism sector to easily access local farmers, and vice versa, via a Rural Development Cooperative.	Ljubljana (Slovenja)	Ljubljana Tourism Institute, Factory of Sustainable Tourism, NGO GoodPlace, municipal Department of Rural Development and Jarina Rural Development Cooperative.	UNTWO (2018Pg 9-12
54	Dahshour World Heritage Site for Community Development project	To protect the area of the Dahshour pyramids, its ecosystem and communities, the project supported tourism-based sustainable development, cultural and ecological management, and opportunities for revenue generation. It focused on improving the livelihoods and working	Egypt	Egyptian Government and five UN agencies – UNWTO, UNDP, ILO, UNESCO and UNIDO	Pg 13-18

		conditions of the local population through targeted employment-generation activities, with special focus on women's and youth employment, as well as the development of locally-driven MSMEs.			
55	Sabyinyo Community Livelihood Association project	The association was created to contribute to Volcanoes National Park's sustainable conservation, while improving the socio-economic conditions of the local population. The Association's tourism project involved the construction and operation of a high-end community lodge – the Sabyinyo Silverback Lodge – marked by community participation and representation.	Rwanda	Sabyinyo Community Livelihood Association	Pg 19-22
56	Global Himalayan Expedition Initiative	The Global Himalayan Expedition (GHE) is an initiative with social impact in the Indian Himalayas that leverages tourism and technology to provide clean energy, digital education, connectivity, access and livelihood creation opportunities to remote mountain communities.	India	Global Himalayan Expedition	Pg 23-26
57	ST-EP project	The ST-EP project, Supporting Women Entrepreneurs in Mopti, demonstrates how rural women can benefit by becoming integrated into the tourism value chain as entrepreneurs in handcrafts, farming and the supply of produce.	Mopti (Mali)	UNTWO, Region of Mopti	Pg 27-30
58	Youth Career Initiative	The Youth Career Initiative (YCI) is a leading independent employability programme in the hotel industry that helps disadvantaged young people access skills and training, equipping them with the tools to thrive in the tourism sector.	Europe, the Middle East and Africa, Latin America and Asia Pacific.	Eleven international hotel groups	Pg 31-34
59	ILUNION Hotels	With 27.8% of its workforce comprising employees with some form of disability, ILUNION Hotels is a strong example of how tourism businesses can offer a range of employment opportunities for people with disabilities by integrating inclusive policies into all areas of hotel management.	Spain	ILUNION Hotels	Pg 35-38
60	Eco-village of Las Terrazas	The pioneering eco-village of Las Terrazas in the UNESCO biosphere reserve of the Sierra del Rosario – the first tourism-based sustainable development project in Cuba – demonstrates how an independent community, with the government's support, can maintain its economy in the	Cuba	Las Terrazas Complex	Pg 39-42

		long-term through sustainable tourism. The Complex aims to rehabilitate and preserve the area's environmental integrity through the reforestation of terraces, while achieving a balance between the local population and the environment.			
61	Kumarakom Responsible Tourism Initiative	The Kumarakom Responsible Tourism project, envisages that each stakeholder in the destination has a responsibility to make tourism sustainable, prioritizing economic, socio-cultural and environmental sustainability through responsible activities by all stakeholders. By establishing strong relationships with the local community and hoteliers, a mechanism was created that enables hotels to purchase local products. and services from the community. A Price Committee and a Quality Assurance Committee were formed to ensure quality, mutual benefits, trust and transparency.	Kerala	Government of Kerala	Pg 43-48
62	Local development project	The local development project supports local producers, develops local agriculture through agro-ecology and enables Club Med resorts to be supplied with fresh, locally sourced, high quality products. The initiative's challenging aim is to organize a lasting match between the local supply of food products and the demands of Club Med resorts. Its objective is also to ensure fair remuneration for producers and a strong distribution of added value, giving the poorest groups access to these markets.	Senegal, Brazil, Morocco and Indonesia.	Club Med and the NGO Agrisud	Pg 49-52
63	Nearly Zero Energy Hotels (neZEH) project	The Nearly Zero Energy Hotels (neZEH) project spearheads hotel energy renovations, demonstrating reductions in energy consumption by up to 70%, and inspires global replications towards a more sustainable, energy efficient tourism sector. The Nearly Zero Energy Hotels (neZEH) Consortium was created to assist hotels to save energy, reduce their carbon footprint and build a more competitive and sustainable hospitality sector	Europe	European Hotels	Pg 53-56
64	Mayakoba Tourism Development initiative	The high-level coastal tourism development of Mayakoba has achieved a demonstrable increase in biodiversity through the preservation and strengthening of terrestrial ecosystems and the creation of aquatic habitats.	Mexico	Solidaridad municipality	Pg 57-60

65	Chumbe Island Coral Park (CHICOP)	Chumbe Island Coral Park (CHICOP) is a successful self-sustaining marine park and forest reserve in Zanzibar, Tanzania, off the coast of East Africa. This privately managed nature reserve is a model for sustainable environmental conservation funded by ecotourism. CHICOP's overall aim is to create a model of sustainable nature conservation – one in which ecotourism supports park management, research and Environmental Education Programmes for local school children.	Zanzibar (Tanzania)	Chumbe Island Coral Park (CHICOP)	Pg 61-64
66	Olderkesi Community Wildlife Conservation Trust	The Olderkesi Community Wildlife Conservation Trust (OCWCT) illustrates the power of collaboration between the tourism sector and communities to preserve biodiversity, conserve wildlife and support human development. All activities undertaken through the OCWCT seek to strengthen livelihoods, preserving Maasai culture and enhance visitor experiences Community land is leased to OCWCT for wildlife conservation and tourism. In return, the community receives an incentive in the form of a land lease fee.	Kenya	Olderkesi Community Wildlife Conservation Trust	Pg 65-68
67	Climate Change Vulnerability Studies	Mexico's Climate Change Vulnerability Studies consist of assessments that gauge vulnerability to climate change of twenty of the country's leading tourism destinations. Adaptation programmes guide decision-making regarding the most effective measure to strengthen the tourism destination and to improve the safety and security of the population.	Mexico	Twenty of Mexico's priority tourism destinations	Pg 69-72
68	Project of Enhancing the climate resilience of tourism-reliant communities	The project illustrates the benefits of mainstreaming climate risks into tourism-related policy processes and adaptation actions at the national and local levels – moves that booster the resilience of local communities, the tourism sector and the overall economy. The initiative supported the formulation of integrated and climate-sensitive Management Plans.	Samoa	Five Tourism Development Areas	Pg 73-76
69	Cultural Ecotourism Project	The Cultural Ecotourism Project in the Sundarbans Impact Zone is an example of a sustainable ecotourism initiative that enhances respect for local culture, ecology, local communities and their well-being in Bangladesh's Sundarbans mangrove forest region. The project aims to lessen local communities'	Bangladesh	Sundarbans impact zone	Pg 77-80

		dependence on forest resources by supporting them to explore ecotourism as an alternative income generating source and develop their options as eco-entrepreneurs and service providers in the ecotourism value chain.			
70	Art, Culture and Tourism Centres' network	Lanzarote's network of nine Art, Culture and Tourism Centres (CACTs) raise awareness and promote sustainability through artistic interventions, in line with a vision of art and nature coexisting in perfect harmony.	Lanzarote (Spain)	Nine art, culture and tourism centres	Pg 81-84
71	Hostelling International programmes	Hostelling International (HI) USA's New York Hostel promotes intercultural understanding and global citizenship through strategically designed experiential learning programmes for travellers and community members. HI NYC's programmes offer a deeper opportunity to think about travellers' impact on the lived experience of the places they visit and reflect on their own culture's similarities or differences.	USA	Hostelling International (HI) USA	Pg 85-88
72	El Carlos Ecotourism and Archaeological Centre	The El Carlos Ecotourism and Archaeological Centre – managed by a Cooperative formed of ex-guerrilla, ex-paramilitary and displaced people – is an important example of a local initiative which strengthens tourism and peace.	Colombia	El Carlos Ecotourism and Archaeological Centre	Pg 89-92
73	Bohol province	Bohol province in the Philippines is a strong example of participatory governance in local stakeholder-led ecotourism development – characterized by cooperation, ownership and dedication. Prior to its development as a major tourism destination, the province was characterized by widespread poverty. To address these issues, the Provincial Government of Bohol decided to pursue ecotourism as a form of regional development for environment-friendly and community-based economic growth.	Philippines	Provincial Government of Bohol	Pg 93-96
74	Sustainable Destinations Alliance for the Americas (SDAA) initiative	The Sustainable Destinations Alliance for the Americas (SDAA) brings together eleven destinations in the Caribbean and Central America to collaboratively address the challenges of climate vulnerability, environmental degradation and reliance on tourism. The SDAA's objectives are: Maximize tourism's benefits for local communities and residents, protect the region's	Caribbean and Latin America	Eleven destinations in the Caribbean and Central America	Pg 97-100

		natural and cultural assets by conserving its land and marine resources and embed sustainability practices in the day-to-day management and marketing of destinations.			
75	Dubai Sustainable Tourism initiative	Dubai Sustainable Tourism (DST), a public-private partnership featuring the involvement of civil society, contributes to Dubai's broader clean energy and sustainable development targets by embedding the principles of sustainability into all aspects of the tourism sector. DST brings together all economic stakeholders involved in tourism and hospitality – from tour operators to hotel developers and operators. Its holistic approach builds on common goal to achieve the long-term objective of a sustainable economy.	Dubai	Governments entities, tourist private sector, NGOs and experts	Pg 101-104

4. Circular Tourism

In order to provide an overall presentation about the relationship between tourism and circularity, the main issues are discussed. The concept of circular economy is introduced, by presenting main features and objectives. The declination of CE to the tourism industry is discussed in terms of definitions and assessment of circular tourism. As concluding remark, a set of existing best practices related to circular tourism at international scale is provided.

4.1 Circular Economy

Circularity, as a concept rooted in the circular economy thinking, explores opportunities to move from linear to circular production and consumption patterns, promoting a fundamental change of paradigm that aims at enhancing resource efficiency with a system-wide approach along the entire value chain. Embracing circularity implies robust measurement and monitoring of the sustainable development impacts of economic activities and a constant rethinking and optimizing of performance through the use of innovation and technologies.

Circular economy (CE) is a new economic model that has born as an alternative to the current linear model that follows a 'take-make-dispose' pattern. According to linear economy, companies extract raw materials to manufacture a product, then sell the product to a consumer, after its usage consumer discards the product. The low level of resource prices, relative to labour costs, has also created the current wasteful system of resource. However, the limits of linear consumption and productions have emerged dramatically, since any system based on consumption rather than on the restorative use of non-renewable resources entails significant losses of value and negative effects all along the material chain (Ellen MacArthur Foundation, 2013).

Existing literature is plenty of contributions seeking to define circular economy. In 1999, the shift from linear to circular economy was discussed in these terms *"The model of a linear economy, in which it is assumed that there is an unlimited supply of natural resources and that the environment has an unlimited capacity to absorb waste and pollution, is dismissed. Instead, a circular economy is proposed, in which the 'throughput' of energy and raw materials is reduced. In such an economy there would be a shift in activity from the manufacturing sector to service sector activities such as re-use, repair,upgrading and recycling"* (Cooper, 1999, p.10).
According to the British Standards Institution, the CE is defined as *"economy that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles"* (BSI 2017, p.10).
A recent study (Kirchherr, 2017) proposes a systematic literature review of 114 definitions of circular economy, highlighting that the most common interpretation of CE concept refers to the 3Rs framework (Reduce, Reuse, Recycle) and that many authors consider CE as a road to economic prosperity. According to this work, CE is defined *"as an economic system that replaces the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations"* (Kirchherr, 2017, p.229).

According to Ellen MacArthur Foundation (2013, p.7), *"**a circular economy is an industrial system that is restorative or regenerative by intention and design**. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models"*. A circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on the following **principles** (Ellen MacArthur Foundation, 2013):

1. Design out waste and pollution. Waste does not exist, since products are designed and optimised for a cycle of disassembly and reuse.
2. Build resilience through diversity. Modularity, versatility, and adaptivity are key features to develop diverse systems that are more resilient in case of external shocks than systems built simply for efficiency.
3. Rely on energy from renewable sources. In the circular economy, energy sources are renewable by nature, to decrease resource dependence and increase system resilience.
4. Think in 'systems'. The ability to understand how parts influence one another within a whole, and the relationship of the whole to the parts, is crucial.
5. Waste is food. Consumable components of a product in the circular economy are largely made of biological ingredients or 'nutrients' that are at least non-toxic and possibly even beneficial, and can be safely returned to the biosphere. With regard to the technical nutrients, circular economy refers to improvement in quality (upcycling).

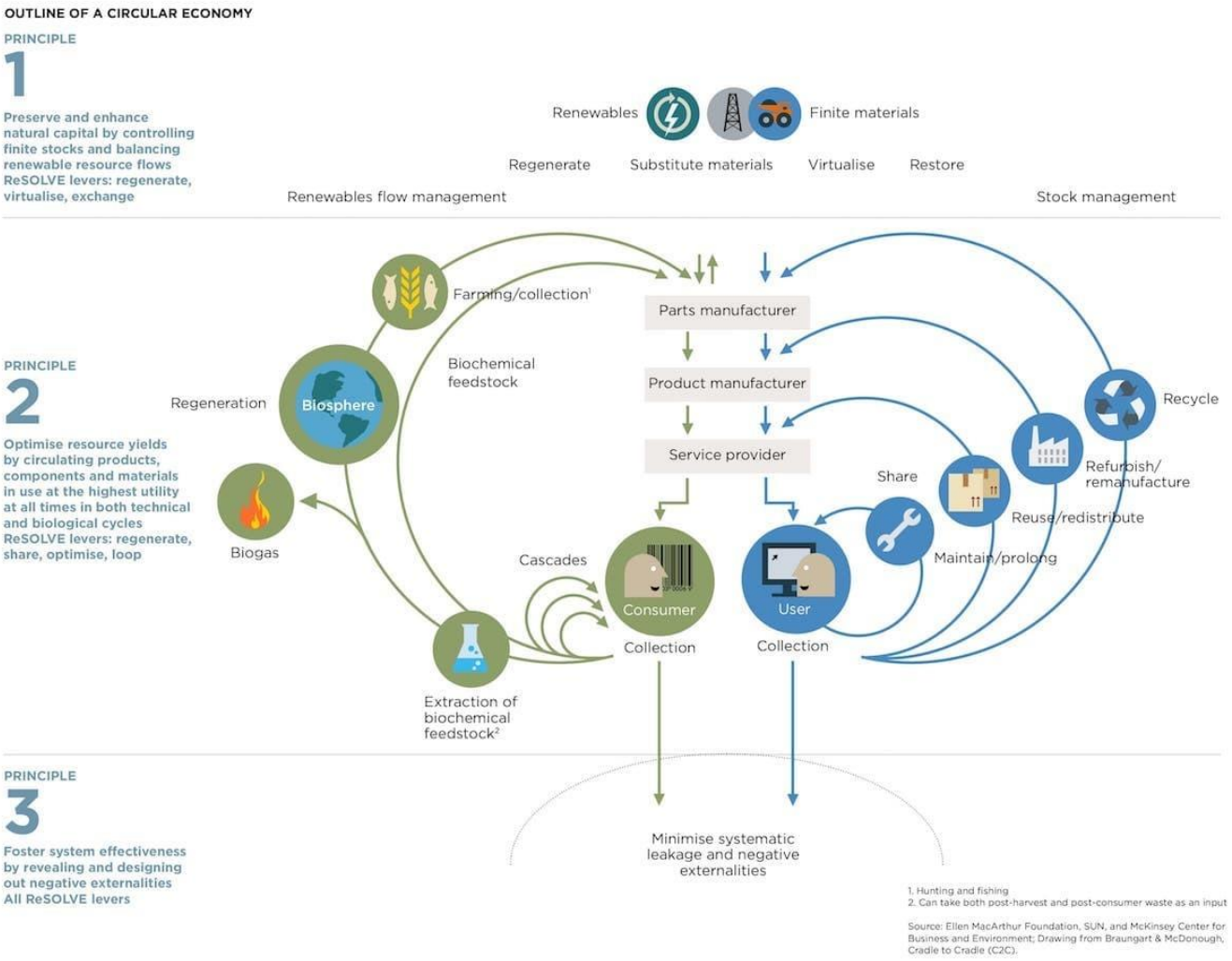
These principles lead to **four sources of value creation** able to offer relevant opportunities in terms of product design and materials usage, namely:

1. The *power of the inner circle* refers to minimising material usage in comparison to the linear production system. In a nutshell, it means that the less a product has to be changed in reuse, refurbishment and remanufacturing and the faster it returns to use.
2. The *power of circling longer* refers to maximising the number of consecutive cycles and/or the time in each cycle, in case of reuse, remanufacturing, or recycling.
3. The *power of cascaded use* refers to diversifying reuse across the value chain, substituting for an inflow of virgin materials into the economy.
4. The *power of pure circles* refers to uncontaminated material streams that increase collection and redistribution efficiency while maintaining quality, which, in turn, extends product longevity and thus increases material productivity.

The circular economy is governed by **3Rs**, namely **Reduce, Reuse, and Recycle**. In simple words, the first 'R' – Reduce aims at minimizing the quantity of waste produced; the second 'R' – Reuse is the action or practice of using an item, whether for its original purpose or to fulfil a different function; the third 'R' – Recycle aims at environmental sustainability by substituting raw material inputs into and redirecting waste outputs out of the economic system.

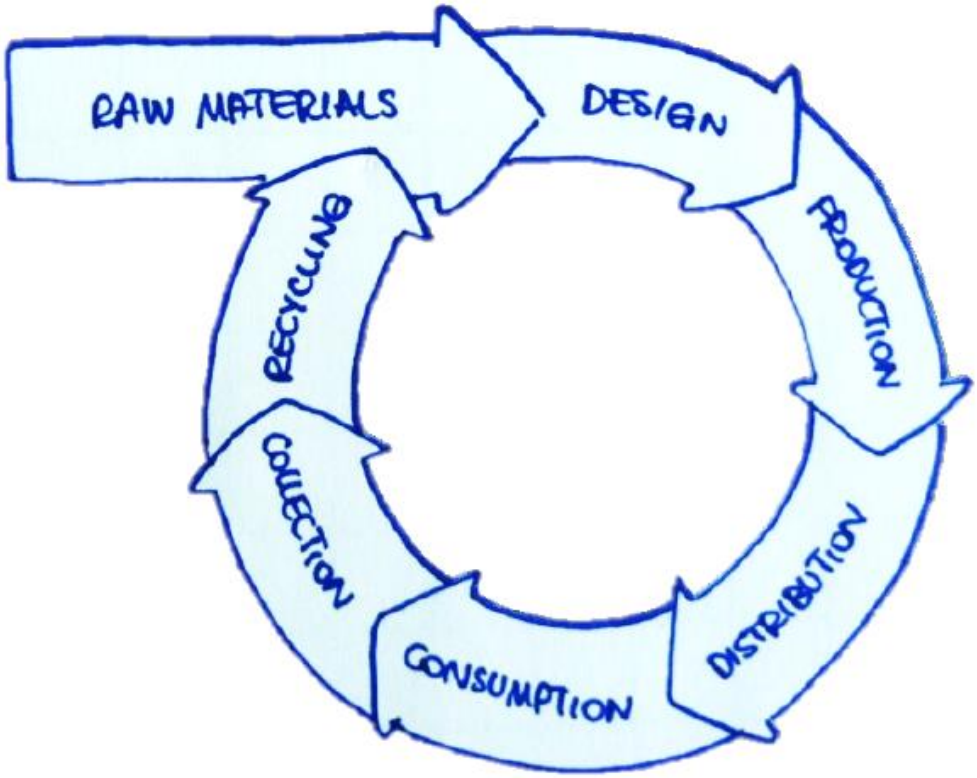
A circular economy seeks to rebuild capital, whether this is financial, manufactured, human, social or natural. This ensures enhanced flows of goods and services. The system diagram illustrates the continuous flow of technical and biological materials through the 'value circle'.

Figure 25. Circular economy system diagram
Source: retrieved from Ellen MacArthur Foundation (2013)



The circular model builds economic, natural, and social capital. The transition from linear economy to circular economy requires a joint effort by stakeholders from all sectors and can put economic growth on a sustainable pathway (Iraldo & Bruschi, 2015).

Figure 26. From linear to circular economy
Source: retrieved from Iraldo & Bruschi (2015)



Moreover, the role of circular economy is determinant for the achievement of the Sustainable Development Goals of the United Nations Agenda 2030, discussed on the present document at paragraph 3.1. Recently, the circular economy has gained increasing prominence as a tool which presents solutions to some of the world's most pressing crosscutting sustainable development challenges. Circular Economy has emerged as a guideline and an operating strategy for the implementation of sustainable development objectives (Merli et al., 2018). Such relationship is investigated even in a recent study (Schroeder et al., 2019), that sheds some light on the possible interlinkages between the CE and the SDGs, concluding that CE practices may be applied as a 'toolbox' for achieving a sizeable number of SDG targets and thus highlights the importance of the CE transition for successfully achieving the SDGs.

Finally, at European level, the transition towards a circular economy has been encouraged since 2015 through the first Circular Economy Action Plan (European Commission, 2015). In 2019, the Commission reported on the complete execution of the action plan with all the 54 actions included as delivered or being implemented. Thus, in 2020 the European Commission has adopted a new Circular Economy Action Plan (European Commission, 2020), one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. the important actions proposed by the European Commission through Circular Economy Package are to contribute to "closing the cycle" of product life cycles. The direction is to increase recycling and re-use by bringing benefits for the environment and the economy. The new Circular Economy Action presents measures to:

- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;

- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- Ensure less waste;
- Make circularity work for people, regions and cities,
- Lead global efforts on circular economy.

Action at EU level can drive investment, create a level playing field, and remove obstacles stemming from European legislation or its inadequate enforcement.

4.2 Circular Tourism

While the application of Circular Economy evidence-based approach has led to positive results and sustainable business models in other sectors, it is still incipient within tourism (UNWTO 2019:c; Manniche et al. 2017). Among contributions dealing with **circular tourism,** there exists a common consensus regarding the fundamental role that CE principles may play in achieving sustainable tourism standards.

Circular tourism has been defined as *"a model able to create a virtuous circle producing goals and services without wasting the limited resources of the planet that are raw materials, water and energy*". (Girard & Nocca, 2017). Moreover, circular tourism proposes a model in which every tourism actor adopts an eco-compatible approach (Acampora et al., 2018). By applying the principles of a circular economy, hospitality and tourism companies can accelerate their own businesses and move forward in thinking and action to create a more sustainable experience for all stakeholders involved in the hospitality and tourism industry" (Van Rheede, 2012).

Furthermore, as proposed by many authorsit is necessary to distinguish the sustainable tourism from the circular tourism. According to Manniche et al. (2017), the sustainable/green economy refers to the "cradle-to-grave" approach, whereas the circular tourism to the "cradle-to cradle" perspective and they foresee two phases in the implementation of the circular economy:

- CE 1.0: it contains circular elements and innovations that are applicable at the firm level and in the immediate future;
- CE 2.0: it expresses a more systemic transition and shift towards a new socio- and techno-economic paradigm.

Similarly, Girard & Nocca (2017) recognize that hospitality and tourism companies can contribute to the achievement of sustainable tourism through the application of CE principles. However, considering circular tourism as a form of green tourism, namely addressed to limit the consumption and waste of non-renewable energy sources, is limitative since circular tourism involves recovery, reuse, redevelopment, valorisation and regeneration.

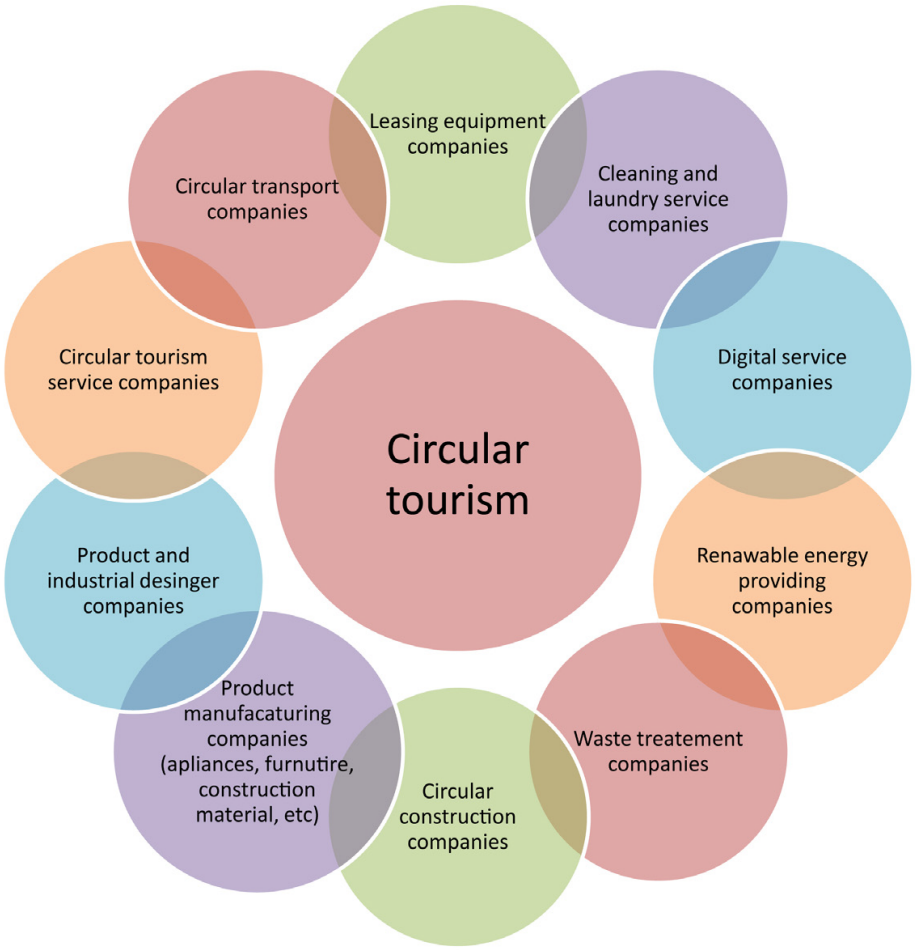
According to the World Tourism Organization (UNWTO 2019:c), tourism may replicate and implement existing best practices across its transversal value chain, since its nature of service-oriented sector. Moreover, tourism has the potential to create positive and longlasting impacts that go well beyond the sector due to the interlinkages between tourism and other economic activities as well as the direct interaction it generates between consumers and producers (UNWTO 2019:c). Thus, tourism may successfully move away from traditional

linear value chain relations toward circular flows able to trigger the transformation process. The Circular Tourism Value Chain (UNWTO, 2019:c), depicted in the following figure, identifies four main categories of actors, namely tourists, tourism destination, local population and natural and cultural assets and four tourism industries: transport, accommodation, excursions and leisure. The CE focus is on resource efficiency, by optimizing use, analyzing use and rethinking resource use (GHG, energy, water, waste, land, biodiversity).

Figure 27. Circularity in tourism value chains
Source: retrieved from UNWTO (2019:c)

Circular economy may be integrated into the tourism value chain at all stages of the value chain, through resource extraction, processing, manufacturing at industrial and service scale, storage and distribution and use, not limited to resource-efficient manufacturing but including resource-efficiency after use in terms of extension of the product life-span through reuse and repair (Kurtagić 2018). Every industry related to the tourism sector, as for instance food industry, construction industry or textile industry, should be designed to allow repair, reuse and recycling. Moreover, circular economy in tourism can stimulate the development of a number of companies that are necessary to achieve the circularity of providing tourist services, by boosting entrepreneurship development and job creation (Kurtagić 2018).

Figure 28. The Value Chain of C-Tourism
Source: retrieved from Kurtagić (2018)



However, tourism sector continues to be structured based on classic value chain relations. Thinking toward a systemic circular economy transition, the tourism sector should be depicted as a series of interrelated and more or less closed circular resource or material flows. Rather than 'following the money', CE value chains need to 'follow the materials' (Manniche et al., 2017).

4.3 Assessment of Circular Tourism

The circular economy promotes system innovations that aim to design out waste, increase resource-efficiency, and achieve a better balance between economy, environment and society. Ensuring a successful transition to a circular economy requires the ability to measure and report on progress, as exactly required for the transition towards sustainability. Proper tools, indicators and assessment methods are in fact need to support practioners, decision-makers and policy-makers to monitor the effects of circular economy adoption. As a copious literature highlights, a wide range of circularity indicators and tools has been developed in recent years.

While the application of circular economy thinking has led to positive results and to the introduction of new sustainable business models in other sectors, it is still incipient within tourism. As a service-oriented sector, tourism could make good use of the opportunities to replicate and implement existing circular best practices across its transversal value chain (UNWTO 2019:c). However literature available in this field is scarce and there is a lack of a common understanding of circular tourism concept itself. For this reason, as yet only few examples of indicators/tools/assessment methods to analyze circular tourism transition can be found. Many authors (Girard & Nocca 2017; Acampora et al. 2018; Jones & Wynn 2019; Florido et al. 2019) agree with the need to design evaluation and monitoring tools and indicators capable of expressing the synergistic effects that allow us to measure and quantify the progress in the circular tourism transition. Responsibility indeed requires knowledge. Despite this awareness none of these academics has proposed circular tourism indicators or monitoring frameworks.

Therefore, within INCIRCLE project, in order to identify which are the main aspects to be monitored for circular tourism transition, a systematic literature review has been elaborated.

With regards to contributions focusing on the **entire tourism value chain and on hospitality industry**, a list of reviewed works and main aspects to assess are provided in the following table.

Table 3. Circular tourism – main aspects of monitoring
Source: authors' elaboration

FOCUS: ALL TOURISM VALUE CHAIN	
Reference	**Main aspects to improve (and to assess)**
UNWTO (2019:c)	- **resource efficiency with a system-wide approach along the entire value chain** - **eco-design** - **responsibility** in the use of materials (**reduce, reuse and recycle**) - **eventually zero waste** - **robust measurement and monitoring of the sustainable development impacts** of economic activities - **constant rethinking** - optimizing of performance through the **use of innovation and technologies** - tourism could make good use of the opportunities to replicate and implement existing best practices across its **transversal value chain** - **more systematic circular production patterns** - monitoring of SCP (sustainable consumption and production) impact areas with the elements of the circular economy, particularly **waste reduction** - **minimize use of the plastic and food waste** - **Rethink resource use** - **Optimize** use - **Analyze** use - **Planning-operations-investments-monitoring**
Acampora et al. (2018)	- **the protection of health, safety and the environment**, also from a landscape point of view (implementation of a sustainable tourism destination plan and of a biodiversity management plan; ensure the quality of open spaces and building in terms of overall structure and construction choices; ensure the harmonization of anthropic activities with the natural elements of the landscape in which it is inserted) - **prevention and reduction of air, water and soil pollution** (CO2 and air emissions reduction; reduction of water consumption, also by differentiating supplies according to uses and by adopting systems for rainwater or wastewater reuse: reduction of use of chemicals; sustainable supply chain development with the choice of products and services that comply

	with specific environmental criteria; guarantee the efficiency of the road network to optimize the accessibility of roads to the area and to favor the sustainable mobility of people and goods) - **wastewater treatment** (reduce the discharge of wastewater through a system of separate wastewater disposal; ensure a wastewater treatment system that reduces the environmental impact of traditional purification processes) - **recycling, waste recovery** (efficient collection of waste and recycling; waste material exchanges among partners) - **reduce resource consumption** (reduce the consumption of materials) - **reduction of energy consumption and implementation of energy efficiency** (reduce primary energy consumption for heating and/or cooling and ensure thermo-hygrometric comfort in indoor environments; control/reduce the use of non-renewable sources for energy supply and maximize the use of renewable sources; optimize the performance of natural and artificial lighting systems in indoor environments for energy saving and visual comfort) - **performance and sharing economy** (development of sharing and performance economy solutions; implementation of the Product as Service business model like bike sharing, car sharing, platform for local tour guides, product as service) - **key elements of the environmental, productive and competitive improvement program** (environmental and social communication and education; consumption monitoring; development and application of indicators; staff training; implementation of the environmental management system and / or obtaining ecolabels)
Giurea (2018)	- **efficient use of natural resources** - **energy saving** - **technological capacity for patterns of consumption and production** - **reduction of emissions of waste to air, water and soil** - **reduction of waste generation through prevention, reduction, recycling and reuse** **How?** - Introduction of a management from an ecological point of view regarding the efficient use of natural resources - Keeping a balance concerning food waste streams, collection problems by reducing food waste - Introduction of a management system regarding all wastes to minimize their adverse impacts on human health and the environment - implementing a system concerning waste generation through prevention, reduction, recycling and reuse - energy saving in by responsible use of energy and by choosing renewable energy sources - To actively involve tourists in the sustainable management, it is important that the **staff is properly trained in the field of environmental issues and strives to disseminate and promote responsible and sustainable awareness through the education of good practices** - the **use of technological equipment** to realize sustainable patterns of consumption and production (e.g. regarding the use of water, energy, etc.)
Kurtagić (2018)	- **circular economy can be integrated into the tourism value chain at all stages of it** - more **resource-efficient manufacturing** - more **resource-efficiency after use** in terms of **extension of the product life-span through reuse and repair**. Products of every industry linked to the tourism sector, such as the food industry, construction industry, textile industry or furniture industry have to be designed to allow repair, reuse and recycling. - **designers, contractors and suppliers have to consider longer term relationships** - in the construction of tourism facilities relevant circular business models are: circular design; circular recovery and circular use (e.g. leasing and sharing services) - **procurement of materials** that can be easily returned **into recovery process** - **procurement focused on leasing services rather than on procurement of a product**, through more circular waste management

	- a **circular economy energy management** can be seen in any **heat recovery option** - **waste to energy** - **greywater heat recovery** (greywater from e.g. shower, kitchens, spa area, laundry, etc.) - **energy systems based on renewable energy solutions** (biomass, combined heat and power CHP, geothermal energy-ground source heat pumps, solar photovoltaic electricity systems, solar thermal energy-solar COMBI systems, solar thermal energy-domestic hot water systems, wind energy, micro hydro power, water cooling) - citizens, social entrepreneurs and/or community organizations participate directly in the energy transition by investing in, producing, selling and distributing renewable energy or delivering energy services - **condensate water recovery** (for irrigation, for decorative ponds or fountains, for toilet and urinal flushing, for laundry and washing, for swimming pool) - **rainwater collection from roofs and parking places** that **can be recycled into water supply systems** - **food waste can be composted**, **refined into fuel, processed to produce biogas** (in-sit e treatment or associate with companies providing food waste recycling services) - transport: use of fuel produced from used restaurant oils or biogas; car sharing companies
Vargas-Sánchez (2018)	- the circular economy is about **rethinking the firm as not only a provider of accommodation, food or spa services, but as a producer of a multitude of (by-) products that can be valued instead of wasted**. Turning this concept into new business models needs **a deliberate strategy based on systems thinking, since radical redesigns will be required within the firm and the whole value system/cycle**: the green approach of reducing the resource use keeping the current setup is not enough. - In order to become efficient, the **circular supply chains of the future will have to include a large number of highly specialized companies that provide materials, products and services that contribute to making end products and services as competitive as the ones that are produced in today's linear systems** - in the accommodation sector, the main variable acting as a brake on the uptake of environmental strategies is **managers' lack of commitment**; that is, their management style. Therefore, **working on their motivation sources and their leadership abilities – via training, goals and incentive schemes- appears as a critical transformation factor to be taken into account at the business level** - **awareness rising among businesses and consumers is crucial**, "because that is the weakest point in the value chain". Even beyond that, engaging everyone in a **global educational program, for tourism activities** and for our daily lives in general
Naydenov (2018)	- **Circular/closed tourism is a prerequisite for the sustainable development of the sector** - The tourism sector has hitherto (till now) not been given much attention as a possible context for Circular Economy initiatives and analyses. Seen in the context of sustainable development, **circular tourism can combine tourism and sustainable resource management. Its purpose is to produce goods and tourist services, while limiting the impact on the environment** (including consumption and non-renewable energy) - Circular tourism follows the logic of the circular economy, a business model consistent with the principles of sustainable development. In the same way**, circular tourism proposes a model in which each actor of tourism (traveler, host, tour operator, and supplier) adopts an eco-friendly approach.** - **Environmental education is important** - **Circular tourism is** a general term for mass tourism that is **designed or intended to restore nature.** - Opting for circular tourism **allows travelers to take a responsible approach at all stages of their stay, from preparing for the trip to the local experience**. - On the same principle, there is **Circular Tourism and Shared Tourism**. They are inherently different, but **they are connected and can be integrated**. While circular tourism refers to

	the lifespan of tourist goods and services, shared tourism refers to the way tourist goods and services can be used during their lifecycle - **keywords for circular tourism** are the **restoration, reuse, conversion** - The concept aims to **minimize additional means of transport and optimize logistics and supply chain** - Circular tourism aims to **balance the interests of tourists and the local population**. - **eco-friendly laundry policy** - **organic cleaning products** - **monitoring what happens** after the waste is used - **purchase of local** organic **products** - planning of **tourist routes with bicycle tours** - **awareness of tourist** about ecotourism is encouraged - **sharing platforms** - **make biodegradable the waste**
Sørensen et al. (2018)	- tourism involves a number of **actors (private, public and voluntary)** producing different tourism products and services. **These actors may apply, individually and cooperatively, CE principles of production** - **new and developing economic logics of product ownership may facilitate CET** - different types of **tourist practices may support and facilitate CET to different degrees** - **The industry and policy makers have important roles in providing CET products** (or material), **and educating tourists to use these** (skills), **while the tourists through their practices, based on their images and knowledge** (or skills) o**f CET holidays and activities, choose among possible practices and influence the practices of the industry and eventually policy makers** - **both**
Girard and Nocca (2017)	- circular economy is seen has a **model able to contribute to make tourism more sustainable** - goods and services **production without wasting** - **circular economy aims to close the loops (no waste) and to make the life cycle of goods more efficient** - circular economy **is not a synonymous of sharing economy** - the circular tourism is defined as **a model able to create a virtuous circle producing goods and services without wasting the limited resources of the planet that are the raw materials, water and energy, that is limiting impact on environment, and in which actors of tourism (traveller, host, tour operator, supplier) adopt an eco-friendly and responsible approach** - applying principles of circular economy into tourism sector (e.g. zero km menu; waste = money; upcycling of used coffee grounds; etc.) - In a circular perspective**, waste produced by tourism sector can become part of the city system and thus part of the urban processes in order to optimize resources and make tourism more sustainable** - **Energy saving** can be achieved through **investments in technologies** (such as renewable energy systems, energy efficient lighting, cooling, heating) **but also through territorial management and behavioral and lifestyle changes** - Circular tourism is not only a green tourism, addressed to limit the consumption and waste of non-renewable energy sources**. Recovery, reuse, redevelopment, but also valorization and regeneration are key words if we think about sustainable and circular tourism**. The future of tourism goes almost always **through the protection of cultural and natural heritage in order to achieve a sustainable touristic supply** - Heritage reuse can contribute to revitalize local economy with jobs, new businesses, tax revenues and local spending. **The circular economy allows conserving the use-value of heritage, through the regeneration of resources**, and intrinsic one. **The adaptive reuse produces multidimensional benefits**: cultural benefits (conserving "alive" a symbol of community identity), economic benefits (in terms of increase of productivity),

	environmental benefits (i.e. reduction of resource consumption) and social benefits (i.e. employment). - **an adequate legislation framework and regulation on investment are necessary**. Furthermore, in order to direct tourism development/management strategies, the **evaluation of local touristic potential is necessary**. - **Achieving sustainable and circular tourism is a continuous process**; it **requires constant monitoring of impacts and a wide awareness of them** (both positive and negative), contributing to assume behaviors able to make tourism a mean to achieve sustainable development goals. Inadequate knowledge of the territory and of tourism demand and supply can badly direct development policies, producing negative impacts on the environment, economic activities, local culture and community (i.e. pollution, degradation, congestion of public spaces, inflationary processes both in commercial services and in the real estate market). - The circular tourism **requires appropriate tools, indicators, knowledge and data in order to assess/monitor the performances of this new model, that is the efficiency of the circular model**
Nedyalkova (2016)	- **Reuse of disused buildings and desolated spaces** for more authentic tourist facilities: • The process of retrofitting old buildings for new uses, which allows structures to retain their historic integrity while meeting the needs of modern occupants, is called adaptive reuse. It is essentially the recycling of a building • At the same time, this process could be a tool to revitalize depopulated areas while creating valuable community resources from an unproductive property and serve as a catalyst stimulating further economic and tourism development - **Reducing logistic and environmental costs in hotels and restaurants** while harvesting a trend: • **local produce** contributes to preserving the diversity of local varieties. Linking small-scale producers to the tourism industry is a way for enhancing poor regions economic development. Local produce maintains green space and farm land in destinations and helps to strengthen rural-urban linkages - **Effective recycling and waste management on a more local level**: • **waste recycling, as well as waste prevention, should be further promoted in tourism** while transforming waste into useful resources. • **zero waste hotels** - staff members need to really care about the outcomes and to work coordinated for preventing losses. **It is necessary to educate every member of the team** about methods of monitoring, storage, and recycling
FOCUS: HOSPITALITY INDUSTRIES	
Julião et al. (2018)	- **the service sector**, directly and indirectly, **is responsible for a significant impact on the environment**. Nevertheless, attention to the application of CE principles into the service sector seems to be lacking - green practices are gaining increased attention in the hotel and restaurant industries, and that a wide variety of green practices are already being adopted. However, the role of CE in these industries, appears to receive little attention by current research and could be obscured in green practices. - **a research gap in the application of CE principles in the tourism** industry and calls for further research in this field.
Florido et al. (2019)	- The **CE can become a central part of the host-guest relationship by including and involving guests not only from an environmental perspective, but also by making them participants in their actions to contribute to sustainability**. In this way, tourism is presented as **a unique opportunity to reconfigure the way people live**, if only for a brief period of time, by immersing them in new environments and socio-technical configurations - **tourism influences the personal responsibility of each guest in the use of resources,**

	helping guests and the industry itself become aware that they can take a vacation and at the same time reduce our ecological footprint and so it is likely that this attitude becomes a status symbol. - circular tourism practices: **Respecting the limitations of the destination** (minimizing the impact on nature and culture); **support the local economy**; **carry out environmentally sustainable activities**; **actively contribute to the conservation of nature and culture**; etc. - hotel sector: **Measures to prevent food waste**; **green certificates**, **increasing use of capacity** through **shared economy platforms, self-sufficiency in terms of sustainable energy, implementation of circular agricultural practices that involve local farmers**. In the latter case, greater self-sufficiency would be u achieved with respect to local foods, local bio-waste would be transformed into fuels and fertilizers, establishing circular synergies between tourism and local agriculture, as well as job creation and new business strategies circular - a **holistic approach** is important - **it is desirable to have an institutional and governance framework for innovation in relation to sustainability issues and environmental aspects stable and unique among countries and regions**. - **Waste management business; eco-design business models; lease of products; remanufacturing; collaborative commerce in tourism** - **multilevel transition** (The public administration and/or destination management organizations (DMOs), the tourism sector and the resident population)
Rodrìguez-Antòn and Alonso-Almeida (2019)	- (1) **conservation and improvement of natural resources**; (2) optimization of **resource efficiency**; and (3) promotion of **system effectiveness** - **eco-innovations** have been noted such as the first steps towards more circular businesses - **reduction, reuse, recycle, redesign, replace, rethink**
Jones and Wynn (2019)	- **circular economy, natural capital and resilience, seen to be central to sustainability within hospitality industries** - The significance of these concepts has been recognized by a number of companies and voices within the tourism and hospitality industry in their development of sustainability strategies and programs - a **circular tourism economy could help to bring about the sustainable use of resources, enhance the efficiency of the tourism industry and achieve the sustainable development of tourism** - **more efficient waste management, optimizing the energy and water efficiency of buildings and making increasing use of renewable energy resources** - hoteliers can reduce their water footprint, improve their eco-credentials and contribute to the circular economy by **the laundry choices** they make and by **purchasing products with a view to the ability of such products being reused and/or recycled** - **priority to local, natural, recycled, recyclable and seasonal products**, to **minimize** the flow of **incoming waste** and to **maximize the recycling** - **promote cleaner water and more conservative and efficient water consumption approach to enhancing resilience** "by operating more efficiently and reducing our impact on the environment and our demand for natural resources" and by "understanding our exposure to, and impact on, climate change" - the development of theoretical work on the circular economy, natural capital and resilience, developed within tourism and hospitality would seem to be fertile territory for future research endeavour - **Integration of technologies** is a more general trend that is impacting tourism and hospitality operations and is particularly relevant to the accommodation of sustainability management moving forward.
Manniche et al. (2017)	- **the tourism sector should be depicted as a series of interrelated and more or less closed circular resource or material flows** - CE value chains in Tourism need to follow the materials flows, in order to allow inter-sectional cascades

	- **accommodation** focus: *circular building and construction; circular refurbishing, implementation of circular management systems; staff education; interaction with guests; energy and water flows; circular laundries strategies*. - **hotel restaurants** focus: *biological material flows into foodstuffs, their packaging, transportation, food preparation, cleaning and storage flows; circular foo waste handling.* - **spa and wellness** focus: *energy and water flows; chemical flows; circular greywater handling*. - **attention has to be paid if each business activity can be implemented in the near future or in the not-so-near future**. Whether an innovation or business can be implemented now or later **depends both on whether there are obvious barriers to their implementation such as lacking capital for investment or lack of technically viable solutions**. On the other hand, each business activity needs to be **assessed in terms of its value chain complexity.** - **actual circular business models seem difficult to implement without interaction outside the firm, primarily through the supply chain**. Circular business models almost per definition **demand interaction between firms and prerequisite long-term relationships between suppliers and users**. This is the case for all types of resource flows in the accommodation field. Most prevalent, however, is the importance of circular energy and water production and treatment systems, which are highly relevant in regions where access to sustainable energy sources is limited - **it must be stressed the dependence, even of the large accommodation firms, on 'circular infrastructure', including renewable energy sources in the public energy grid, access to circular water treatment systems, access to suppliers and users that base their business models on leasing forms, circular designs and sharing platforms for example**. This is even more important for SMEs that are less able to develop such infrastructure and therefore rely on larger firms as well as policy infrastructure to support transitions.

Table 4. Circular tourism transition requests
Source: authors' elaboration

What does Circular Tourism (transition) request?
Resource efficiency with a system-wide approach along the entire value chain (rethink resource use, optimize resource use, analyze resource use)
Use (and integration) of innovation and technologies to realize sustainable and circular patterns of consumption and production (e.g. regarding the use of water, energy, etc.)
Optimizing logistics and supply chain
Rethinking the firm as not only a provider of accommodation, food or spa services, but **as a producer of a multitude of (by-) products** that can be valued instead of wasted
Waste reduction (through waste prevention actions such as minimize use of the plastic and of food waste, reuse/repair of products, reduction of resource consumption)
Waste recycling and waste recovery
Circular energy management system: renewable energy resources (including food waste), reduction of energy consumption and implementation of energy efficiency (in order to heat recovery, energy recover from waste, greywater heat recovery, etc.)
Circular water management system: condensate water recovery, rainwater collection and wastewater treatment for reuse
Prevention and reduction of air, water and soil pollution
Integration of principles of Reduce, Reuse, Reduce, Recycle, Repurpose, Rethink, Replace, Redesign within Tourism sector
Restoration and conservation of nature
Protection of the environment (through the implementation of a biodiversity management plan)
Adaptative reuse of cultural heritage
Circular production patterns (in order to provide circular products/services to tourism industries)

Procurement focused on leasing services rather than on procurement of a product
Procurement of local products/services
Performance and sharing economy (implementation of the Product as Service business model like bike sharing, car sharing, platform for local tour guides, product as service)
Adoption of an eco-friendly approach by each actor of tourism (traveler, host, tour operator and supplier)
Tourists, policy makers and the industry all have important roles to play (multilevel transition)
Transversal actions
Balance the interests of tourists and local population
Robust measurement and constant monitoring of the circular development impacts
Promotion of sustainable/circular awareness through the education of good practices (e.g. staff training; providing proper information to guests)
Managers' commitment (through training, goals and incentive schemes)
An **adequate legislation** framework and regulation on investments
An **institutional and governance framework for innovation** in relation to sustainability/circularity issues and environmental aspects

4.4 From assessment to actions: best practices around the world

The present chapter introduces and describes a list of **best practices related to circular tourism** around the world. In order to offer an overview as comprehensive as possible, different sources have been consulted, including scientific papers, reports from international bodies, books and handbooks. From all these studies, best practices dealing with circular tourism have been mapped.

Several typologies of circular tourism initiatives have been reported concerning aspects related to resource efficiency, material flows, waste prevention, renewable resources, energy savings, design of products and services, mobility solutions and other issues.

As shown in the following table, the mapped best practices are implemented worldwide by different actors and at different levels. Macro level refers to the tourism destination, meso level considers essential services such as education, transport, water management services, energy supply services, waste management services and micro level refers to each tourism industry, as for instance tourism accommodations, food services, tour operators.

Table 5. Circular Tourism Best practices
Source: authors' elaboration

#	Name of the initiative	Brief description	Place of implement ation	Subjects involved	Unit of analysis	Document references
Source: Acampora, A. et al. (2018). *From linear to circular tourism: the case study of an Italian Ecologically Equipped Productive Area*. The 24th International Sustainable Development Research Society Conference - Actions for a sustainable world from theory to practice.						
1	EEPA Gaeta Green Tourism	The research conducted in the study tries to figure out how how to apply CE concepts and practices in the tourism sector and to illustrate a project aiming at defining a EEPA in a tourist cluster. The research objective is to identify CE principles and business models applicable in the tourism sector, with a specific focus on the EEPA development. The goal is to develop an area in which tourism activities are implemented, following the logic of circular economy.	Gaeta (Italy)	6 touristic activities: one hotel, two Bed and Breakfast, one tour operator, one restaurant, and one beach club.	Meso	
Source: Manniche, J., et al. (2017). *Destination: a circular tourism economy - A handbook for transitioning toward a circular economy within the tourism and hospitality sectors in the South Baltic Region*, Centre for Regional & Tourism Research (CRT), Nexoe.						
2	CIRTOINNO project	The CIRTOINNO project aims to increase the innovativeness of small and medium-sized enterprises (SMEs) within the tourism sector by supporting the integration of *circular economy* elements into their	South Baltic regions	Pomerania Development Agency (Poland), Klaipeda Chamber of	Micro	

		services, products and business models.		Commerce, Industry and Crafts (Lithuania), Public Institution Strategic Self-Management Institute (Lithuania), Energy Agency for Southeast Sweden (Sweden), Institute of Fluid-Flow Machinery Polish Academy of Sciences (Poland), Centre for Regional and Tourism Research (Denmark), Linnaeus University School of Business and Economics (Sweden)		
3	Innovation in the built environmental and digitalisation at the Crowne Plaza	Crowne Plaza Copenhagen Towers is a hotel located in Denmark. The hotel is a frontrunner in environmental building design, built with the purpose of using sustainability as a competitive edge over other hotels. The hotel's heating system, food waste disposal system, as well as procurement policies tor furniture and disposables are highly ambitious.	Copenhagen (Denmark)	Crowne Plaza Copenhagen Towers	Micro	Pg 68-69
4	Green Solution House	It is a small hotel in Denmark. The hotel is based on a holistic approach to sustainability and circularity, integrated in almost all aspects of its operation. The environmental initiatives cover a variety of aspects of hospitality services. In total, the GSH has adapted 75 new or adapted 'green solutions' encompassing circular energy and water systems, upcycled furniture, reusable carpets,	Denmark	Green Solution House Hotel	Micro	Pg 71-72

		curtains and paints, elimination of food waste, local supplies of foods and building materials, and interaction with the surrounding landscape and biotopes. It supports a regenerative business model, whereby monetary revenue from the hotel is channeled into funding the on-going integration of new solutions. Solar cells, energy production from food leftovers, filtering stages to enable on site reuse of water from the sinks and toilets are just a few of the initiatives undertook.				
5	Supply chain management at Martin's Hotels	Martin's Hotels is a Belgian chain of hotels. Their environmental initiatives cover accommodation, restaurant, energy and water. Their initiatives are primarily a waste and energy reduction scheme that aims to close resource loops and completely de-sign out waste. The company collaborates with its suppliers in this transition.	Belgium	Martin's Hotels	Micro	Pg 77-78
6	Berendsen's sustainable and circular laundry services	Berendsen is a supplier of linen and laundry-services. It works to improve the lifetime and reduce environmental impacts of linen and laundry services for hotels and spas. They do so by various means, such as reusing greywater, using materials with a longer life and retaining wastewater heat.	Europe	Berendsen	Micro	Pg 80-81
7	Toward circularity at Victor Vask	Victor Vask is an industrial laundry services provider. In collaboration with Loland Green So-lutions, Victor Vask is developing a biological water treatment system that will transform wastewater from the washing facilities into water of drinkable quality. This water can then be reintroduced into the washing facilities. The wastewater is supplemented by collected rainwater, as water inevitably exits the system through evaporation and in the clothes as they exit the washing process. The aim is thus to create a system that does not produce wastewater. It will however, be necessary to introduce some water due to evaporation.	Denmark	Victor Vask	Micro	Pg 82-83

8	Environmental Management at the Scandic Hotels	Scandic Hotels is a Scandinavian hotel group, with 230 hotels in seven countries. Scandic Hotels follow a general environmental policy, which covers multiple areas of resource use, waste handling, materials and procurement. Circular economy is mentioned in the Scandic environmental policy, not as an overall framework for the hotels' actions, but rather as a comment on how the hotel group handles building materials during renovations and the general minimizing of waste. However, the initiatives do cover a wide range of the hotel group's activities, and they provide good examples of possible starting points for smaller accommodation providers.	Europe	Scandic Hotels	Micro	Pg 84-85
9	Towards closed loop food circles at the Strattons Hotel	Strattons is a small hotel. The Strattons hotel owners have participated in a regional waste minimization project specifically targeting the food and drink industry and is currently (2016) a partner in WRAP (The Waste and Resources Action Programme). At the Strattons Hotel all waste produced in the hotel is segregated, weighed and recorded. Where possible, the waste is taken to the 'recycling room' for storage prior to re-use or recycling. Less than 2% (149 kg) of the hotel's waste is sent to landfill	Norfolk (UK)	Strattons Hotel	Micro	Pg 102-104
10	Smart meter food monitoring system at The Strathmore Hotel	The Strathmore Hotels operate a group of seven hotels. The Salutation Hotel took part in an eight-week trial to actively monitor and reduce food waste helped by WRAP. Food waste monitoring system: A smart meter to measure food waste, from Winnow Solutions, was installed in the hotel's kitchen to track kitchen waste and customer plate waste. This weight data was linked to cost information to calculate the 'true cost of waste' for the hotel.	Scotland/ Northern England (UK)	The Strathmore Hotel	Micro	Pg 104-105
11	Sharing of surplus food at Hotel Guldsmeden	It is a small family run hotel certified by Green Globe. Green Globe's 360-degree sustainability management system ensures the best efforts in every aspect of the daily operations	Aarhus (Denmark)	Hotel Guldsmeden	Micro	Pg 107

		at the hotels. One truly circular initiative at Hotel Guldsmeden is the sharing of food surplus, mainly from the breakfast buffet, via the app/platform Too Good to Go,				
12	BonAppetour	It is a social dining marketplace that connects travellers with local hosts for home-dining experiences, including dinner parties, cooking classes etc. Potential diners can see the menu in advance and read details of the venue and the host.	World	BonAppetour Concierge Services	Micro	Pg 108 http://bonappetour.com
13	I Food Share	It is a web platform that allows users, retailers or manufacturers to offer free food surpluses. The forms in which swaps are manifested are based on the organizers' motivations and target participants' interests (Albinsson, Perera, 2009).	World	I Food Share	Micro	Pg 108
14	Karma	A platform that help reduce food waste from restaurants and cafés through allowing them to sell excess food to customers as take-away meals, thereby also party recover costs.	World	Karma	Micro	Pg 108
15	Resq Clud	A platform that match food waste from restaurants, café, etc. with with anyone who wants to eat in a more environmental manner, saving tens of thousands of meals from ending up in the trash bin.	World	Resq Clud	Micro	Pg 108
16	The Blue Lagoon - Example of a geothermal spa	The energy company HS Orka extracts the geothermal fluid from its reservoir by drilling deep wells of up to 2000 meters. The geothermal fluid is then used to heat freshwater for central heating and to create electricity.	Iceland	Svartsengi Resource Park Energy company HS Orka	Micro	Pg 123
17	Earth Lab at the Six Senses Spas	The Six Senses Hotels, Resorts, Spas company provides spa services in luxury hotel and resort settings. Earth Lab projects includes both firm internal initiatives as well as local interaction with other actors. This can for example be collaboration with local marine conservation actors, forest restoration initiatives and other community development projects. The concrete initiatives include for example eliminating all import of bottled water including use of plastic water bottles and bottling potable water on site. Renewable	20 countries in the world	Six Senses company	Micro	Pg 124

		energy is produced from solar and biomass energy. Use of local, biodegradable products instead of plastic straws, for example lemongrass and bamboo.				
18	Green Globe	Green Globe is a privately owned and independent corporation that offers a widely recognized certification scheme based on a structured assessment of the sustainability performance of travel and tourism businesses and their supply chain partners. Businesses can monitor improvements and document achievements leading to certification of their enterprises' sustainable operation and management.	World	Green Globe Corporation	Meso	Pg 126
19	OrbSys recycling shower	a new kind of shower that saves up to 90% of the water and 80% of the energy consumed by a normal shower. The shower achieves such savings by being a closed-loop, re-circulating system. is essentially an advanced real-time water filtration system packaged as a recycling shower. The process can retain most of the heat in the water, resulting in huge energy savings.	World	Orbital Systems	Micro	Pg 127
20	Six Senses Yao Noi spa resort	the firm has replaced all previ-ously imported drinking water with in-house produced potable water, which is sold in still or sparkling versions at a water bar. The water preparation is usually considered a back of the house operation. According to Yao Noi, the main rea-son behind this change is to become more environmentally conscious and to create a public awareness of" food miles" towards guests and hosts.	Thailand	Six Senses company	Micro	Pg 128
21	ECO-spa	ECO-spa, which stresses their use of locally grown birch trees as the basis of their business model. The spa offers a range of eco certified products combined with their own directly prepared products primarily based on birch trees for cosmetology, body treatments and spa rituals.	Riga (Latvia)	ECO-spa	Micro	Pg 128
Kurtagić, S., M. (2018). ***Circular Economy In Tourism In South East Europe.*** **Conference on Circular Economy in Tourism in South East Europe, 8 May 2018, Ljubljana, Slovenia.**						

22	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Biomass	Installations of biomass plants are available from around 15kW upwards, there is no significant technological upper limit to installation size. Pellet boilers are available with either a built in hopper, filled manually from bags, or with a separate, bulk storage hopper. The latter allows pellets to be delivered by tanker, down a long pipe, typically just once a year, with the minimum of disruption.			Micro	Pg 18
23	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Combined Heating and Power (CHP)	The use of CHP would allow a hotel to produce electricity onsite at a lower cost and benefit from the heat produced as a byproduct of the generation process. Space heating, water heating, laundry, restaurant, and pool heating loads can be met by an appropriately sized CHP system. CHP technologies utilize both electricity and heat generated from a single source. A CHP system makes better use of the fuel put on them, saving up to 40 percent of the energy in total. A CHP system can provide all the hot water and space heating required by a hotel and reduces dependence on electricity from the grid supply thereby proving more efficiency than conventional boiler systems.			Micro	Pg 18
24	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Geothermal Energy- Ground Source Heat Pumps	Ground Source Heat Pumps are one of the most efficient systems available today, with heating efficiencies up to 70% higher than other heating systems and cooling efficiencies up to 40% higher than available air conditioners.			Micro	Pg 18
25	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Solar thermal energy –	Solar combi systems are solar heating installations providing space heating as well as domestic hot water in hotels. The primary energy sources are solar energy as well as an auxiliary source preferably such as biomass, either direct or with a heat pump. One of the biggest advantages of using solar energy as energy			Micro	Pg 19

	Solar COMBI systems	source for cooling is that the maximum energy is obtained when the cooling load is at its peak.				
26	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Solar thermal energy – Solar COMBI+ systems	Solar combi plus systems use heat from solar thermal collectors to provide heating in winter, cooling in summer and domestic hot water (DHW) all year round. The cold is produced by a thermally driven cooling machine, a sorption chiller, which is fed with heat			Micro	Pg 19
27	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Solar thermal energy – Domestic Hot Water Systems (DHWS)	Solar water heating systems use free heat from the sun to warm domestic hot water. An auxiliary heat, additional boiler or immersion heater, is then used to make the water hotter, or to provide hot water when solar radiation is not sufficient.			Micro	Pg 19
28	Decentralized energy system based on renewable energy solutions identified for application in SME hotels: Wind energy	Small wind energy systems are based on a rotor, a generator or alternator mounted on a frame, a tail (usually), a tower, wiring, and the electrical components: controllers, inverters, and/or batteries. They can be installed on the roof of a hotel where there is a suitable wind resource.			Micro	Pg 19
29	Looming Hostel	The hostel reduces the ecological footprint and apply the circular economy principles by furnishing the hostel from recycled materials. The food is composted at the site or in cooperation with city composting company.	Tartu (Estonia)	Looming Hostel	Micro	Pg 23
30	CuisinArt Golf Resort & Spa	The resort has installed a solar plant that uses a battery backup system to store energy, providing an uninterruptible ability to supply energy to the reverse osmosis filtration plant, which provides water to the residents of the resort area and irrigation for the golf course. The current 1MW solar plant is the 1st phase of the solar project. The resort intends in the very near future to	Rendezvous Bay, anguilla	CuisinArt Golf Resort & Spa	Micro	Pg 24

		proceed with full solar and thermal energy totaling 4MW at their 300 acres estate, to serve rooms, restaurants, etc.				
31	Westin Dawn Beach Resort & Spa	The resort has completed the installation of 2,602 lightway solar panels for a total system capacity of 755 kilowatts. The completed solar system will produce approximately 1,223 ,000 Kilowatt hours per year. The system will avoid 1.9 million pounds of carbon dioxide emissions or the equivalent of CO2 emissions from energy used by 43 homes annually, or 707 acres of forest preserved from deforestation by carbon sequestering.	Caribbean	Westin Dawn Beach Resort & Spa	Micro	Pg 24
32	Vindson Atlantica Hotel	In 2004, UNIDO launched its Global Chemical Leasing Programme, to promote a business model that marks a paradigm shift from the selling of chemical goods to the delivery of chemical services. The hotel's cost of hygiene maintenance thanks to the programme is 2.0 R$ per occupied room while in the other hotels of this hotel chain, that buy chemicals in a traditional way, the cost is 4.16 R$.	Brasil	Vindson Atlantica Hotel	Micro	Pg 25
33	Pennyhill Park Hotel	The hotel's used cooking oil from restaurants is poured into a large stockpot for easy storage and then recycled to fuel by a local oil refinery. The food is composted at the site or in cooperation with city composting company.	Bangshot (UK)	Pennyhill Park Hotel	Micro	Pg 25
Source: UNTWO (2017/2018). *Lead, Innovate, Finance, Empower.* Annual magazine.						
34	Reducing Energy Consumption and CO2 emissions in the Chilean Tourism Industry	Pilot project in three southern regions of Chile with high tourist activity. Through a close collaboration with the Chilean tourism private sector, the project seeks to reduce the energy consumption of each individual company, help them shift to renewable energy sources, give them the opportunity to become energy self-sufficient, and reduce the carbon footprint of the country's tourism sector.	Chile	Federation of Tourism Companies of Chile (FEDETUR)	Micro	Pg 30-31
35	Zero Carbon Resorts for Sustainable	Interventions in the project range from simple measures with low or no investment, such as identifying and	Philippines and Thailand	Micro, small and medium-	Micro	Pg 34-35

	Tourism project in the Philippines and Thailand	eliminating energy and resource waste and implementing efficient, leading-edge technologies to heighten resource efficiency. Through the application of the 3R methodology of Reduce - Replace - Redesign, the project has challenged the conventional practices of tourism establishment operations in the Philippines and Thailand, leading to a reduction of up to 63% of costs for energy and water and avoiding the emission of over 11 million kg CO2.		sized tourism enterprises		
36	CCI Business optimizer	Chamber of Commerce and Industry of France (CCI France) launches interactive web application to encourage eco-savings in the hospitality sector. The CCI Business show the potential savings if they would adopt sustainable management practices. The application provides an average assessment of savings on water and energy resources and financial savings linked to good environmental practices or equipment adjustment.	France	Chamber of Commerce and Industry of France	Micro	Pg 36
37	JG Afrika's Operational Materials Management Plan for Hotel Verde	Hotel Verde is the first hotel in Africa to offer carbon neutral accommodations and conferencing facilities. it has implemented a comprehensive range of interventions, including energy-saving heating systems, grey water recycling measures and green building certifications. Hotel Verde is also a pioneer in offering the Hotel Carbon Management Initiative (HCMI), carbon-offsetting programme in the region. JG Afrika, an engineering and environmental consultancy assisted Hotel Verde to implement a "zero waste to landfill" policy through the development of an Operational Materials Management Plan, aiming to provide the Hotel control over the potential waste generated onsite through an informed procurement process.	Cape Town (South Africa)	Hotel Verde	Micro	Pg 37
38	"Let 's Reduce Single-Use Plastics	By providing detailed information about the various pros and cons of plastic alternatives, the Guide		Travel without plastics company	Micro	Pg 39

	Reduction" Guide and Toolkit	enables hotel management teams to make informed purchasing decisions. It provides a global directory of suppliers of alternative products to single-use plastic. The Toolkit includes tools to measure cost impacts, plus staff training and customer communication templates for hotels to raise their employee and guest awareness of the positive environmental effects of reducing disposable plastic.				
39	"Transforming Tourism Value Chains to Accelerate More Resource Efficient, Low Carbon Development" project	The project aims at improving tourism value chains in developing countries and Small Island Developing States (SIDS) by reducing greenhouse gas emissions and increasing resource efficiency. The project aims at tourism businesses and private and public actors across three tourism value chains -food and beverages, accommodation, and the Meetings industry. The scope of the project involves analyzing tourism value chains, preparing policy recommendations, and developing concrete action plans to help reduce greenhouse gas emissions and improve resource efficiency along the value chains of at least 100 businesses.	Dominican Republic, Mauritius, the Philippines and Saint Lucia	UN Environment, German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	Meso	Pg 40
40	Tourism Tracer mobile app	Tourism Tracer is one of the most innovative and extensive research conducted on tourist travel as it offers unprecedented insights into where groups of visitors go, how they move around, and what influences their decisions. The data gathered offers significant value for the Tasmanian government and the wider global tourism community by assisting in visitor planning and management of tourism flows.	Tasmania (Australia)	University of Tasmania	Meso	Pg 41
41	Chamonix Valley-Mont-Blanc mobility solutions	The Chamonix communities have taken an active role as the Valley's Sustainable Mobility Organizing Authority, aiming to reduce the Valley's road traffic and overcrowding issues during peak tourism seasons by encouraging residents and tourists to shift to public transportation as an alternative to cars. These	France	Chamonix communities	Meso	Pg 49

		communities have developed, managed, and implemented plans for the diversification of mobility options in Chamonix through the modernization of the Mont-Blanc Express railway and Montets Tunnel, and the renovation of the Mont-Blanc urban bus network				
42	Nature Getaway without Cars	A greener way for tourists to visit France's emblematic landscapes and cultural heritage through eco-friendly forms of transport - bikes, train, bus or by foot. Project's website offers useful tourist maps and GPS coordinates. 11 getaways have been offered since 2015.	France	Grands Sites de France / Morocco Ministry of Tourism	Meso	Pg 50
43	Bicitravesias initiative	The Bicitravesias initiative promotes the use of bicycles to tourists to visit the tourist attractions of Bogotá and the region, in order to reduce carbon emissions generated by tourist activities. The Institute also supports the implementation of Sustainable Standard Techniques.	Bogotà (Colombia)	Instituto Distrital de Turismo de Colombia	Meso	Pg 50
44	Respect the Mountains project	Educational project to reduce the waste in mountain areas while educating and sharing good practices with mountaineers, tourists, and future generations. Since its launch in 2015, over 1500 volunteers have collected 7,500 kg of waste and will soon be implemented in several countries.	Mountain areas	International Climbing and Mountaineering Federation (UIAA)	Meso	Pg 50
45	International Tourism Partnership - ITP Goals	Setting ITP Goals, clear and quantifiable commitments to improve sustainability and drive responsible business in hospitality. Goals include Youth Employment, Carbon, Water, and Human Rights, issues that have been identified by members and through ITP's extensive stakeholder engagement as the most pressing social and environmental issues.	World	Hospitalities	Meso	Pg 50
45	Manual: Sustainable Food Tools – Ways to Communicate with Guests	Free manual communicates hotel 's sustainable food elements and provides tools and suggestions adaptable to different hotels. Tested in 7 hotels affiliated with Futouris members, the project encourages guests to adopt more sustainable food consumption practices.		MODUL University Vienna, Department of Tourism and Service Management	Micro	Pg 51

46	National Sustainable Consumption and Production Plan	Adopting SCP patterns in government policies, plans and programmes to improve quality of life and combat poverty in Honduras. Building strategic alliances between sectors aims for resource efficiency and inclusive economic growth.	Honduras	National Council for Sustainable Development	Macro	Pg 51
Source: Nedyalkova, S., (2016). *Applying circular economy principles to sustainable tourism development.* Smart destination conference.						
47	Zero waste platform	There are more and more Zero waste hotels globally that apply the Zero waste definition as "designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them". Along with other benefits, this waste management platform contributes to brand differentiation.	World	Zero waste hotels	Meso	Pg 6
48	Winnow track system	It is an example of a digital product developed to track and measure the waste in the hospitality sector. 2016). This system engages employees to check on a display every waste they put into a recycle bin. The amount of waste in the food waste bins is been measured on a daily basis. There are also data about the kind of food binned and the reason why. This information helps restaurants and hotels to prepare and produce more effectively and minimize the waste of foods that are repeatedly left uneaten by consumers.			Micro	Pg 7
49	Hospitality and Food Service voluntary agreement	It is a voluntary agreement at national level to cut food and associated packaging waste and increase recycling – initiated by the four UK governments and WRAP. Over 100 companies, which represents 19% of the hospitality and food service sector in the UK, have signed up to this agreement.	UK	UK governments, UK tourism companies	Meso	Pg 7
Source: Rodríguez-Antón, J., M. & del Mar Alonso-Almeida, M. (2019). *The Circular Economy Strategy in Hospitality: A Multicase Approach,* Sustainability, 11, 5665.						
50	InterContinental Hotels Group (IHG) and IHG Green Engage.	IHG, in the field of sustainability and EC, aims to reduce its impact on the environment by using a digital sustainability platform, called IHG Green Engage. This platform is a global standard applicable to the	World	InterContinental Hotels Group (IHG)	Micro	Pg 5

		entire group; it helps hotels to manage and control their energy consumption, CO2 emissions, water use and waste generation through more than 200 green solutions and implementation plans that strive for profitability while minimizing its environmental impact. Each green solution describes the action the hotel should take (such as replacing incandescent light bulbs in the rooms) and provides detailed steps to implement the solution.				
51	Accor's Planet 21 in Action programme.	Accor's hotel chain has defined the Planet 21 in Action programme, which follows in the wake of the Planet 21 programme, and which aims to reduce the use of water, expand the recycling of its waste, protect biodiversity, reduce energy use and CO2 emissions, increase the use of renewable energy and promote eco-design and sustainable construction. Its development includes a series of programmes related to the CE and sustainability, for example asking customers to reuse their towels, offering eco-designed beds from FSC certified woods and a healty food.	World	Accor's Planet 21 in Action programme	Micro	Pg 5-6
52	Eco-Touch by Meliá	Melia hotels International chain bases its sustainability actions on a global sustainability policy, in the strategic alliance that the group has with UNICEF and in sustainable products and services by the "Eco-Touch by Meliá" brand. Meliá is aligning with the European Commission's proposals regarding EC through four actions: promote recycling and reuse of materials and waste, use technologies to limit the consumption of certain materials to reduce their consumption and waste generation; use renewable, biodegradable or compostable raw materials; commit to the eco-design of the hotels, products and services to improve the operation from an environmental perspective and reduce waste generation. (Meliá Hotels Group Annual Report, 2018).	World	Melia hotels International	Micro	Pg 7

53	NH Hotel group	NH's environmental contribution has focused on reducing resource consumption, reducing CO2 emissions, obtaining environmental certifications for its hotels and using "green" energy sources, as well as in working to minimise its impact on climate change, increasing resource efficiency and developing more sustainable products. All this has reduced the environmental footprint of the company, in addition to its responsible consumption of natural resources.	World	NH Hotel group	Mirco	Pg 8
Source: Association of Municipalities and Towns of Slovenia (2020). *CircE – Interreg Europe Project Slovenja Action Plan.* https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1581328309.pdf						
54	Alpine Pearls	Alpine Pearls is a network of villages in the Alps offering Green Mobility. Holidays in Eco-Motion promotes access to destinations in the Alps by providing environmentally- friendly mobility choices.	Alpine area	21 Alpine villages	Meso	Pg 8 www.alpine-pearls.com/en/mobility-guarantee/
55	Bohinj destination	Sustainable mobility in the Alps through intelligent transport systems containing information on parking occupancy, public transport, natural asset experience programmes and a mobility card (subject to a fee) for guests which includes free-of-charge parking, transport and visits of natural and cultural sights in Bohinj and discounts elsewhere in Slovenia	Bohinj (Slovenia)	Bohinj destination	Meso	Pg 8 www.bohinj.si/mehka-mobilnost/
56	KOLESCE bicycle rental system and CELEBUS electric public transport	Urban and interurban systems for sustainable mobility which goes beyond local borders and establishes both regional mobility and inclusion in the NextBike network through a uniform contactless user card for public bicycle rental and transport systems	Slovenia	Tourists	Meso	Pg 8 https://bikes.nomago.si/
57	Cycling destination development manual	Manual to help tourists organize their trip by bicicle.	Slovenia	Tourists	Meso	Pg 8 https://skupnostobcin.si/wp-content/uploads/2016/06/5.pdf
58	Avant2GO	Car sharing service. introduction of electric car sharing: case study Koper as part of the Edison – eKoper project.	Slovenia	Tourists	Meso	Pg 8 https://avant2go.com/

59	Platform "prevoz.org"	Co-mobility – established Slovenian platform, online tool andmobile application for individuals travelling a similar route by car.	Slovenia	Tourists	Meso	Pg 8 https://prevoz.org/
60	Zero waste tourism and hotels	Recommendations for Zero Waste Tourism in Slovenia: zero waste events and accommodation and the first Slovenian zero waste hotel	Slovenia	Tourists	Micro/meso	Pg 10 hotel; https://ebm.si/zw/turizem/ https://ebm.si/zw/o/2018/hotel ribno-zelen-zgled-na-poti-do-druzbe-brez-odpadkov/
61	Nuovo Mesto's Pilot project	The project involves closed-loop material flow of carton packaging for milk and juices. Through a series of specially designed activities, they were encouraging schools and households to collect carton packaging separately and to pass as many of them on to recycling as possible. This was part of Novo Mesto's efforts to gradually establish its own closed materials loop for waste beverage cartons, thereby securing enough raw materials to produce its own supply of sanitary paper over the long term.	Municipality of Novo Mesto (Slovenia)	Municipality of Novo Mesto	Meso	Pg 10
62	Living resource community management projects	Initiatives to establish rural cooperative diffused hotels (diffused hotels can act as hotels that bring together local providers; they also facilitate the valuation of the available built environment of natural persons; they promote a multi-purpose use of buildings; they form part of the emerging sharing economy)	Slovenia	Rural diffused hotels	Micro	Pg 12
63	Hotel Water Measurement Initiative (HWMI)	It is a methodology and a tool enabling hotels to consistently measure and report water consumption. HWMI is free and may be used by any hotel anywhere around the world.	World	International Tourism Partnership, KPMG and 18 global hotel companies	Micro	Pg 12 https://www.tourismpartnership.org/wp-content/uploads/2017/09/HWMI-v1-

						0_update-13-Sep-2016.zip.
64	Hotel Carbon Measurement Initiative (HCMI)	It is a methodology and a tool enabling hotels to consistently measure and report carbon emissions. HCMI is free and may be used by any hotel anywhere around the world.	World	International Tourism Partnership, KPMG and 23 global hotel companies	Micro	Pg 12
65	Slovenian Network of Re-Use Centres	The centres aim to reuse and recycle waste creating green jobs.	Slovenia	Government of Slovenia	Meso	Pg 13 www.cpu-reuse.com/centri-ponovne-uporabe.
66	Iceland scheme to reduce plastic waste	The scheme, created for the reduction of the quantity of plastic waste generated by tourists on the island, regards offering them a luxury brand of tap water. The Kranavatn brand which means "tap water" is available at the Iceland airport, bars, restaurants and hotels. It is marketed as a luxury beverage aimed at encouraging responsible tourism without plastic.	Iceland	Tourists	Macro	Pg 14
67	Smart Specialisation Strategy or SPS	n the SPS, a CE is one of the priority areas for development investments The SPS constitutes an implementation document of previously adopted strategic documents. Under its priority area "Natural and Traditional Resources for the Future", the SPS also highlights the development of new business models for transition towards a CE.	Slovenia	Government of Slovenia	Macro	Pg 26
Source: Global Destination Sustainability Index (2018). ***Sustainable Destination Management: The Road to a Circular Economy. A white paper analysis of the 2017 GDSI***. **https://www.gds-index.com/uploads/extra/GDSI-The-Road-to-a-Circular-Economy-Whitepaper-v2-2017.pdf**						
68	Melbourne's Strategy	Actions to mitigate the impact of the City's activities with action plan on heat, energy, water and waste.	Melbourne (Australia)	Melbourne government	Macro	Pg 8
69	Smart Green Program	A program involving the City of Sidney with businesses including hotels, events, and conference and entertainment venues in order to improve their environmental performance while reducing operating costs. Launched in 2009, the program has provided hands-on sustainability advice and support to businesses, such as no cost water	Sydney (Australia)	City of Sydney and tourism businesses	Macro	Pg 9

		and waste assessments, recommendation reports, referrals to state government energy programs and implementation support.				
70	Food workshops	Zurich Hotel Association in collaboration with United Against Waste, is currently organizing food waste workshops for its partners. Participating hotels could in average reduce their food waste by 42%. The DMO promotes this initiative on www.zuerich.com, where visitors can find restaurants with a strong commitment to sustainability.	Zurich (Switzerland)	Zurich Hotel Association	Micro	Pg 13
Other sources						
71	Ecobnb's Guide	Ecobnb in a website specialized in providing tourists information about sustainable and circular tourism. Its guide discovers how to be a Green Tourist through the application of some actions, as choose organic and km 0 food from local farms, choose train, bike and eco-friendly cars, prefer accommodations in which recycled and recovery materials is used, which exploit clean energy coming from 100% renewable energy sources, and avoid plastic when possible.			Micro	https://ecobnb.com/blog/2019/11/circular-economy-and-Tourism-the-ecobnbs-guide/
72	Residence Ancora	In the kitchen of our apartment we find all the explanations to make the collection, both in Italian and English, and a large drawer with colored containers of different sizes arranged to collect various materials. So recycling on vacation it's really easy! In addition, mothers with young children can buy in the boutiques of the residence cloth or biodegradable diapers.	Acciaroli (Italy)	Residence Ancora	Micro	https://ecobnb.com/blog/2015/11/zero-waste-hotels/
73	Ecovillage Torri Superiori	The village gives the opportunity to participate in the daily life of the village, lessons and courses on eco-sustainability. Thanks to composting practice they cut down at least 50% of the weight of waste they produce and create the compost for our vegetable gardens and orchards.	Western Liguria (Italy)	Ecovillage Torri Superiori	Micro	https://ecobnb.com/blog/2015/11/zero-waste-hotels/
74	B&B Vivere la Vita	In the B&B practices to avoid the disposable packaging are put in place. Also, regarding detergents and cleaners they use only big packs	Garda Lake (Italy)	B&B Vivere la Vita	Micro	https://ecobnb.com/blog/2015/11/zero-

		and just 1 or 2 types of biological and ecological detergents.				waste-hotels/
75	B&B Paradiso n. 4	The B&B uses waste to put it back into the circle. They differentiate all waste, including the rooms. Some recycled items are part of their furniture. They collect the corks and then ship them to special centers that reuse them in the field of construction, thanks to their insulating capacity.	Siena (Italy)	B&B Paradiso n. 4	Micro	https://ecobnb.com/blog/2015/11/zero-waste-hotels/
76	Hotel Energy Solutions (HES) and HES e-toolkit	Hotel Energy Solutions (HES) is a UNWTO-initiated project in collaboration with a team of United Nations and EU leading agencies in Tourism and Energy. The project delivers information, technical support & training to help Small and Medium Enterprises (SMEs) in the tourism and accommodation sector to increase their energy efficiency and renewable energy usage. HES provides an online mitigation toolkit: the HES e-toolkit to help hotels reduce their carbon footprint and operations costs, thus increasing business profits. The easy-to-use and free of charge e-toolkit provides hoteliers with a report assessing their current energy use and recommends appropriate renewable energy and energy efficiency technologies. It further suggests what savings on operating expenses hotels can expect from green investments through a Return on Investments Calculator.			Micro	http://www.hes-unwto.org/hes_root_asp/index.asp?LangID=1

5. The INCIRCLE model: Measurement Framework and Circular Economy Tourism Key Performance Indicators (CET-KPIs) dashboard(s)

The present chapter has the scope to provide a comprehensive overview about activities carried out to build the INCIRCLE Circular Economy Tourism Key Performance Indicators (CET-KPIs) dashboard(s) and to show and explain the Incircle model (that include both the Measurement Framework and the CET-KPIs) dashboard(s).

The first main step of this activity has been the design and development of a measurement framework able to describe tourism sustainability and circularity. The framework is based on four capitals (natural, social, built, human) and on three levels (micro, meso, macro), as better described below. The framework include also five principle of the Circular Economy model that represent at the same time rules on which choices – at every level - should be taken and objectives that a sustainable and circular tourism should achieve. This objectives will guide the transition toward a circular tourism model and, in this perspective, they give a strong support in terms of strategic management of tourism destination and tourism industries. CE tourism principle are: Rethink, Reduce, Regenerate, Revalue, Innovate. The model does not consider collaboration as an autonomous principle because it supports the achievement of all CE tourism principles, being transverse to them.

The second main step has been the mapping of circularity and sustainability indicators, developed for the tourism sector by Academics and National/International organizations in the recent years. This first version of the data-set has been systematically reviewed on the basis of the previously developed guide framework in order to provide the INCIRCLE CET-KPIs dashboard, as better described below. The Incircle model consists of two different dashboards: one addressed to tourism destinations' decision makers (TDDM) and another one addressed to tourism industries' decision makers (TIDM). Since the one addressed to TDDM refers to the macro level of analysis – the tourism destination - CET-KPIs in this dashboard must cover a wide range of situations (in economic, social and environmental terms). In the light of the variety of indicators included in this dashboard, the Incircle model provides also a customizing tool, capable to support the tourism decision-makers in the selection process of adequate CET-KPIs matching with their specific circumstances. As well the dashboard addressed to TIDM can be customized considering the specific tourism industry that must be measured: for this reason, has been created four different versions.

5.1 Incircle Measurement Framework

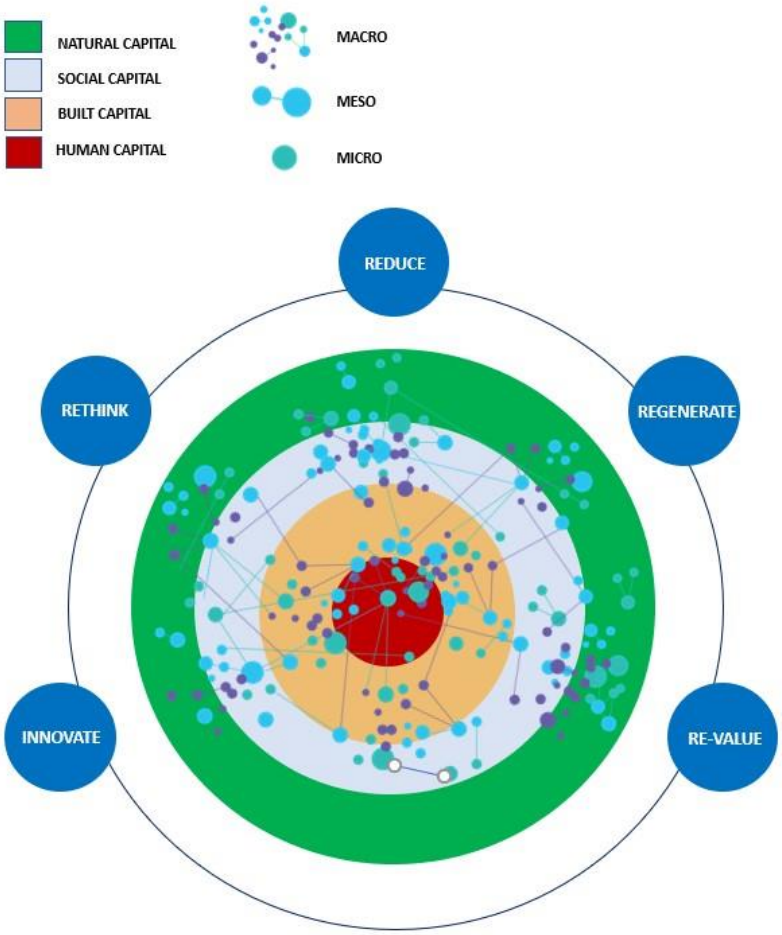
Circular tourism, within INCIRCLE project, may be evaluated, considering four types of capitals (that are Human Capital, Natural Capital, Social Capital and Built Capital) and three analysis levels (that are Macro, Meso and Micro), intrinsically linked to five circular economy principles (that are Rethink, Reduce, Regenerate, Innovate and Re-value), as reported in the Figure 29.

Regarding the levels of analysis: at macro level, we consider the tourism destination; at meso level, we consider the dense network of interactions that nourish sustainability and circularity at macro and micro levels ; and at micro level, we consider tourism industries (like tourism accommodations, food services, tour operators, etc.).

Across these capitals and analysis levels we can distinguish decision makers and stakeholders. The first type of actors takes decisions directly influencing the tourism sustainability and circularity. The second type of actors takes decisions that may influence only indirectly the tourism sustainability and circularity. Both types of actors manage resources stocks and flows across five capitals. These kinds of resources are various, including economic, financial, natural, technical, human, societal, etcetera. In this perspective, both types of actors take decisions that directly influence the quality and balance of the four capital.

Circular tourism aims to minimize negative impacts on capitals and maximize benefits on the same capitals. In facts, through a regenerative approach, tourism sector can contribute to the preservation of the four capitals, improving their value, quality and balance, sustaining the human well-being and the planetary health, simultaneously. Furthermore, the economic sector can take a competitive advantage thanks to this sustainable, circular, restorative, regenerative and carbon neutral approach.

Figure 29. Incircle Measurement framework
Source: authors' elaboration



In the following sections, each part of the Incircle Model and INCIRCLE CET-KPIs dashboards will be deeply described.

5.1.1 The primary beneficiaries of the Incircle model

The primary beneficiaries of the Incircle model are decision makers of tourism destination and enterprises operating within the same destination (Table 6). These actors can directly influence sustainable and circular management of tourism (as an economic sector) in the considered area. From tourism destination side, the Incircle model targets managers of organizations that - in different manners - are in charge to define objectives, policies, the governance structures, incentives, plans and programs, etcetera. In a few words, those who take decisions, make choices, implement actions and projects that are (directly) connected to the transition toward a sustainable and circular tourism model. These sorts of decisions entail different types of resources across the four capitals. From tourism industries side, the Incircle model targets business managers that usually take decisions and make choices affecting different flows of resources across these capitals. They can adopt policies, strategies, business models, management systems, communication campaigns, etcetera, oriented to a sustainable and circular tourism model.

In authors' opinion the Incircle model can address a wide range of secondary beneficiaries that are stakeholders operating in the tourism destination who can adjust their own strategies and management systems to the Incircle approach, improving their own circular performance and in the meanwhile supporting the circular performance of the destination.

Table 6. The primary beneficiaries of the Incircle model
Source: authors' elaboration

Beneficiaries of the INCIRCLE model – MACRO level
Destination management: general public administration, governance structure (NACE 8411)
Support institutions: Ministry of Tourism, Trade, Commerce, Transport, Culture, Interior, Environment, etc.
Trade promotion organizations
Chamber of commerce
Ministries and National institutions for management of all assets
Beneficiaries of the INCIRCLE model – MICRO level
Accommodations (NACE 55.1): Hotels – SMEs, Hotels – large chains, Summer houses, Airbnb, Apartment, guest house, hostles, agritourisms, etc.
Campsites (NACE 55.3)
Food Services (NACE 56): Restaurants, Hotel restaurants, bars, fast- foods, etc.
Tour operators and travel agencies (NACE 79)

5.1.2 The four capitals

As described within chapter 3, Sustainable Development (SD) is defined as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland et al., 1987).

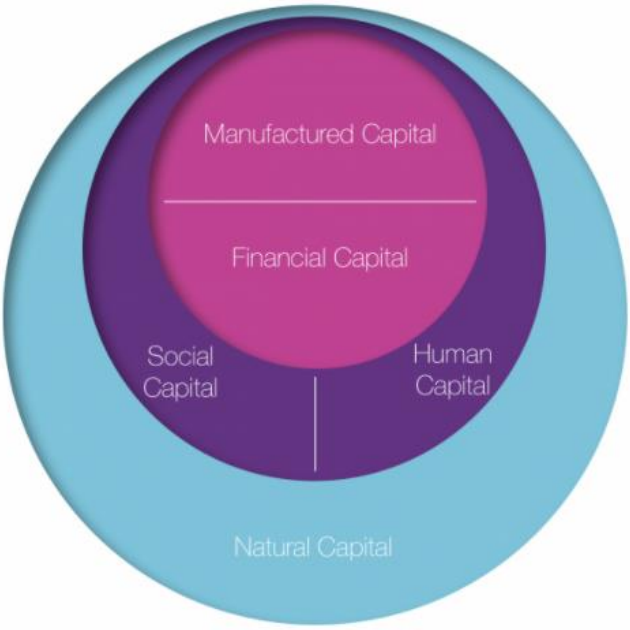
"Forum for the Future" in the 1990's elaborated the **five capitals model** (Figure 30) of sustainable development to illustrate the interconnectedness of various types of capital and the dynamic process through which organizations around the world may begin to achieve a balance between their environmental, social and economic needs. According to this model, five types of sustainable capitals can be identified from where we derive the goods and services we need to improve the quality of our lives:

- **Natural capital** (also sometimes referred to as environmental or ecological capital) is the natural resources (energy and matter) and processes needed by organizations to produce their products and deliver their services. This includes sinks that absorb, neutralize or recycle wastes (e.g. forests, oceans); resources, some of which are renewable (timber, grain, fish and water), whilst others are not (fossil fuels); and processes, such as climate regulation and the carbon cycle, that enable life to continue in a balanced way. All organizations rely on natural capital to some degree and have an environmental impact. All organizations consume energy and create waste. Organizations need to be aware of the limits to our use of the natural environment, and operate within them
- **Human capital** incorporates the health, knowledge, skills, intellectual outputs, motivation and capacity for relationships of the individual. Human Capital is also about joy, passion, empathy and spirituality. Organizations depend on individuals to function – they need a healthy, motivated and skilled workforce, for instance. Intellectual capital and knowledge management is increasingly recognized as a key intangible creator of wealth. Damaging human capital by abuse of human or labor rights or compromising health and safety has direct, as well as reputational costs.
- **Social capital** is any value added to the activities and economic outputs of an organization by human relationships, partnerships and co-operation. For example, networks, communication channels, families, communities, businesses, trade unions, schools and voluntary organizations as well as social norms, values and trust. Organizations rely on social relationships and interactions to achieve their objectives. Internally: social capital takes the form of shared values, trust, communications and hared cultural norms which enable people to work cohesively and so enable the organization to operate effectively. Externally: Social structures help create a climate of consent, or a license to operate, in which trade and the wider functions of society are possible. Organizations also rely on wider socio / political structures to create a stable society in which to operate: e.g. Government and public services, effective legal systems, trade unions and other organizations.
- **Manufactured capital** is material goods and infrastructure owned, leased or controlled by an organization that contribute to production or service provision, but do not become part of its output. The main components include buildings, infrastructure (transport networks, communications, waste disposal systems) and technologies (from simple tools and machines to IT and engineering). Manufactured capital is important for a sustainable organization in two ways. Firstly, the efficient use of manufactured capital enables an organization to be flexible, innovative and increase the speed to market of its products and services. Secondly, manufactured capital and technology can be used to reduce resource use and enhance both efficiency and sustainability.
- **Financial capital** (shares, bonds, notes and coin) reflects the productive power of the other types of capital. This is the traditional primary measure of business performance and success (the "single bottom line") in terms of reporting performance to shareholders, investors, regulators and government. Sustainable organizations need a clear understanding of how financial value is created, in particular the dependence on other forms of capital. For measures of financial capital to truly reflect the value of other forms of capital, organizations must understand the importance of a number of other factors and how to assign financial importance to them.

The five capitals model forms a basis for understanding sustainable development through the lens of the economic concept of wealth creation or "capital". The distinction "capitals", detailed in the five capitals model,

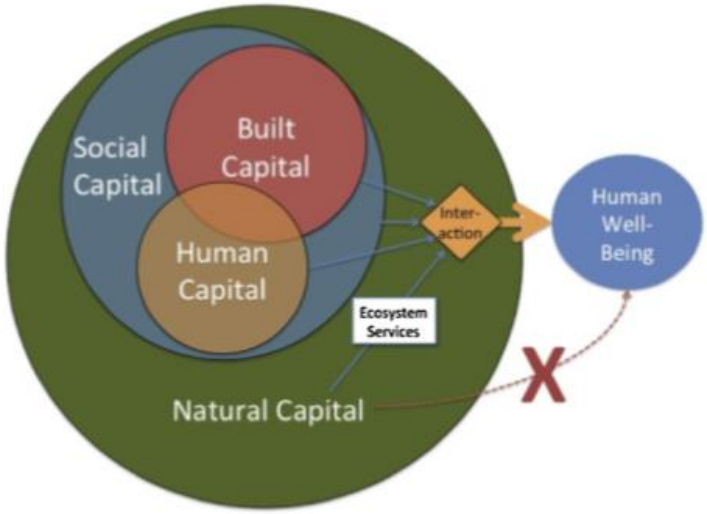
is not a new concept. All organizations, indeed, utilize these five types of capital every day for the purpose of delivering products or services. Examining all sections of the five capitals model together, as a larger and collective unit, is were sustainability, stewardship and increased opportunity are realized.

Figure 30. The five capitals model
Source: retrieved from Forum for the Future (website, https://www.forumforthefuture.org/the-five-capitals***)***



According to another point of view the same Sustainable Development may be reached through the preservation and restoration of ecosystems who provide a range of services that are of fundamental importance to human well-being, health, livelihoods, and survival. These ecosystem services include: **provisioning services** (food, fiber, fuel, water…); **regulating services** (benefits from ecosystem processes that regulate climate, floods, disease, waste and water quality…); **cultural services** (recreations, tourism, spiritual and ethical value….); **supporting services** necessary for the production of all other ecosystem services (soil formation, photosynthesis, nutrient cycling…) (European Commission, 2008). A better understanding of the role of ecosystem services emphasizes our natural assets as critical components of inclusive wealth, well-being, and sustainability. Sustaining and enhancing human well-being requires a balance of all of our assets—individual people, society, the built economy, and ecosystems. This reframing of the way we look at ‘‘nature’’ is essential to solving the problem of how to build a sustainable and desirable future for humanity. In addition to this, it is important to note that ecosystems cannot provide any benefits to people without the presence of people (human capital), their communities (social capital), and their built environment (built capital). This interaction is shown in Figure 31. Ecosystem services do not flow directly from natural capital to human wellbeing – it is only through interaction with the other three forms of capital that natural capital can provide benefits (Costanza et al., 2014).

Figure 31. The four capitals model
Source: retrieved from Costanza et al. (2014)



So, if we view tourism sector under both above-described approaches a circular and sustainable tourism may be realized thanks to the following four "circular and sustainable capitals":

- **Circular and Sustainable Tourism Human Capital**. This sort of capital is composed by individuals living in the area, permanently and temporarily. For examples: citizens, tourisms workers, tourists, etcetera. From a human capital perspective, awareness about sustainability and circularity in tourism is crucial. This shared knowledge is created and strengthened thanks to the relationships developed among all individuals belonging to the tourism destination. Also joy, passion, empathy and spirituality which is preserved and enhanced thanks to the provision of proper cultural services by the four capitals and across the three levels are essential.
- **Circular and Sustainable Tourism Built or manufactured Capital**. The main components of this capital in a tourism perspective are infrastructure that supports the diffusion of a circular mobility (such as electric recharge stations, bike sharing stations, etc.); the provision of essential services (such as waste management, energy supply and water supply); the availability of physical connections within tourism destination. Furthermore, this capital includes all private and public buildings, such as accommodations, restaurants, heritage buildings, etc. Even technologies (from simple tools and machines to IT and engineering) may be referred to this capital, together with equipment, furniture and a wide range of products that are commonly used in tourism processes to deliver tourism experiences. The efficient use of this capital enables tourism to be flexible, innovative and resilient to changes in the market and in consumer orientation. Managing this capital in a proper manner allows to reduce the use of resources and enhance both efficiency and circularity/sustainability of tourism destination/tourism industries.
- **Circular and Sustainable Natural Capital**. This capital includes resources, some of which are renewable (timber, grain, fish and water), whilst others are not (fossil fuels); and processes, such as climate regulation and the carbon cycle, that enable life to continue in a balanced way. All tourism actors rely on natural capital to some degree and have environmental impacts. Tourism actors need to be aware of the

embedded relationships among them and natural assets,
in order to limit their use of natural resources and operate within them in a restorative and, when possible, regenerative way.

- **Circular and Sustainable Social Capital**. This capital is mainly represented by tourism actors (i.e. decision makesrs) who co-operate to develop a circular and sustainable tourism within tourism destination. Moreover this capital includes different types of stakeholders. In this way, such capital embraces tourism industries (with their specific identity), consumer associations, trade unions, NGOs (such as Fair Trade, WWF, etc.) and governmental institutions. All these actors should collaborate to create a shared circular/sustainable tourism (and value) within tourism destination.

The Incircle model specifically considers economic and financial issues both in the flows of resources across capitals and thanks to a specific set of CET-KPIs (included in the social capital at macro and micro levels). The model does not consider these issues as an autonomous capital, but only in terms of resources that contribute to sustain human well-being in the tourism destination. These flows of economic and financial resources are generated by interactions and interconnections between capitals and levels. The tourism destination is measured – in a purely economic perspective - by three different dimensions: the capacity to sustain the local economy; the competitiveness due to the circular approach; the capacity to generate shared value. The same happens at micro level.

5.1.3 The three level of analysis

The macro level of analysis of the Incircle model is the tourism destination within which operate decision makers and different stakeholders. The tourism destination is organized on four capitals (natural, social, built, human), that involve different stocks and flows of resources (e.g. economic, financial, natural, human, etcetera). Decision makers at this level are actors that can take decision can directly affect the sustainability and circularity in the considered area. Stakeholders are actors that can indirectly influence the transition toward a sustainable and circular tourism model in the area. Many actors can be considered as stakeholders, for example, trade associations, organizations involved in critical processes (i.e. water management and services; waste management and services; energy management and services; mobility management and services; education), retailers, artisans, a wide range of suppliers of products and services, local communities, representatives on issues of common interests, etcetera. Decision makers at macro level interact with several stakeholders. These interactions directly affect the four capitals and entail several resource stocks and flows. These interactions both directly and indirectly influence sustainable and circular performance of the tourism sector in the area.

The micro level of analysis of the Incircle model is composed by different kinds of tourism industries (e.g. tourism operators, campsites, accommodations, spa, restaurant, etcetera). Decision makers at this level take decisions that directly affect the four capitals in the area, the use of resources and the sustainability and circularity of tourism offer (at micro and macro level). Decision makers at this level interact with other decision makers at macro level and with several stakeholders. As we explained above, these interactions directly affect the four capitals and entail several resource stocks and flows. These interactions both directly and indirectly influence sustainable and circular performance of the tourism sector in the area. Decision makers at micro level must be considered also as decision makers at macro level since they take decisions that are relevant at both levels.

Since interactions among decision makers and among decision makers and stakeholders are clearly relevant both in terms of four capitals' quality and balance and in terms of sustainability and circularity of tourism sector, we consider this kind of network as the meso level of analysis. Characteristics of the network, subnetworks and of ties must be considered separately from the macro and the micro level, because interconnections and interactions among levels, actors, capitals and resource deserve an autonomous role for sustainability and circularity in the tourism sector. Networks play an adhesive function in terms of sustainability and circularity. Decision makers and stakeholder are nodes of the network. Decisions involving – among others - decision makers directly affect circularity of the tourism destinations and of the tourism industries. Decisions involving only stakeholders indirectly affect circularity of the tourism destinations and of the tourism industries. Decisions taken by decision makers and by stakeholder directly affects the four capital, stocks and flows of resources. Nodes play a critical role in terms of dynamism of networks and subnetworks. The complex governance structure promotes and sustains network and subnetworks.

5.1.4. The five Tourism Circular Economy principles

The Incircle model as seen above is guided by five different Tourism Circular Economy Principles. These are:

- **Reduce**

  The reduce principle is mainly focused on natural capital. It requires to decision makers, both at the tourism destination and at tourism industries levels, to maximize resource efficiency, resource productivity and resource intensity. The reduce principle promotes a shift toward dematerialization and the use of renewable resources, secondary raw materials and byproducts. The achievement of this principle is strongly supported by closed cycles. In addition, industrial symbiosis is a crucial strategy for reduction. The implementation of reduce principle needs a strong stakeholder's engagement. These are actors both directly (i.e. tourism destination's and tourism industries' decision makers) and indirectly (i.e. tourism destination's and tourism industries' stakeholder) involved in the management of the tourism destination and in the management of tourism industries. So, collaboration among actors and across capitals is a fundamental lever for the fulfillment of the reduce principle. In this perspective, the quality of network in the tourism destination become critical, together with the nature and the strength of ties between stakeholders.

- **Regenerate**

  The implementation of regenerate principle needs the adoption of a holistic and systemic vision in managing in an integrated manner all capitals. Indeed, this principle encompasses all considered capitals (i.e. natural, social, built, human) and finds in the equilibrium among them its fulfillment. Looking at natural capital the regeneration principle requires decision makers at tourism destination level and at tourism industries level to restore environmental assets and to regenerate them. Environmental assets include abiotic factors and flows and ecosystems' assets and services. Restoration means to return something to an earlier good condition. Regeneration means to improve a place or system, especially by making it more active or successful. Looking at the local community by creating a shared value and a shared vision it becomes possible to regenerate individuals and society. Therefore, it supports the human well-being, a sustainable development based on local knowledge and trust, community based and

complex governance structures. Regenerate principle asks decision makers to conceive their socio-economic system as an ecological-socio-economic system.

- **Rethink**

  Rethink principle requires decision makers to dramatically refuse the linear approach, adopting a new way to think about resources management processes across capitals. Design is at the center of this new way to think, together with the life cycle approach. The implementation of the rethink principle asks integrated and collaborative decisions making processes. The fulfillment of the rethink principle is based on a strong awareness on impacts that decisions determine on resources across capitals, in all phases of the lifecycle of products and services. The awareness on such kind of impacts enhances the adoption of responsible decisions and the increase of the sense of responsibility. The need to be aware about impacts requires the availability of information and adequate information management processes. New technologies, internet of things, traceability, big data, can support the implementation of this principle. Servitization, co-creation, co-management, sharing, mass customization, can drive the new way of thinking.

- **Innovate**

  The innovate principle requires decision makers to be innovative. Innovation refers to the use of a new idea or method. These kinds of processes are displayed in very different filed of actions, as, for example, technologies, organization management, materials, products, services, operational processes and at social level. Specifically, social innovation refers to new solutions that simultaneously meet a social need and lead to new or improved capabilities and relationships and better use of assets and resources. In this perspective, social innovations are in the meanwhile good for society and enhance society's capacity to act. The fulfillment of this principle is strongly supported by the capacity of change and is based on collaboration between stakeholders and people. Innovation principle interacts with and supports all the other principles of the model.

- **Revalue**

  Revalue principle refers to the capacity of decision makers to maintain the value of resources and products across different economic cycles. This kind of capacity can be supported by several types of actions, as for example, maintenance and repair, reuse, repurpose, refurbish, remanufacturing, refitting, renovation, recycle, recovery. This principle specifically requires to enhance the overall capacity of cycles to upcycle. Upcycling refers to the reuse in such a way as to create a product of higher quality or value than the original. More specifically, upcycling could be referred to the process of converting secondary raw materials/by-products into new materials, components or products of better quality, improved functionality and/or a higher value. The achievement of this principle is supported by collaboration and integrated management of resources across capitals.

It appears clearly to what extent collaboration supports the achievement of all CE tourism principles, being transverse to them, even if it is not considered as an autonomous principle.

5.2 From the measurement framework to the INCIRCLE CET-KPIs dashboard(s)

After the development of the Measurement Framework the first step toward the development of INCIRCLE CET-KPIs dashboard has been the identification of the fundamental action areas that have to be assessed and measured if tourism decision makers decide to undertake a circular transition, exploring the above-described tourism circular and sustainable capitals. In the Table 7 and 8, respectively for MACRO (Tourism destination) and MICRO level (Tourism enterprises), these action areas are reported and briefly described.

In the INCIRCLE CET-KPIs dashboard these Action Areas are reported as "Capital Aspects" and are used to identify the various families of circular and sustainable indicators constituent the dashboard itself.

Table 7. Capital aspects related to MESO level within INCIRCLE project
Source: authors' elaboration

MACRO (Destination)			
CAPITAL	**Which "action areas" have to be measured?**		
	No.	**Capital Aspect**	**Eventual specifics**
Human Capital	**1**	Awareness level on sustainable and circular issues (information and formation for tourists, staffs and communities; collection, monitoring and recording of awareness level on these issues)	➢ Residents ➢ Visitors ➢ Tourism enterprises
	2	Social well-being: cultural services. These include aesthetic inspiration, cultural identity, traditions, sense of home, and spiritual experience related to the natural environment (e.g. recreational activities, attention for mental health, presence of theaters/cinemas, presence of museums, eco-tourism, local suppliers, short supply chains, quality products)	/
	3	Residents' experience: monitoring systems of the residents' feedbacks on tourism issues; actions taken in response of residents' feedbacks	/
	4	Tourists' experience: monitoring systems of the tourists' feedbacks; monitoring systems of tourist' behaviours; actions taken in response of tourists' feedbacks	/
	5	Tourism Demand (what does tourist look for?)	/
Built or manufactured Capital	**1**	Transport infrastructures (maintenance and efficiency)	/
	2	Infrastructures that support circular mobility (electric recharge stations, bike sharing stations, etc.)	/
	3	Private and public built capital (focus on energy efficiency, renovative initiatives, etc. -> EPBD Directive 2018/844/EU; adaptive uses of preexisting buildings)	/
	4	Infrastructures that support essential services (water, energy and waste management) -> their maintenance and improvement in order to reduce leakages)	➢ Energy ➢ Waste ➢ Water
	5	Conservation of heritage building	
Natural Capital	**1**	Resource consumption (water, energy, raw materials; efficiency in the resource consumption; attention to renewables sources; use of biofuels; etc.)	➢ Energy ➢ Water
	2	Pollution (chemical and quantitative status of ground water; ecological and chemical status of surface waters; emissions to air	➢ Air ➢ Waste

		and to water; waste produced recycled and recovered, waste prevention; Blue Flag; etc.)	➢ Water ➢ Beaches
	3	Climate indicators for Tourism	
	4	Land uses	
	5	Presence of brownfields / greenfields	
	6	Protected areas	➢ Land ➢ Water
	7	ICZM (integrated Coastal Zone Management)	/
	8	Vulnerable areas	/
	9	Vegetation loss	/
	10	Quality of drinkable water	/
	11	Climate change adaptation and mitigation systems (e.g. Green and blue infrastructures; rainwater harvesting; developing drought-tolerant crops; choosing tree species and forestry practices less vulnerable to storms and fires; sand nourishment; etc.)	/
	12	Marine litter impact (% recycled collected marine litter)	/
	13	Climatological risks assessment / action plans in the case of hazard extreme events	/
Social Capital	**1**	Presence of an organization/institution/work group specific for circular and sustainable tourism issues	/
	2	Presence (and implementation) of law or policy or strategy dedicated to sustainable and circular tourism	/
	3	Presence (and implementation) of law or policy or strategy dedicated to climate change adaptation/mitigation	/
	4	Presence (and implementation) of law or policy or strategy dedicated to conservation of cultural heritage	/
	5	Land use/development plan	/
	6	Integration level between circular and sustainable tourism policy with other policies	/
	7	GHG emission management plan	/
	8	pollution management plan (noise, light, runoff, erosion, ozone-depleting substances, etc.)	/
	9	waste management plan (attention for waste recycling, waste recovery, development of proper waste collection systems, construction of new waste recycling treatment plants, etc.)	/
	10	water management plan (wastewater treatment, presence of tertiary wastewater treatment plants, water balance, cleaning of roads with rainwater or purified wastewater, water safety plan, emergency plans, leakages monitor, infrastructures maintenance, etc.)	/
	11	energy management plan (renewable sources, carbon neutrality, energy efficiency for public/private buildings, etc.)	/
	12	circular mobility strategy (electric vehicles, car sharing, bike sharing, bike roads, biofuels; attention to which type of waste collection vehicles are used; etc.)	/
	13	Risk assessments and monitoring plans related to tourism / assessment of which tourism assets are present (including natural and cultural sites)	/
	14	Risk management plans that are also referred to Tourism	/
	15	Management systems to mitigate tourism impacts (e.g. adoption of environmental management systems by tourism enterprises, including voluntary certifications/labelling for	/

		environmental/quality/sustainability; adoption of guidelines/procedures to mitigate impacts associated with tourists' visits at cultural sites, etc.)	
	16	Public availability of data regarding tourism sector/ tourism impacts / tourism analysis and resources of destination (public access)	/
	17	waste prevention initiatives (e.g plastic strategy: banish or minimization, prevention of marine litter, etc.; durability strategy, etc.)	/
	18	Dematerialization/digitalization plan (implementation of IT intensity use)	/
	19	Financial planning with focus sustainable and circular issues for Tourism / presence of funds for circular and sustainable initiatives/actions	/
	20	Clear circular and sustainable communication towards tourists and towards local communities (for shared value creation)	/
	21	Marketing which reflects local production, local tradition (e.g. products, services and events)	/
	22	Participative decision processes (engagement of all shareholders/stakeholders)	/
	23	GPP -> circular and sustainable procurement	/
	24	The use of mix instruments (taxes, tariffs, viability incentives, PES, ETS, etc.) in order to implement the adoption of circular and sustainable practices (e.g. adoption of adaptative measures for water balance like rain harvesting, etc.; household composting systems, etc.)	/
	25	The use of mix instruments in order to implement the innovation/development of new technologies respectful with circular and sustainable principles (e.g. implementation of a supply chain more circular and sustainable, etc.)	/
	26	dynamic capabilities (such as presence of change intent)	/
	27	networking (collaborations, agreements, industrial symbiosis, etc.)	/
	28	Planning of events according to circular and sustainable aspects	/
	29	Specific plans/project/actions/programs aimed at supporting traditional activities, craftsmanship, local economy, short chains, etc., based on local knowledge and traditions, able to give to the destination a very well recognizable identity in socio-economic terms	/
	30	Specific plans/project/actions/programs aimed at supporting tourism enterprises in their circular transition (e.g. for the adoption of sustainable standard certification; for the implementation of waste prevention/reduction solutions; for a more efficient water and energy management; for the reduction of emissions to air; etc.)	➢ Energy ➢ Water ➢ Waste ➢ GHG emissions ➢ Pollution ➢ Sustainable/circular standards
	31	Specific plans/project/actions/programs aimed at supporting protection and restoration of natural and cultural sites	➢ Natural sites ➢ Cultural sites
	32	Specific plans/project/actions/programs aimed at supporting protection of intangible cultural heritage	/
	33	Seasonality (limiting tourists' pressure during seasonal peaks; specific strategy for attracting year-round visitors)	/

Table 8. Capital aspects related to MICRO level within INCIRCLE project
Source: authors' elaboration

MICRO (Tourism enterprises)			
CAPITAL	**Which "action areas" have to be measured?**		
	No.	**Capital Aspect**	**Eventual specifics**
Human Capital	**1**	Awareness level on sustainable and circular issues (information and formation for tourists, staffs and communities; collection, monitoring and recording of awareness level on these issues)	➢ availability of information material ➢ biodiversity ➢ cleaning ➢ energy ➢ environmental/social/economic topics ➢ local area ➢ sustainabile and circular practices ➢ transport ➢ waste ➢ water
	2	Social well-being: cultural services. These include aesthetic inspiration, cultural identity, traditions, sense of home, and spiritual experience related to the natural environment (e.g. recreational activities, attention for mental health, presence of theaters/cinemas, presence of museums, eco-tourism, local suppliers, short supply chains, quality products)	/
	3	Residents' experience: monitoring systems of the residents' feedbacks on tourism issues; actions taken in response of residents' feedbacks	/
	4	Tourists' experience: monitoring systems of the tourists' feedbacks; monitoring systems of tourist' behaviours; actions taken in response of tourists' feedbacks	/
Built or manufactured Capital	**1**	Infrastructures that support circular mobility (electric recharge stations, bike sharing stations, etc.)	/
	2	Private and public built capital (focus on energy efficiency, renovative initiatives, etc. -> EPBD Directive 2018/844/EU; adaptive uses of preexisting buildings)	➢ water ➢ energy ➢ construction ➢ equipment/forniture
Natural Capital	**1**	Resource consumption (water, energy, raw materials; efficiency in the resource consumption; attention to renewables sources; use of biofuels; etc.)	➢ energy ➢ water ➢ paper ➢ plastics
	2	Pollution (chemical and quantitative status of ground water; ecological and chemical status of surface waters; emissions to air and to water; waste produced recycled and recovered, waste prevention; Blue Flag; etc.)	➢ solid waste ➢ water ➢ air
	3	Land uses	/
Social Capital	**1**	Presence of a business plan / strategy dedicated to sustainable and circular issues	/
	2	Land use/development plan	/
	3	GHG emission management plan	/

	4	pollution management plan (noise, light, runoff, erosion, ozone-depleting substances, etc.)	/
	5	waste management plan (attention for waste recycling, waste recovery, development of proper waste collection systems, construction of new waste recycling treatment plants, etc.)	/
	6	water management plan (wastewater treatment, presence of tertiary wastewater treatment plants, water balance, cleaning of roads with rainwater or purified wastewater, water safety plan, emergency plans, leakages monitor, infrastructures maintenance, etc.)	/
	7	energy management plan (renewable sources, carbon neutrality, energy efficiency for public/private buildings, etc.)	/
	8	circular mobility strategy (electric vehicles, car sharing, bike sharing, bike roads, biofuels; attention to which type of waste collection vehicles are used; etc.)	/
	9	Management systems to mitigate tourism impacts (e.g. adoption of environmental management systems by tourism enterprises, including voluntary certifications/labelling for environmental/quality/sustainability; adoption of guidelines/procedures to mitigate impacts associated with tourists' visits at cultural sites, etc.)	/
	10	Sharing/publication of reports on sustainable and circular performance	/
	11	waste prevention initiatives (e.g plastic strategy: banish or minimization, prevention of marine litter, etc.; durability strategy, etc.)	/
	12	Dematerialization/digitalization plan (implementation of IT intensity use)	/
	13	Clear circular and sustainable communication towards tourists and towards local communities (for shared value creation)	/
	14	Marketing which reflects local production, local tradition (e.g. products, services and events)	/
	15	Participative implementation processes (engagement of all shareholders/stakeholders)	/
	16	circular and sustainable procurement	/
	17	networking (collaborations, agreements, industrial symbiosis, etc.)	/
	18	Planning of events according to circular and sustainable aspects	/
	19	Specific plans/project/actions/programs aimed at supporting traditional activities, craftsmanship, local economy, short chains, etc., based on local knowledge and traditions, able to give to the destination a very well recognizable identity in socio-economic terms	/
	20	Specific plans/project/actions/programs aimed at supporting the circular tourism transition (towards destination itself, but also towards supply chains)	/

	21	Awareness of own impacts on local community(ies), natural and cultural sites and of own actions undertaken to mitigate them	/
	22	Provision of circular and sustainable products/services (especially in the case of Tour Operators)	/

Regarding the MESO level, seen as the tourism network in the area, we identified the specific nourishment provided by MACRO and MICRO levels to it. The incircle model identifies at meso level three different main paths: (i) a circular education path (identified as all information/formation/education initiatives on sustainable and circular issues provided by tourism destination and tourism industries to create a shared knowledge on the topic); (ii) a circular infrastructure path (identified as the provision, by tourism destination and tourism enterprises, of an efficient and integrated system able to manage energy, water, waste and raw materials in a restorative and regenerative way) and (iii) a circular collaboration path aimed towards the implementation of a shared circular tourism strategy. Human Capital, Social Capital and Built Capital, together, contribute to the development of these paths moving within Natural Capital. Table X reports which main actions should be undertaken within each capital, considering both MACRO and MICRO level to develop a solid MESO level.
In the INCIRCLE CET-KPIs dashboard, all indicators which are related to networking actions are properly highlighted.

Table 9. MESO level within INCIRCLE project
Source: authors' elaboration

MESO - NETWORK			
MACRO contribution			
CAPITAL	**Which "action areas" have to be measured?**		
	No.	**Capital Aspect**	**Eventual specifics**
Human Capital	**1**	Awareness level on sustainable and circular issues (information and formation for tourists, staffs and communities; collection, monitoring and recording of awareness level on these issues)	*All information/formation initiatives to raise awareness level on sustainable and circular issues of visitors, residents and tourism enterprises*
	3	Residents' experience: monitoring systems of the residents' feedbacks on tourism issues; actions taken in response of residents' feedbacks	*Monitoring of residents' experience related to tourism sector and the undertaking actions in response to it*
	4	Tourists' experience: monitoring systems of the tourists' feedbacks; monitoring systems of tourist' behaviours; actions taken in response of tourists' feedbacks	*Monitoring of visitors' experience and the undertaking actions in response to it*
Built or manufactured Capital	**1**	Transport infrastructures (maintenance and efficiency)	*Development of an efficient transport network within tourism destination*
	2	Infrastructures that support circular mobility (electric recharge stations, bike sharing stations, etc.)	*Development of an efficient circular and sustainable transport network within tourism destination*

	4	Infrastructures that support essential services (water, energy and waste management) -> their maintenance and improvement in order to reduce leakages)	*Development of an efficient circular and sustainable infrastructure network that supports the energy/water/waste recycle, reuse and reduction within tourism destination*
Social Capital	**1**	Presence of an organization/institution/work group specific for circular and sustainable tourism issues	*Presence of a management committee for sustainable and circular tourism which includes all external and internal stakeholders within tourism destination*
	2	Presence (and implementation) of law or policy or strategy dedicated to sustainable and circular tourism	*A policy/strategy dedicated to sustainable and circular tourism publicly available*
	6	Integration level between circular and sustainable tourism policy with other policies	*Development of a sustainable and circular tourism policy which is integrated with other destination's policies*
	9	waste management plan (attention for waste recycling, waste recovery, development of proper waste collection systems, construction of new waste recycling treatment plants, etc.)	*Development of a proper waste collect system within all tourism destination's areas*
	10	water management plan (wastewater treatment, presence of tertiary wastewater treatment plants, water balance, cleaning of roads with rainwater or purified wastewater, water safety plan, emergency plans, leakages monitor, infrastructures maintenance, etc.)	*Development of a proper water provision system/wastewater treatment within tourism destination*
	11	energy management plan (renewable sources, carbon neutrality, energy efficiency for public/private buildings, etc.)	*Development of an efficient energy distribution system within tourism destination*
	12	circular mobility strategy (electric vehicles, car sharing, bike sharing, bike roads, biofuels; attention to which type of waste collection vehicles are used; etc.)	*Development of a circular and sustainable public transport within tourism destination*
	16	Public availability of data regarding tourism sector/ tourism impacts / tourism analysis and resources of destination (public access)	*A public reporting activity about all sustainable/circular tourism issues*
	20	Clear circular and sustainable communication towards tourists and towards local communities (for shared value creation)	*A clear circular and sustainable tourism communication*
	21	Marketing which reflects local production, local tradition (e.g. products, services and events)	*Promotion of local production and traditions*
	22	Participative decision processes (engagement of all shareholders/stakeholders)	*Development of a participative decision process for sustainable and circular tourism issues*

	23	GPP -> circular and sustainable procurement	*Support to make suppliers/retailers more sustainable and circular in their daily operations*
	24	The use of mix instruments (taxes, tariffs, viability incentives, PES, ETS, etc.) in order to implement the adoption of circular and sustainable practices (e.g. adoption of adaptative measures for water balance like rain harvesting, etc.; household composting systems, etc.)	*Destination's capacity to give a financial support to tourism enterprises for the adoption of circular and sustainable practices*
	27	Risk assessments and monitoring plans related to tourism / assessment of which tourism assets are present (including natural and cultural sites)	*Destination monitors all tourism impacts and undertakes specific actions to mitigate them*
	28	networking (collaborations, agreements, industrial symbiosis, etc.)	*The creation of a solid circular and sustainable tourism network*
	29	Planning of events according to circular and sustainable aspects	*Tourism destination supports a circular and sustainable planning of events*
	30	Specific plans/project/actions/programs aimed at supporting traditional activities, craftsmanship, local economy, short chains, etc., based on local knowledge and traditions, able to give to the destination a very well recognizable identity in socio-economic terms	*Supporting of local economy, traditional activities, craftsmanship and short chains*
	31	Specific plans/project/actions/programs aimed at supporting tourism enterprises in their circular transition (e.g. for the adoption of sustainable standard certification; for the implementation of waste prevention/reduction solutions; for a more efficient water and energy management; for the reduction of emissions to air; etc.)	*Destination provides guidelines/support to tourism enterprises in their circular transition*
	32	Specific plans/project/actions/programs aimed at supporting protection and restoration of natural and cultural sites	*Destination involves tourists and tourism enterprises in supporting the protection and restoration of natural and cultural sites*
	33	Specific plans/project/actions/programs aimed at supporting protection of intangible cultural heritage	*Destination involves tourists and tourism enterprises in supporting the protection of intangible cultural heritage*

MICRO contribution			
CAPITAL	**Which "action areas" have to be measured?**		
	No.	**Capital Aspect**	**Eventual specifics**
Human Capital	**1**	Awareness level on sustainable and circular issues (information and formation for tourists, staffs and communities; collection, monitoring and recording of awareness level on these issues)	*All information/formation initiatives to raise awareness level on sustainable and circular issues of visitors and tourism staff*

	2	Residents' experience: monitoring systems of the residents' feedbacks on tourism issues; actions taken in response of residents' feedbacks	*Monitoring of residents' experience related to tourism sector and the undertaking actions in response to it*
	3	Tourists' experience: monitoring systems of the tourists' feedbacks; monitoring systems of tourist' behaviours; actions taken in response of tourists' feedbacks	*Monitoring of visitors' experience and the undertaking actions in response to it*
	4	circular mobility strategy (electric vehicles, car sharing, bike sharing, bike roads, biofuels; attention to which type of waste collection vehicles are used; etc.)	*Partnership with local transport companies, providing sustainable and circular means of transport and preferring local market distances*
	5	Marketing which reflects local production, local tradition (e.g. products, services and events)	*The tourism enterprise essence itself reflects local traditions*
	6	Participative implementation processes (engagement of all shareholders/stakeholders)	*Development of a participative decision process for sustainable and circular tourism issues within both tourism enterprise itself and externally*
	7	circular and sustainable procurement	*Selecting of sustainable and circular suppliers*
	8	networking (collaborations, agreements, industrial symbiosis, etc.)	*Tourism enterprise is involved in (promotes) the creation of a solid circular and sustainable tourism network*
	9	Specific plans/project/actions/programs aimed at supporting traditional activities, craftsmanship, local economy, short chains, etc., based on local knowledge and traditions, able to give to the destination a very well recognizable identity in socio-economic terms	*Supporting of local economy, traditional activities, craftsmanship and short chains*
	10	Specific plans/project/actions/programs aimed at supporting the circular tourism transition (towards destination itself, but also towards supply chains)	*Tourism enterprise participates in programs promoted to destination, in order to improve own circular performance*

5.3 Mapping of sustainable and circular indicators developed for Tourism sector

After the identification of actions areas for circular transition in each capital and at each level of analysis a literature review has been undertaken to map sustainable and circular indicators developed for tourism sector in recent years is illustrated. Secondly, the logics exploited to analyze mapped indicators and to develop the final INCIRCLE CET-KPIs dashboard is debated. Finally, the chapter describes the customizing tool elaborated to

interactively use the developed INCIRCLE CET-KPIs dashboard in order to ease the tourism user in the development of own CET-KPIs set.

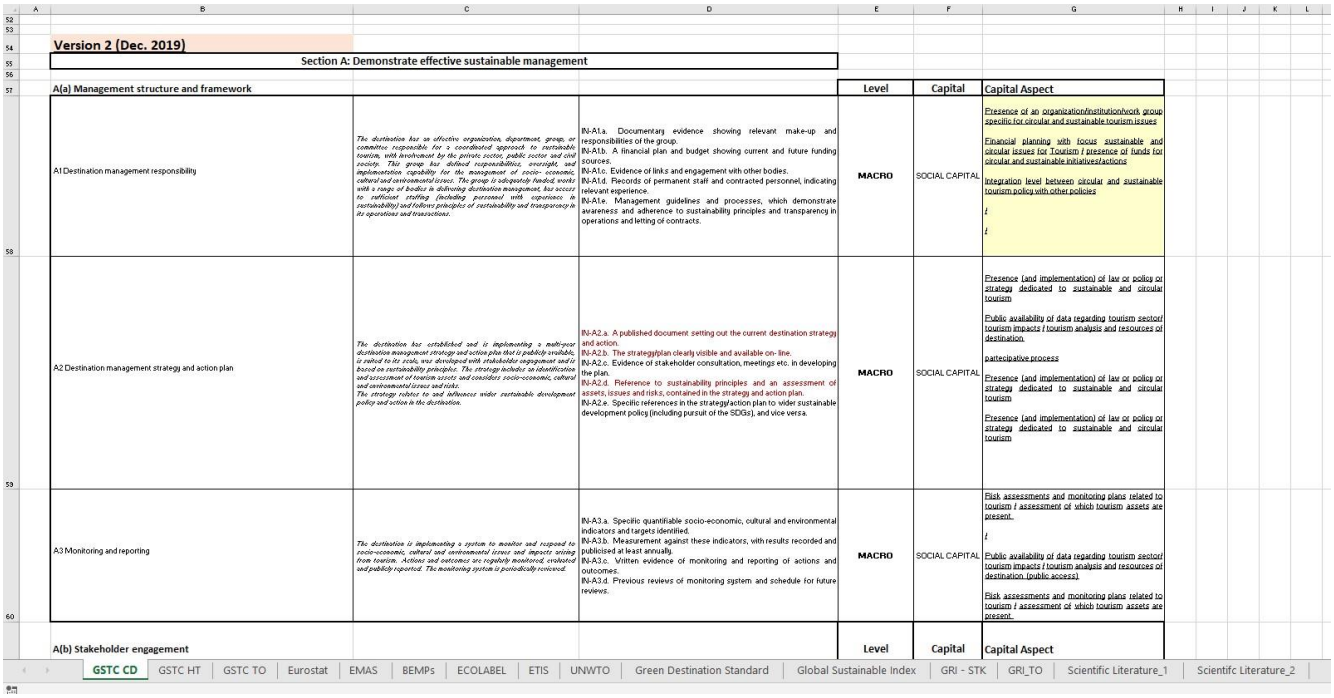
As first step, an extended desk research has allowed to review past studies carried out on the assessment of progress towards sustainable and circular tourism development in the recent years. Both national/international organization studies and Academic ones have been taken into account. The studies analyzed are listed in Table 10. All of them have been already described in the previous chapters of the present report (more precisely, within chapters 3 and 4).

Table 10. National/international organization studies and academic ones analyzed to map sustainable and circular indicators for Tourism sector within INCIRCLE project
Source: authors' elaboration

Author(s) / institution	Year	Title	Unity of analysis examined
UNWTO	2004	Indicators of sustainable development for tourism destinations - a guidebook	Tourism Destination
European Union	2016	The European Tourism Indicator System ETIS toolkit for sustainable destination management	Tourism Destination
EUROSTAT	2006	Methodological work on measuring the sustainable development of tourism. Part 2: Manual on sustainable development indicators of tourism	Tourism Destination
GTSC	2019	GTSC Destination Criteria Version 2.0 with Performance indicators and SDGs	Tourism Destination
Green destinations	2017	Green Destinations Standard Version 1.4	Tourism Destination
Global Sustainable Destination Index	2015	Benchmarking methodology	Tourism Destination
Torres-Delgado and Saarinen	2014	Using indicators to assess sustainable tourism development: a review	Tourism Destination
Asmelash and Kumar	2019	Assessing progress of tourism sustainability: developing and validating sustainability indicators	Tourism Destination
Zhao et al.	2016	Evaluating the comprehensive benefit of eco-industrial parks by employing multi-criteria decision-making approach for circular economy	Tourism Destination
GTSC	2016	GSTC Industry Criteria Version 3 with suggested Performance indicators for Hotels and Accommodation	Tourism accommodation
European Union	2016	Revision of European Ecolabel Criteria for Tourist Accommodation and Camp Site Services. Final criteria proposal	Tourism accommodation / campsites
Hanza	2018	Contributions regarding the research of the sustainable development in agro-tourism from a circular economy perspective	Tourism accommodation
GTSC	2016	GSTC Industry Criteria Version 3 with suggested Performance indicators for Tour Operators	Tour operators
GRI	2002	Tour Operators' Sector Supplement	Tour operators
Manniche et al.	2017	Destination: A circular tourism economy: A handbook for transitioning toward a circular economy within the tourism and hospitality sectors in the South Baltic Region	Tourism accommodation / SPA / Hotel restaurants
GRI	2013	Sustainability Topics for Sectors: What do stakeholders want to know?	Tourism enterprises
Styles et al.	2013	Best environmental management practice in the tourism sector	All tourism actors (destination and tourism enterprises)
European Union	2016	COMMISSION DECISION (EU) 2016/611 under regulation 1221/2009 (EMAS)	All tourism actors (destination and tourism enterprises)

Thanks to this activity an elevated number of sustainable and circular tourism indicators has been mapped (approximately 1500 indicators). All these indicators have been collected into a proper Excel database (Figure 32).

Figure 32. Excel database including all sustainable and circular tourism indicators mapped thanks to desk research activity.
Source: authors' elaboration



Version 2 (Dec. 2019)					
Section A: Demonstrate effective sustainable management					
A(a) Management structure and framework			Level	Capital	Capital Aspect
A1 Destination management responsibility	*The destination has an effective organization, department, group, or committee responsible for a coordinated approach to sustainable tourism, with involvement by the private sector, public sector and civil society. This group has defined responsibilities, oversight, and implementation capability for the management of socio- economic, cultural and environmental issues. The group is adequately funded, works with a range of bodies in delivering destination management, has access to sufficient staffing (including personnel with experience in sustainability) and follows principles of sustainability and transparency in its operations and transactions.*	IN-A1.a. Documentary evidence showing relevant make-up and responsibilities of the group. IN-A1.b. A financial plan and budget showing current and future funding sources. IN-A1.c. Evidence of links and engagement with other bodies. IN-A1.d. Records of permanent staff and contracted personnel, indicating relevant experience. IN-A1.e. Management guidelines and processes, which demonstrate awareness and adherence to sustainability principles and transparency in operations and letting of contracts.	MACRO	SOCIAL CAPITAL	Presence of an organization/institution/work group specific for circular and sustainable tourism issues Financial planning with focus sustainable and circular issues for Tourism / presence of funds for circular and sustainable initiatives/actions Integration level between circular and sustainable tourism policy with other policies ; ;
A2 Destination management strategy and action plan	*The destination has established and is implementing a multi-year destination management strategy and action plan that is publicly available, is suited to its scale, was developed with stakeholder engagement and is based on sustainability principles. The strategy includes an identification and assessment of tourism assets and considers socio-economic, cultural and environmental issues and risks.* *The strategy relates to and influences wider sustainable development policy and action in the destination.*	IN-A2.a. A published document setting out the current destination strategy and action. IN-A2.b. The strategy/plan clearly visible and available on- line. IN-A2.c. Evidence of stakeholder consultation, meetings etc. in developing the plan. IN-A2.d. Reference to sustainability principles and an assessment of assets, issues and risks, contained in the strategy and action plan. IN-A2.e. Specific references in the strategy/action plan to wider sustainable development policy (including pursuit of the SDGs), and vice versa.	MACRO	SOCIAL CAPITAL	Presence (and implementation) of law or policy or strategy dedicated to sustainable and circular tourism Public availability of data regarding tourism sector/ tourism impacts / tourism analysis and resources of destination partecipative process Presence (and implementation) of law or policy or strategy dedicated to sustainable and circular tourism Presence (and implementation) of law or policy or strategy dedicated to sustainable and circular tourism
A3 Monitoring and reporting	*The destination is implementing a system to monitor and respond to socio-economic, cultural and environmental issues and impacts arising from tourism. Actions and outcomes are regularly monitored, evaluated and publicly reported. The monitoring system is periodically reviewed.*	IN-A3.a. Specific quantifiable socio-economic, cultural and environmental indicators and targets identified. IN-A3.b. Measurement against these indicators, with results recorded and publicised at least annually. IN-A3.c. Written evidence of monitoring and reporting of actions and outcomes. IN-A3.d. Previous reviews of monitoring system and schedule for future reviews.	MACRO	SOCIAL CAPITAL	Risk assessments and monitoring plans related to tourism / assessment of which tourism assets are present ; Public availability of data regarding tourism sector/ tourism impacts / tourism analysis and resources of destination (public access) Risk assessments and monitoring plans related to tourism / assessment of which tourism assets are present
A(b) Stakeholder engagement			Level	Capital	Capital Aspect

GSTC CD | GSTC HT | GSTC TO | Eurostat | EMAS | BEMPs | ECOLABEL | ETIS | UNWTO | Green Destination Standard | Global Sustainable Index | GRI - STK | GRI_TO | Scientific Literature_1 | Scientifc Literature_2

5.4 The CET-KPIs dashboard(s)

Successively, in order to develop the INCIRCLE CET-KPIs dashboard, all sustainable and circular tourism indicators mapped, thanks to the previous desk research activity, have been systematically "categorized" according to the four capitals framework described within section 5.1. Only sustainable and circular tourism indicators that have been resulted to be completely compliant to measurement framework (both in terms of Capitals, Action Areas, Levels and CE Principles) have been reported within a new Excel database structured into four datasheets, each of them corresponding to one of four capitals. This last dataset has represented the "skeleton structure" that has made possible the development of the final INCIRCLE CET-KPIs dashboard.

Successively, additional CET-KPIs have been integrated, where necessary, in order to make all capital aspects fully described. This last activity has been carried out thanks to circular economy literature not strictly referred to tourism sector (Saidani et al., 2019; Moraga et al., 2019; Parchomenko et al., 2019; Kristensen et Mosgaard, 2020; Rossi et al., 2020).

As final step of this building process, each KPI has been labelled according to the five CE principles of the guide framework, described within 5.1.3 section.

INCIRCLE CET-KPIs dashboard has been developed into two versions: for MACRO and MICRO levels (Figure 33).

Figure 33. Final INCIRCLE CET-KPIs dashboard (MACRO version)
Source: authors' elaboration

	A	B	C	D	E	F	G
1	REF	Unit of Analysis	CAPITAL ASPECT	Indicator/criteria	Networking (N)	Indicator type (QI: qualitative Qt: quantitative	COI
2	EUROSTAT	MACRO	Awareness level on sustainable and circular issues (residents - schools)	The destinations universities, colleges and hospitality schools have integrated sustainability and circularity into their undergraduate event management curriculum. (y/n)	N	QI	UNIV
3	ETIS; UNWTO	MACRO	Awareness level on sustainable and circular issues (residents - schools)	The destinations universities colleges and hospitality schools have integrated sustainability and circularity into their postgraduate (e.g. masters) event management curriculum (y/n)	N	QI	UNIV
4	ETIS; UNWTO	MACRO	Awareness level on sustainable and circular issues (residents and visitors)	Residents and visitors are encouraged to reduce energy consumption without compromising service or safety (y/n)	N	QI	ALL
5	ETIS; ASMELASH AN	MACRO	Awareness level on sustainable and circular issues (residents and visitors)	Residents and visitors are encouraged to prevent their waste production (y/n)	N	QI	ALL
6	ETIS; UNWTO	MACRO	Awareness level on sustainable and circular issues (residents and visitors)	Campaigns to sensitize local communities and tourists towards marine litter problem within destination (y/n)	N	QI	BEACH
7	ETIS	MACRO	Awareness level on sustainable and circular issues (residents)	Local residents' knowledge of tourism and its sustainability/circularity is adequately surveyed (y/n)	N	QI	ALL
8	UNWTO	MACRO	Awareness level on sustainable and circular issues (residents)	Destination provides specific programs of education and training on sutainable and circualr tourism for residents (y/n)	N	QI	ALL
9	UNWTO	MACRO	Awareness level on sustainable and circular issues (residents)	No. of programs or training on sustainable and circular tourism provided for residents in the last year	N	Qt	ALL
10	UNWTO	MACRO	Awareness level on sustainable and circular issues (tourism destination staff)	New and existing staff in the destination management organization receives periodic guidance and training regarding the sustainability and circularity strategy, including their roles and responsibilities (y/n)	N	QI	ALL
11	UNWTO	MACRO	Awareness level on sustainable and circular issues (tourism enterprises and visitors)	Tourism enterprises and visitors are adequately informed on offsetting schemes that meet recognised standards (y/n)	N	QI	ALL
12	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	Training is given to tourism employees (y/n)	N	QI	ALL
13	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	The destination organizes sustainability and circularity training for meetings and events suppliers (ie. hotels, venues, F&B, production companies) (y/n)	N	QI	EVENTS
14	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	The destination organizes sustainability and circularity training for meetings and events organisers (y/n)	N	QI	EVENTS
15	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	A sustainable and circular code of practice for tour operators and tour guides and/or other engagement with them on visitor management at cultural sites has been elaborated (y/n)	N	QI	HE
16	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	A sustainable and circular code of practice for tour operators and tour guides and/or other engagement with them on visitor management at natural sites has been elaborated (y/n)	N	QI	ALL
17	DELGADO 2014	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	No. of sustainability and circularity training events organized in the last year by the destination management for meetings and events suppliers (ie. hotels, venues, F&B, production companies, etc.)	N	Qt	EVENTS
18	ASMELASH AND KU	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	No. of sustainability and circularity training events organized in the last year by the destination management for meetings and events organisers	N	Qt	EVENTS
19	ASMELASH AND KU	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	No. of sustainability and circularity training events organized in the last year by the destination management for tourism accomodations	N	Qt	ALL
20	ASMELASH AND KU	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	The destination organizes sustainability and circularity training for tourism accomodations/campsites (y/n)	N	QI	ALL
21	ASMELASH AND KU	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	The destination organizes sustainability and circularity training for food services industries (y/n)	N	QI	ALL
22	ASMELASH AND KU	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	No. of sustainability and circularity training events organized in the last year by the destination management for tourism accomodations/campsites	N	Qt	ALL
23	GDS - I	MACRO	Awareness level on sustainable and circular issues (tourism enterprises)	No. of sustainability and circularity training events organized in the last year by the destination management for food services industries	N	Qt	ALL
24	GDS - I	MACRO	Awareness level on sustainable and circular issues (tourism enterprises, visitors and residents)	Residents, tourism enterprises and visitors are informed about climate change in an appropriate way (for example, through web sites, promotional material, etc.) (y/n)	N	QI	ALL
25	GDS - I; GREEN DEST	MACRO	Awareness level on sustainable and circular issues (visitors)	% of attraction sites where guidelines for "what to do" and "not to do" are present	N	Qt	ALL

HUMAN CAPITAL | SOCIAL CAPITAL | NATURAL CAPITAL | BUILT CAPITAL

5.4.1 Customization tool for MACRO level

After having defined the INCIRCLE CET-KPIs dashboard(s) presented in the section above, we decided to allow respondents, at macro level, to properly select set of pertinent indicators matching their circumstances. For instance, we noticed that many of the indicators collected in the MACRO INCIRCLE CET-KPIs dashboard refer to

aspects related to touristic location in a coastal area. An example of such indicators is presented in the table below.

Table 11. Example of an indicator pertinent for a touristic location near a coastal area
Source: authors' elaboration

Reference Source	Indicator/criteria	Indicator type (Ql: qualitative; Qt: quantitative)
DELGADO 2014	Percentage of beach area considered to be in high-urbanisation state (%)	Qt

The indicator presented in the table above would not make sense for a touristic location not in a coastal area. For such reason, we decided to facilitate the selection of the appropriate set of indicators for MACRO level respondents on the basis of few simple questions, to be answered before approaching to the dashboard. Indeed, in order to facilitate the identification of the appropriate set of pertinent indicators for the subject using the dashboard a customization instrument has been deployed.
The process undertaken for the creation of the MACRO INCIRCLE CET-KPIs dashboard customization tool is shortly described below.
Once this dashboard was completed and validated by the research group, a systematic review of all indicators was undertaken to identify those that could be appropriately used as discriminants parameters by a respondent in order to have a customized version of the dashboard.
Such process has been undertaken in an iterative way. All selected indicators in the dashboard were read independently and iteratively discussed by the research group involved in the project, thereby ensuring reliability through consensus and minimization of bias. The first iteration allowed the identification of 8 discriminants parameters that could be used to customize the toolkit. Those are the following:

- presence of coastal area (beach, cliff, etc.) (in the table is presented with the code BEACH);
- presence of Universities, colleges and hospitality schools (UNIV);
- presence of airports nearby (AIR);
- presence of cultural heritage (HE);
- presence of public transportation (PUBLTR);
- presence of seasonality in tourism dynamic (SEASONAL);
- presence of protected areas (PROT);
- presence of vehicle sharing facilities (SHAREVEI).

The table below shows the number of indicators for each customization aspects identified during this first stage of analysis.

Table 12. Discriminants parameters that could be used to customize the toolkit after the first iteration
Source: authors' elaboration

CODE	Human	Social	Natural	Built	Total	%

ALL[2]	51	173	83	55	362	84,58%
BEACH	3	3	24		30	7,01%
UNIV	2				2	0,47%
AIR		3		1	4	0,93%
HE	2	6		4	12	2,80%
PUBLTR		3			3	0,70%
SEASONAL		5			5	1,17%
PROT			4		4	0,93%
SHAREVEI				6	6	1,40%
Total	58	193	111	66	428	100,00%

A second iteration of reading independently and iteratively discussing the indicators in the dashboard was then undertaken. Such second iteration allowed the identification of additional discriminants parameters that could be used to customize the dashboard. Those are the following:

- presence of cycle paths and lanes (in the table is presented with the code CYCLING);
- presence of events hosted (EVENTS)
- presence of electrical vehicle charging stations (ELECHAR);
- presence of recreational areas (e.g. sports facilities, concert venues, etc.) (RECREAT).

The table below shows the number of indicators for each customization aspects identified during this second and final stage of analysis.

Table 13. Discriminants parameters that could be used to customize the toolkit after the second iteration
Source: authors' elaboration

CODE	Human	Social	Natural	Built	Total	%
ALL	43	163	83	49	338	78,97%
BEACH	3	3	24		30	7,01%
UNIV	2				2	0,47%

[2] The code ALL identify those indicators that are valid and applicable for all respondents

AIR		3		1	4	0,93%
EVENTS	4	8			12	2,80%
HE	2	6		4	12	2,80%
PUBLTR		3			3	0,70%
SEASONAL		5			5	1,17%
PROT			4		4	0,93%
SHAREVEI		1		6	7	1,64%
CYCLING				3	3	0,70%
ELECHAR		1		3	4	0,93%
RECREAT	4				4	0,93%
Total	**58**	**193**	**111**	**66**	**428**	**100,00%**

As it is possible to see from the table above some of the discriminant parameters are intrinsic characteristics of the touristic location (such as for instance the presence of any cultural heritage) sites while others are mostly related to the facilities and/or services available in the touristic location (such as the availability of cycle paths and lanes in the touristic location.

Still, as presented in the last column of the previous table, the customization process undertaken allowed to identify a core of about 80% indicator that are quite universal for any touristic location and about 20% of indicators specific for only certain touristic location.

Finally, after having undertaken this identification of the appropriate families of pertinent indicators for the customization of the dashboard, we defined a set of questions that the respondent should fill in before approaching the dashboard. The questions are therefore the following ones:

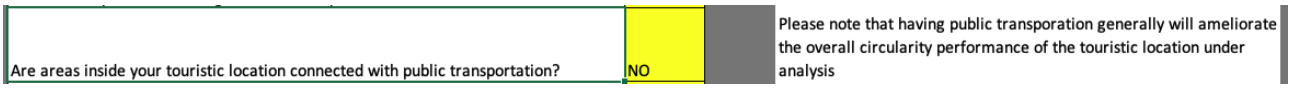
- Is your touristic location closed to a coastal area (cliffs, beaches, etc.)?
- In the area nearby your touristic location are there any Universities, colleges and hospitality schools and have you established any form of cooperation with them?
- Is there an airport near your touristic location?
- Are there any cultural heritage sites near to your touristic location?
- Are areas inside your touristic location connected with public transportation?
- Is seasonality a main characteristic of your tourism dynamic?
- Are there any protected areas close to your touristic location?
- Are there any vehicle sharing facilities in your touristic location?
- Are cycle paths and lanes available in your touristic location?

- Are there any electrical vehicle charging stations in to your touristic location?
- Are there recreational areas (e.g. sports facilities, concert venues, etc.) near your touristic location?
- Is your touristic location hosting any kind of events?

We reckon that a touristic location might not have some of the facilities and/or services presented in the questions (such a public transportation). Therefore, those indicators might not have sense and then will be not presented to the respondent.

However, we have to acknowledge that some of those facilities and/or services will ameliorate the overall circularity performance of the touristic location under analysis, still the public transportation service is a self-evident example. In this case a message is displayed to the respondent to underline such aspect.

Figure 34. Message displayed to respondents
Source: authors' elaboration



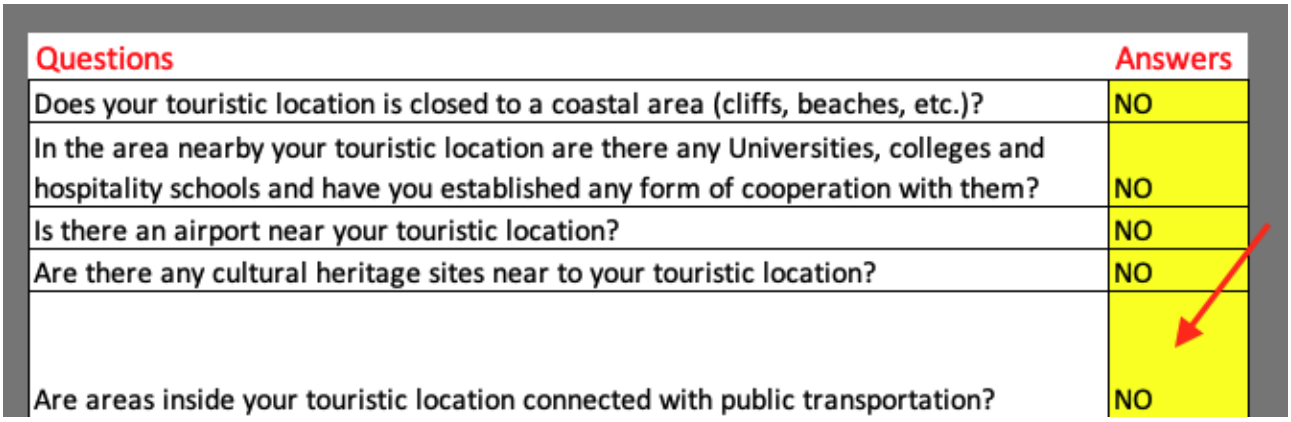
The questions that will show this message are the following ones:

- Are areas inside your touristic location connected with public transportation?
- Are there any vehicle sharing facilities in your touristic location?
- Are cycle paths and lanes available in your touristic location?
- Are there any electrical vehicle charging stations in to your touristic location?

5.4.1.1 Operating instruction to use the Dashboard customization tool

Please start with the sheet called "StartHere" by answering the questions presented in that page. In order to do so, just use the drop-down menu that is presented for each question in the yellow column as presented in the picture below.

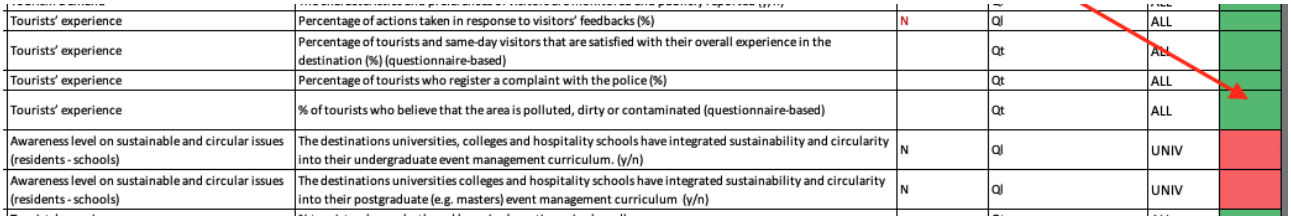
Figure 35. Customization tool Startpage
Source: authors' elaboration



Once you finished to answering the questions that you see on such page you can move to the sheets named:
- HUMAN CAPITAL
- SOCIAL CAPITAL
- NATURAL CAPITAL
- BUILT CAPITAL

In those sheets consider only the indicators marked in green in the last column (column H) as presented in the picture below.

Figure 36. Indicator suitable for the specific touristic location
Source: authors' elaboration



Tourists' experience	Percentage of actions taken in response to visitors' feedbacks (%)	N	QI	ALL	
Tourists' experience	Percentage of tourists and same-day visitors that are satisfied with their overall experience in the destination (%) (questionnaire-based)		Qt	ALL	
Tourists' experience	Percentage of tourists who register a complaint with the police (%)		Qt	ALL	
Tourists' experience	% of tourists who believe that the area is polluted, dirty or contaminated (questionnaire-based)		Qt	ALL	
Awareness level on sustainable and circular issues (residents - schools)	The destinations universities, colleges and hospitality schools have integrated sustainability and circularity into their undergraduate event management curriculum. (y/n)	N	QI	UNIV	
Awareness level on sustainable and circular issues (residents - schools)	The destinations universities colleges and hospitality schools have integrated sustainability and circularity into their postgraduate (e.g. masters) event management curriculum (y/n)	N	QI	UNIV	

5.4.2 Customization tool for MICRO level

After having defined the final dashboard of micro indicators presented above, we decided also to allow respondents to properly select set of pertinent indicators matching their circumstances. In this case the differentiation has been made using the typology of different firms identified in the INCIRCLE model, which are presented in the table below.

Table 14. Typologies of firms identified in the incircle model
Source: authors' elaboration

Beneficiaries of the INCIRCLE model – MICRO level	Nace	Activities in details
Accommodations	55.1	Hotels – SMEs, Hotels – large chains, Summer houses, Airbnb, Apartment, guest house, hostles, agritourisms, etc.
Campsites	55.3	Campsite
Food Services	56	Restaurants, Hotel restaurants, bars, fast- foods, etc.
Tour operators and travel agencies	79	Tour operators and travel agencies

In this case, to ease the selection of the appropriate indicators we made available 4 different excel files for each different firm identified in the INCIRCLE model; so each business activity can select the one most appropriate using the table below as reference.

Table 15. Customization of the dashboard for firms identified in the incircle model
Source: authors' elaboration

Beneficiaries of the INCIRCLE model – MICRO level	File

Accommodations	MICRO_accomodation.xlsx
Campsites	MICRO_campsite.xlsx
Food Services	MICRO_restaurants.xlsx
Tour operators and travel agencies	MICRO_touroperator.xlsx

The table below summarize the number of indicators available in each file.

Table 16. Number of indicator in each file
Source: authors' elaboration

Beneficiaries of the INCIRCLE model – MICRO level	Human Capital (n° of indicators)	Social Capital (n° of indicators)	Natural Capital (n° of indicators)	Built Capital (n° of indicators)
Accommodations	45	173	28	87
Campsites	17	32	13	53
Food Services	13	73	13	21
Tour operators and travel agencies	40	119	16	13

6. Characterization of the partners' territories involved in INCIRCLE project

In order to gather an in-depth understanding of partners' peculiarities, a specific document *"Partners' territories preliminary information"* has been designed, developed and shared with partners. From such document it is possible to collect partners' experiences and outline partners' needs. A comprehensive discussion about the analysis of template results are presented, along with preliminary conclusions.

6.1 Tourism data on partner countries

In order to identify the main features of Tourism sector on the countries partner of the project, it seems useful to present some data in terms of inbound, domestic and outbound Tourism as well as Tourism industries and employment at national level. With regards to INCIRCLE project, **13 partners from 6 different European countries** are involved in the project, namely Italy, Spain, Greece, Albania, Malta and Cyprus.

The following table shows **national Tourism data** on a temporal scale from 2014 to 2018, according to the Tourism Statistics Database UNWTO[3]. **Inbound Tourism** data comprises the total arrivals of individuals in the given country, including both overnight visitors (tourists) and same-day visitors (excursionists). **Domestic Tourism** encompasses the total trips within the given country, including overnight visitors (tourists) and same-day visitors (excursionists). **Outbound Tourism** comprehends the total trips outside the given country, including overnight visitors (tourists) and same-day visitors (excursionists). Tourism industries indicates the number of establishments for the following economic activities: accommodation for visitors, food and beverage serving activities, passenger transportation, travel agencies and other reservation services activities and other Tourism industries. From the data, it emerges increasing trends regarding the four variables investigated for all the countries analyzed over the period 2014-2018.

Table 17. Main Tourism data of INCIRCLE partner countries
Source: data retrieved from Tourism Statistics Database UNWTO

PARTNER COUNTRY	INDICATORS	2014	2015	2016	2017	2018
Italy	**Inbound Tourism**					
	Total arrivals	77.694	81.068	84.925	89.931	93.229
	Domestic Tourism					
	Total trips	126.515	112.860	127.857	121.850	145.307
	Outbound Tourism					
	Total departures	55.169	57.418	57.480	60.042	61.195
	Tourism industries					
	Number of establishments*	87.342	94.643	97.278	100.242	106.087
Spain	**Inbound Tourism**					
	Total arrivals	107.144	109.834	115.561	121.717	124.06
	Domestic Tourism					
	Total trips	462.761	372.265	397.134	448.305	455.297
	Outbound Tourism					
	Total departures	13.952	17.625	18.277	20.274	22.442
	Tourism industries	559.472	571.873	584.897	601.328	616.15

[3] Online dataset accessible at the following link: https://www.e-unwto.org/loi/unwtotfb (accessed 31 March 2020).

	Number of establishments					
Greece	**Inbound Tourism**					
	Total arrivals	24.272	26.114	28.071	30.161	33.072
	Domestic Tourism					
	Total trips	-	19.025	17.154	24.65	26.301
	Outbound Tourism					
	Total departures**	5.802	6.291	7.235	7.685	7.961
	Tourism industries					
	Number of establishments***	9.745	9.757	9.73	9.783	9.873
Albania	**Inbound Tourism**					
	Total arrivals	3.673	4.131	4.736	5.118	5.927
	Domestic Tourism					
	Total trips	-	-	-	-	-
	Outbound Tourism					
	Total departures	4.146	4.504	4.852	5.186	5.415
	Tourism industries					
	Number of establishments	20.976	24.485	26.212	25.357	-
Malta	**Inbound Tourism**					
	Total arrivals	2.162	2.383	2.592	2.944	3.232
	Domestic Tourism					
	Total trips**	200	204	241	261	245
	Outbound Tourism					
	Total departures	430	456	550	633	728
	Tourism industries					
	Number of establishments***	197	203	205	220	234
Cyprus	**Inbound Tourism**					
	Total arrivals	2.558	2.78	3.286	3.75	4.024
	Domestic Tourism					
	Total trips**	1.297	1.303	1.375	1.393	1.566
	Outbound Tourism					
	Total departures	1.209	1.119	1.268	1.407	1.446
	Tourism industries					
	Number of establishments	5.764	5.982	6.115	6.193	-

* Including only accommodation for visitors

** Including only overnight visitors (tourists)

*** Including only hotels and similar establishments within the category food and beverage serving activities

The following table provides data concerning **employment in Tourism sector** for countries partner of the INCIRCLE project in the time span 2008-2018. Employment is expressed as the total number of employees by Tourism industries. Data regarding employment are not available for Italy and Malta. Even in this case, an increasing trend is recorded for all the countries.

Table 18. Employment data of INCIRCLE partner countries (thousands)
Source: data retrieved from Tourism Statistics Database UNWTO

PARTNER COUNTRY	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Italy	-	-	-	-	-	-	-	-	-		
Spain	2623	2158	2152	2160	2077	20834	2203	2322	2447	2510	2604
Greece	281	278	265	251	232	224	267	284	309	315	320

Albania	17	18	22	22	21	25	26	29	39	43	-
Malta	-	-	-	-	-	-	-	-	-	-	-
Cyprus	39	38	39	38	37	35	37	39	42	46	-

6.2 Template *"Partners' territories preliminary information"* description

The template of preliminary partners' information aims at gathering an in-depth overview of the partners' territories, in order to identify the main characteristics of such areas and accordingly develop customized circular Tourism indicators. The document is of a crucial importance because:

- ❖ It offers a comprehensive overview about partners' territories
- ❖ It highlights specific needs to be considered in identifying circular Tourism indicators
- ❖ It allows the customization of circular Tourism indicators based on partners' specificities
- ❖ Represents a challenging opportunity to collect detailed data on actual issues for partners

The collection phase has started on 20 December 2019 by sending the template to all the INCIRCLE partners for autonomous compilation. In order to increase document understanding, as well as encourage the discussion about critical points hard to be filled in, a specific interactive session has been held during the project kick-off meeting (Trieste, 15-16 January 2020). After such explicative session, additional time has been provided to partners for ensuring document completeness.

At the end, **nine templates** have been returned. The municipality of Larnaka has never sent the document, despite numerous reminders.

The template contains preliminary information related to partners' territories, subdivided in ten main sections investigating specific environmental-socio-economic aspects, as follows:

- Section A: general characteristics of the area
- Section B: Tourism impacts
- Section C: economic characteristics of the area
- Section D: mobility of the area
- Section E: municipal solid waste management and initiative of waste prevention
- Section F: water management system and water consumption
- Section G: actual and potential risks
- Section H: energy resources management
- Section I: protected areas and land uses
- Section L: Circular Economy initiatives

The section related to **general characteristics** encompasses questions related to partners' name, number of inhabitants, population growth rate and presence of sea, rivers or mountains in the area.

The section concerning **Tourism impacts** includes a broad set of questions investigating the number of incoming tourists per month during the last year, the incoming tourists' trend in the last 5 years, the contribution of international and domestic Tourism to the whole economic value of the area and to national GDP, the presence of specific categories of Tourism (recreational, cultural, sports/adventure, health, convention and incentive Tourism) and the main accommodation facilities present in the area.

The section related to the **economic characteristics of the area** explores the presence of companies and their contribution to the economy according to the main economic sectors, namely Tourism, fisheries and aquaculture, energy industry, commercial navigation, touristic navigation, manufacturing industry, retailers and agriculture and livestock.

The section related to the **mobility of the area** aims at investigating the main transport terminals present in the area (airports, railway stations, bus stations and harbours), the characteristics of the main mobility issues and the main mobility problems connected with tourist flows, as well as the initiatives of green urban mobility and sustainable Tourism mobility developed in the area.

The section concerning the **municipal solid waste management and initiative of waste prevention** gathers information about municipal solid waste (MSW) production, recycling rate, disposal rate, waste management system and initiatives of waste prevention. Specifically, this section investigates the amount of MSW produced per capita in the last year, the average production per month in the last year and the trend over the last five years, as well as recycling and disposal rates of MSW in the last year and the trend over the last five years. Furthermore, the descriptions of the waste management system of the area and the initiatives of waste prevention developed in the area have required.

The section about **water management system and water consumption** investigates the main water resources of the area (groundwaters, rivers, lakes, sea water after desalinization process, rainwater), the water consumption per capita in the last year, the average consumption per month in the last year, the trend over the last five years and the price for water consumption according to main categories of users, namely private households, agriculture, industry, public sector, accommodation facilities, tourist facilities. Moreover, the description of the water supply system, the wastewater management, the qualitative and quantitative status of water bodies and main problems affecting the water resources and initiatives of prevention have required.

The section related to **actual and potential risks** explores the risk of subsidence in the area, as well as the impact of climate change on a series of physical phenomena, namely drought, floods, intensity of storms, wind speeds, rising sea level, and average temperature.

The section about **energy resources management** explores the main energy resources of the area (coal, natural gas, oil, solar energy, wind power, geothermal, wave and tidal power, hydropower, biomass), the electricity and natural gas consumption per capita in the last year, the average consumption per month in the last year, the trend over the last five years and the price for electricity and natural gas consumption according to main categories of users, namely private households, agriculture, industry, public sector, accommodation facilities, tourist facilities. Furthermore, the electricity and natural gas delivery system of the area and the diffusion of renewable energy technologies have been investigated.

The section concerning **protected areas and land uses** aims at mapping the protected areas of the area according to IUCN protected area category system and the main land uses of the area according to CORINE program.

The last section related to **Circular Economy initiatives** intends to identify any issued laws or adopted solutions focused on such issue, following the recent EU Circular Economy directives.

6.3 Analysis of template results

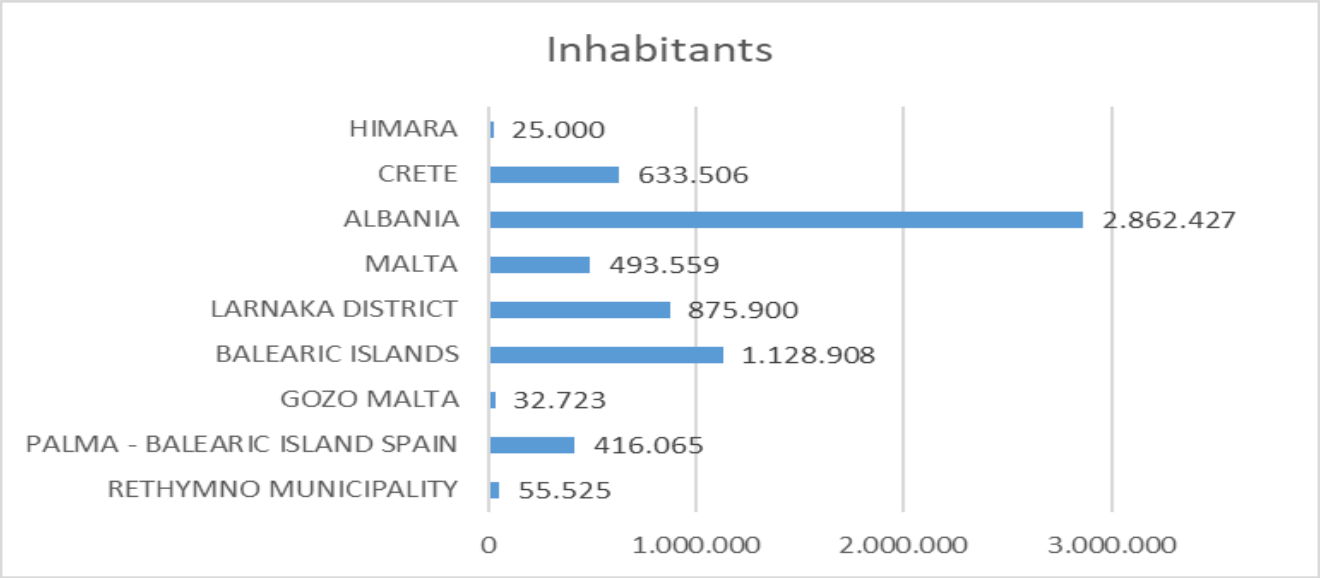
The analysis of the preliminary information contained in the templates has been carried out in order to highlight specific needs in the partners' territories. As mentioned, the following nine partners have filled out the document:

- 4 partners at local level: Palma City Council (ES), Himara Municipality (AL), Ministry for Gozo (MT) and Rethymno Municipality (GR);
- 3 partners at regional level: Regional Government of Balearic Islands (ES), Larnaca-Famagusta District Development Agency (ANETEL – CY) and Region of Crete (GR);
- 2 partners at national level: Malta (Energy and Water Agency) and Albania (Albanian Institute of Transport).

The section about **general characteristics of the area** presents basic information, as number of inhabitants, population growth rate and presence of sea, rivers or mountains in the area.

With regard to population residing in partner territories, it emerges a great variety due to the difference of partners involved. At national scale Albania has a greater number of inhabitants than Malta, given also the greater geographical extent (about 28.748 km² compared to about 316 km² of Malta). Considering the regional level, the Balearic Islands have the largest number of inhabitants, followed by Larnaka district and Crete. As for the municipalities involved, Palma has by far the largest number of inhabitants.

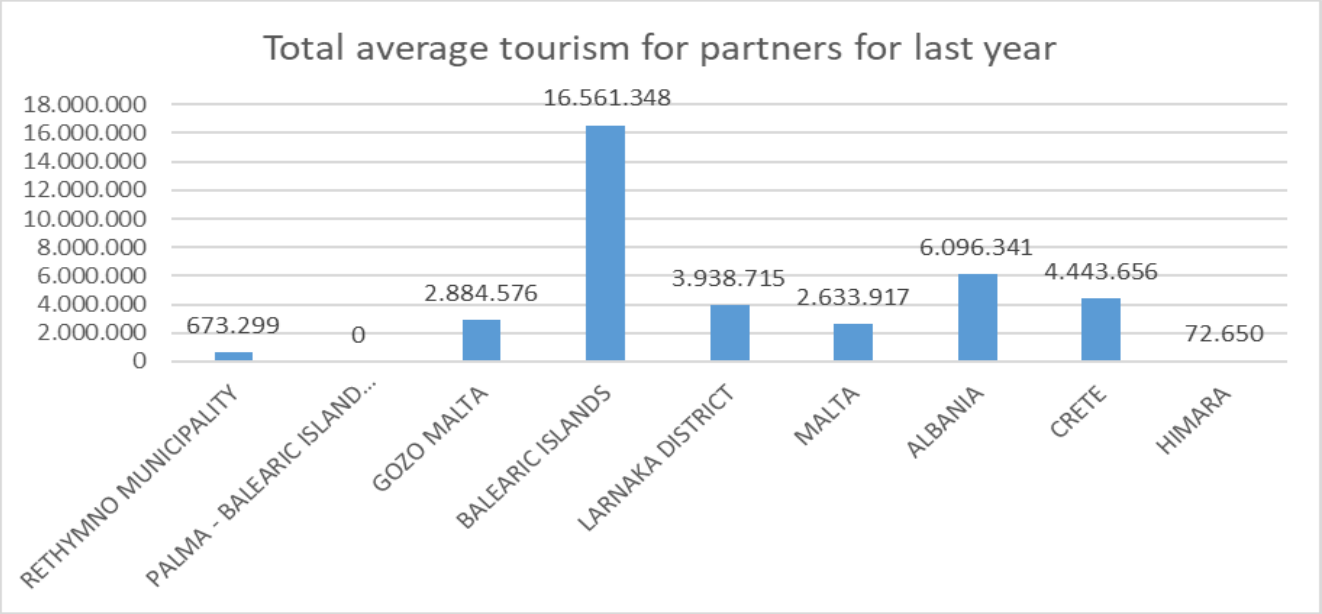
Figure 37. Number of inhabitants
Source: authors' elaboration



All the partners, except for Albanian Institute of Transport, declare a positive population growth rate in the last 10 years. For Albania, the population growth rate is negative. All the territories involved in INCIRCLE project are characterized by the presence of the sea. Moreover, three territories are also characterized by the presence of rivers (Rethymno Municipality, Albania and Crete) and five territories by the presence of mountains (Rethymno Municipality, Albania, Crete, the Balearic Islands and Himara Municipality).

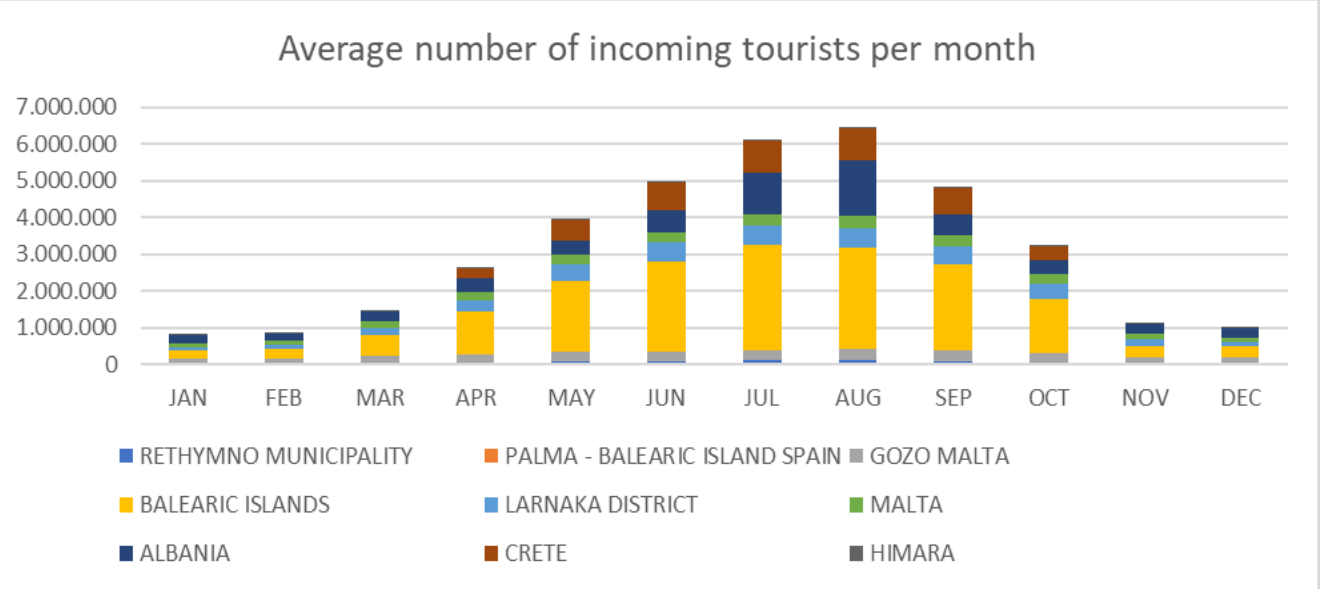
With regard to the section related to **tourism impacts**, it emerges that the Balearic Islands is the partner with the highest average number of incoming tourists referring to last year with over than 16 million tourists, followed by Albania with 6 million tourists. Himara Municipality recorded 72.650 visitors (out of scale in the figure) while Palma did not provide any data about the number of tourists.

Figure 38. Total number of incoming tourists
Source: authors' elaboration



Considering the average number of incoming tourists on a monthly basis, the higher presence of incoming tourists is during the summer months, especially July and August. Considering all the partners, more than 6 million of tourists are recorded during these two months, whereas around one million of visitors are recorded in the autumn-winter period.

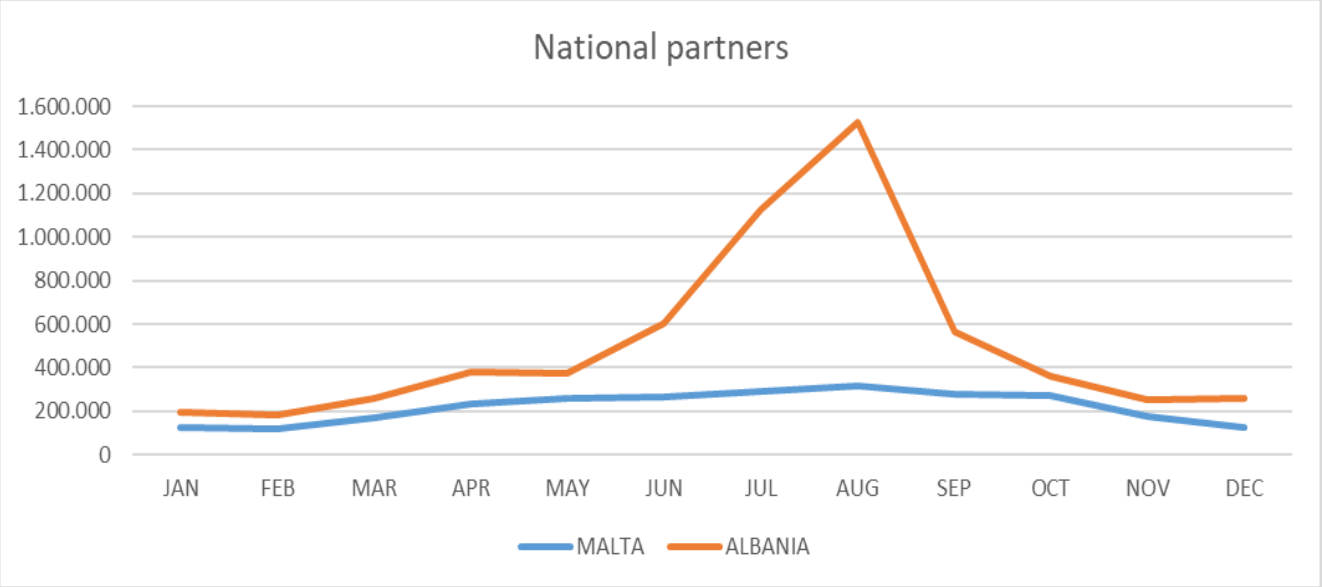
Figure 39. Average number of incoming tourists per month
Source: authors' elaboration



Considering the national partners, Albania has a strong peak of tourists in the summer periods of July and August, going over one and a half million tourists, while it is rather low in the other months, especially the winter ones, with about 200.000 average tourists per month. Malta has an absolute number of tourists much lower than Albania and also has a different distribution over the various months: in fact it always oscillates in a range between about 120.000 visitors in the winter months (comparable to the same Albanian period) and about 320.000 visitors in the central summer months.

With regard to Albania, it may be assumed that their tourist offer is very targeted for a type of tourism that takes place in the summer months, while for Malta a flatter distribution could suggest a type of offer that attracts the tourist more throughout the year (with a slight prevalence also in this case for the summer months).

Figure 40. Average number of incoming tourists per month per national partners
Source: authors' elaboration



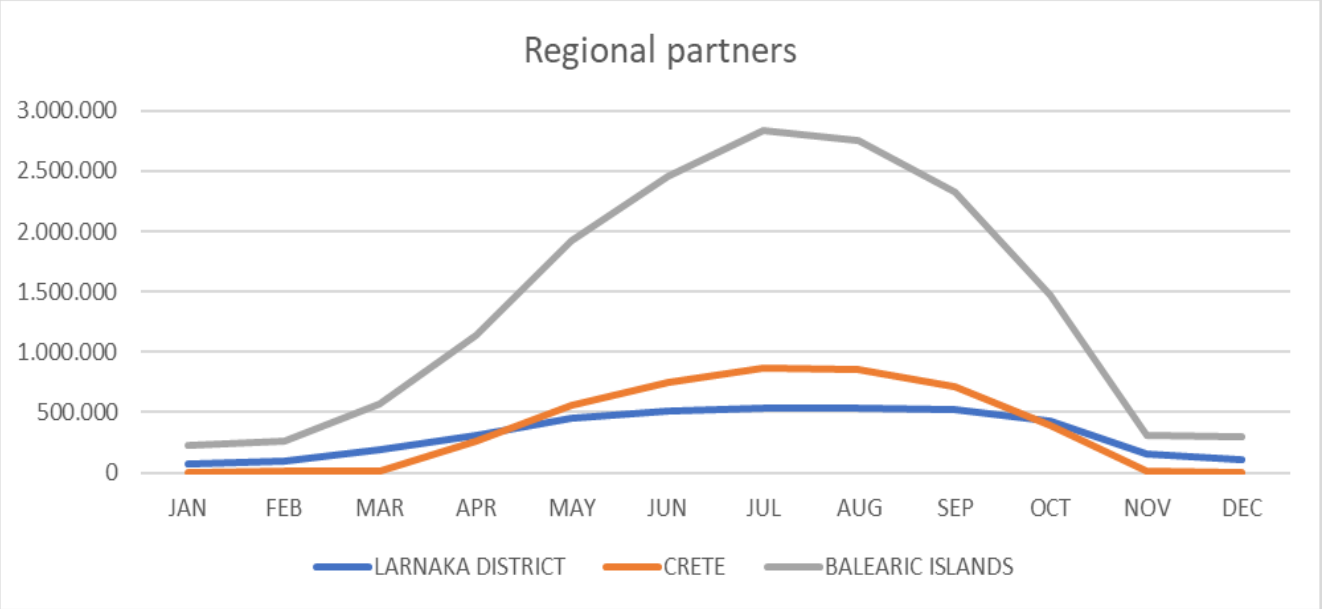
Considering the regional partners, the Balearic Islands have the higher peak in months from May to September, with always over 2 million visitors, almost 3 million in July. The Balearic Islands have the highest absolute number of tourists and the largest number of tourists for each month of the year (including the winter months) compared with all other partners.

It could be assumed that their tourist offer is very targeted for a type of tourism that takes place in the summer months. However, they seem to have a strong attraction also in the other months probably because there is a variety in tourists' offer that is also suitable in these months.

Region of Crete follows the same pattern, with the higher peak in July and August, near 1 million visitors, and a very low level in the other autumn-winter months.

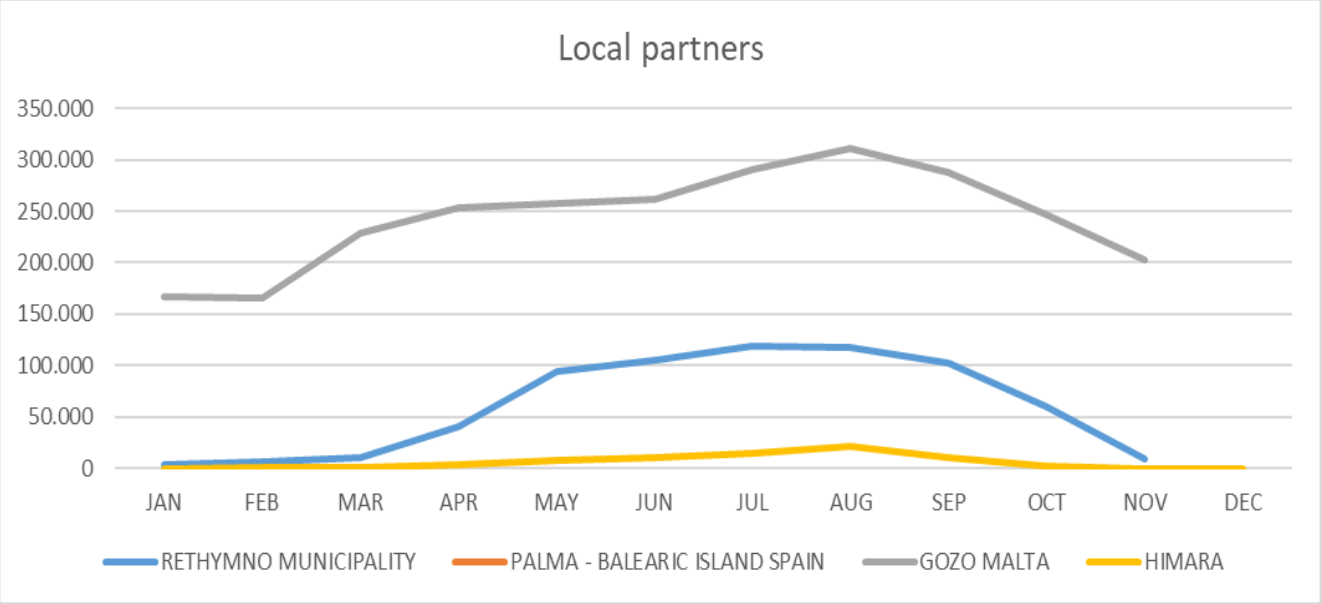
Even Larnaka District has the higher number of tourists in July (near 530.000 visitors) but this level is maintained for more months, from May (around 450.000 visitors) to September (around 520.000 visitors), with the lowest level in January (around 75.000 tourists).

Figure 41. Average number of incoming tourists per month per Regional partners
Source: authors' elaboration



Considering local partners, Hymara has by far the lowest average number of tourists in all months. Nevertheless, even Hymara Municipality has a peak of tourists in the summer period, especially in August (about 21.000 visitors). In the rest of the year the number of visitors stays between 100 (December) and 7.500 (May). Palma did not provide any data.

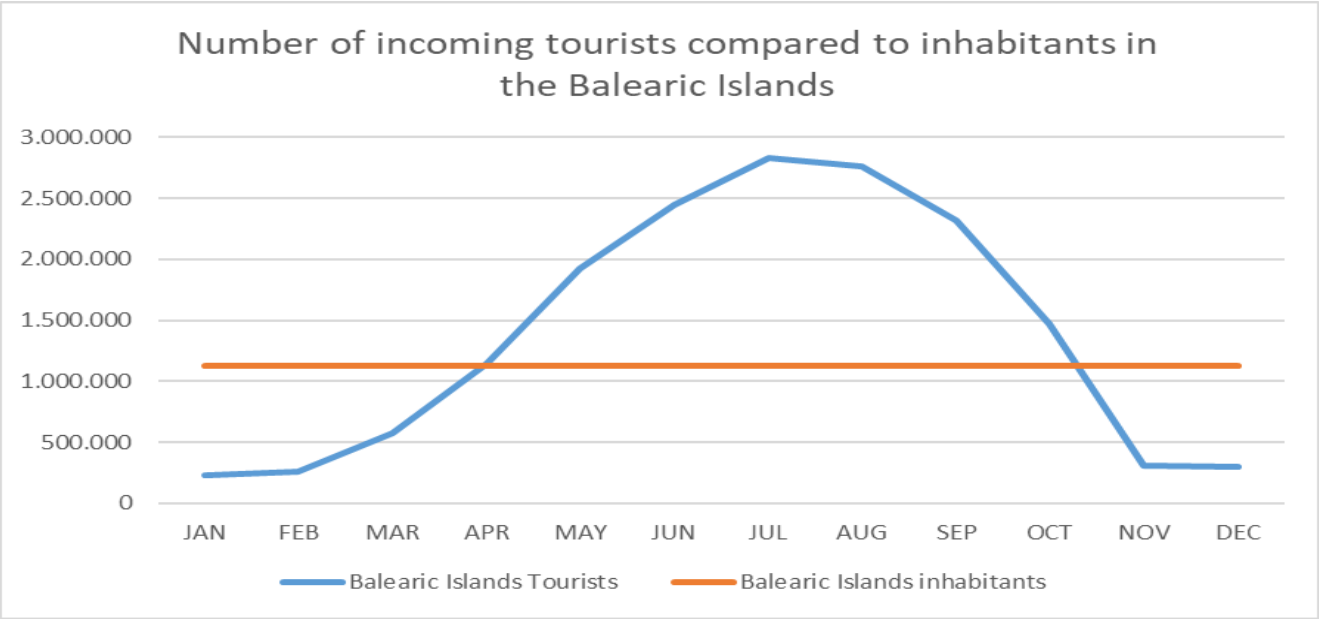
Figure 42. Average number of incoming tourists per month per local partners
Source: authors' elaboration



The incoming tourists' trend in the last 5 years is increasing for all partners, except for Himara Municipality that declares a stable trend.

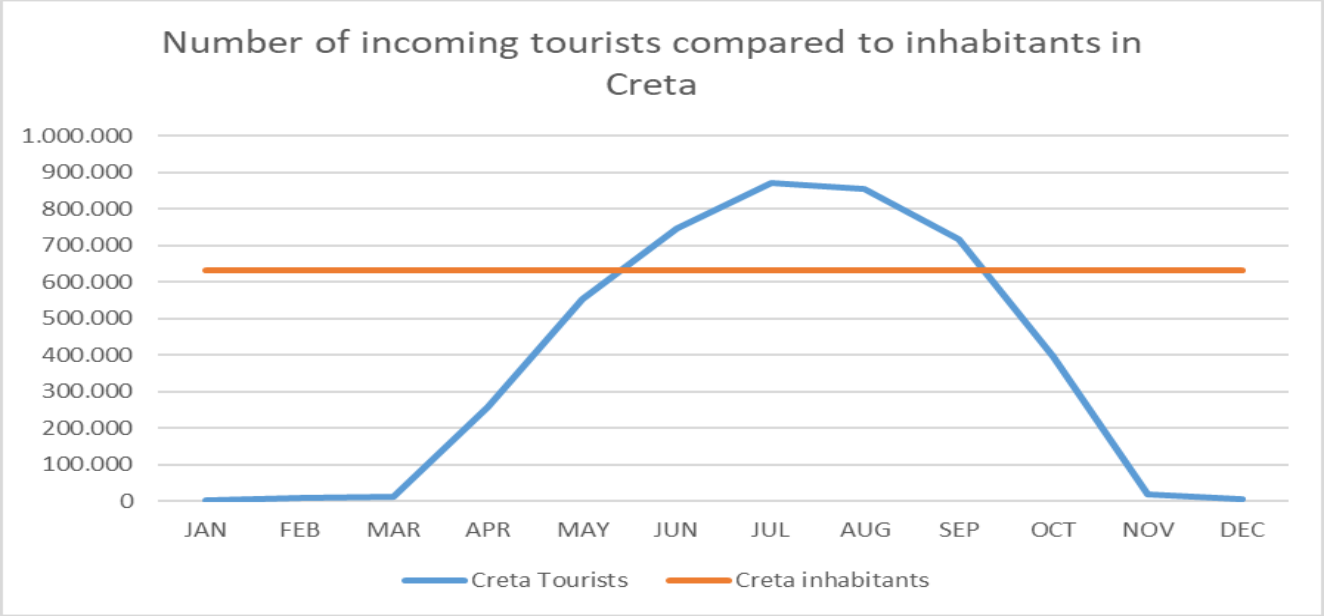
Comparing the number of incoming tourists and inhabitants, it emerges that the Balearic Islands has more incoming tourists than inhabitants during the period April - October. In July and August, the incoming tourists are more than twice the number of inhabitants. It may deserve further investigations in terms of the relationships and interactions between local residents and tourists.

Figure 43. Comparison between incoming tourists and inhabitants in the Balearic Islands
Source: authors' elaboration



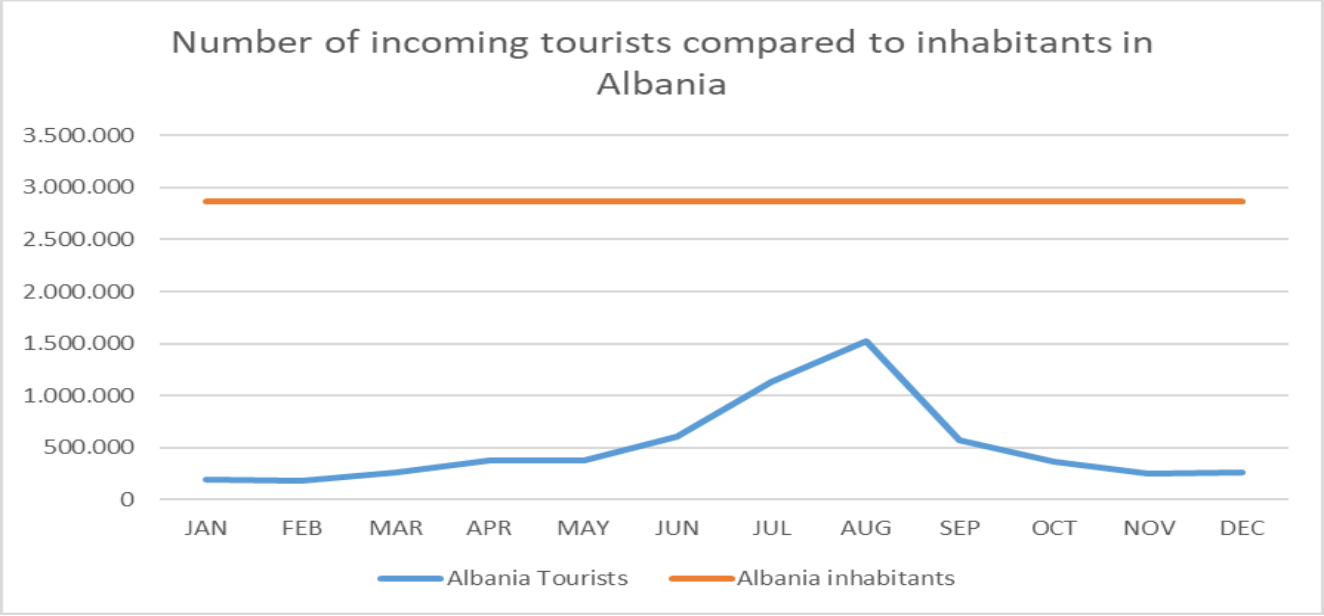
A similar situation is present even in the Region of Crete for a shorter period of time. Only from June to September the number of incoming tourists is higher than inhabitants. In July, the peak of incoming tourism, the number of tourists is not double the inhabitants but is still higher of approximate 250.000 units.

Figure 44. Comparison between incoming tourists and inhabitants in Crete
Source: authors' elaboration



Even the opposite situation is present in some partners' territories. For instance, in Albania the number of incoming tourists is always lower than inhabitants. In the peak of tourism, the tourists are still half of inhabitants.

Figure 45. Comparison between incoming tourists and inhabitants in Albania
Source: authors' elaboration



In all partners' territories is present both international and domestic tourism. The contribution of the international tourism to the whole economic value of the tourism sector is greater than the contribution of the domestic tourism for all areas that provided datas about that.

In particular, Rethymno Municipality, Palma, Gozo and the Balearic Islands have a percentage of the international tourism value between 70% and 92% of the total tourism value, and, in terms of GDP, the international tourism counts, for these areas, around 40%-50%. This seems to confirm that the whole economy of these partner territories heavily relies on tourism.

In Albania, international tourism is higher than domestic tourism, but in absolute terms it is lower than the partners mentioned above.

Regarding the typologies of tourism, all partners declare to have strongly present recreational tourism, related for instance with spending leisure time at sea beaches. Similarly, all the partners declare to have cultural tourism, involving visits to ancient monuments, places of historical or religious importance as well as sports/adventure tourism, related for instance with playing golf, skiing, hiking etc.

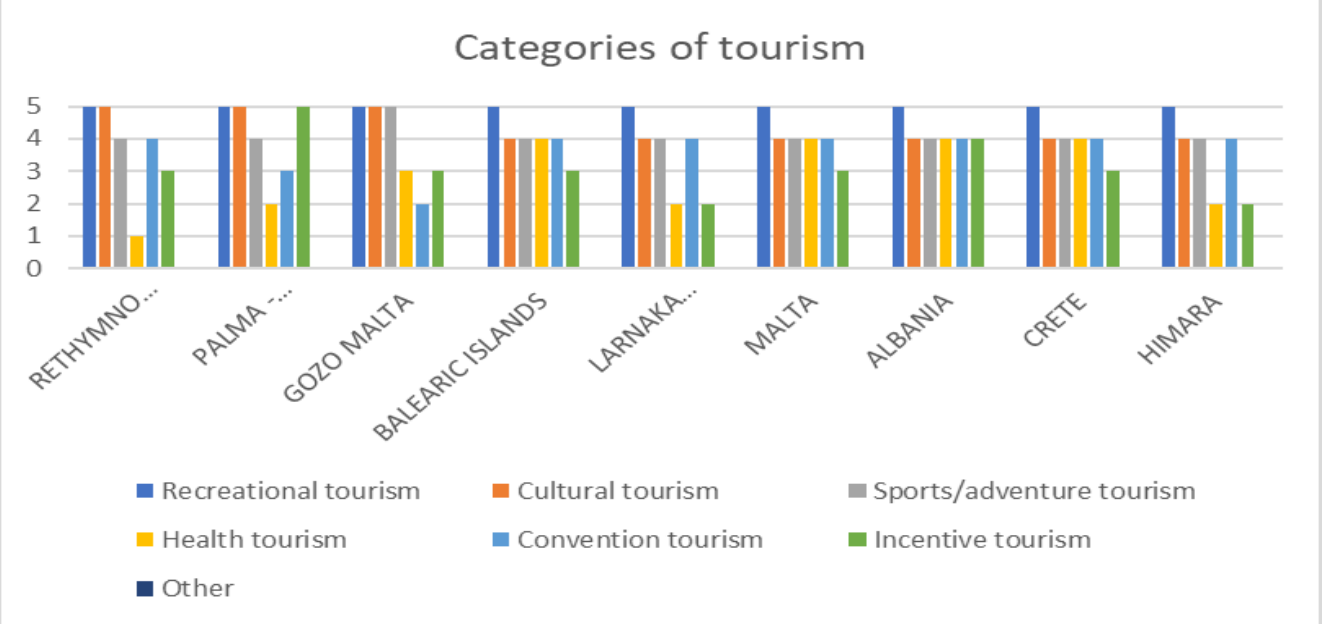
Even convention tourism, namely people traveling within a country or overseas to attend conventions relating to their business, profession or interest, is present in a large part of the partners' territories. Only in Gozo and Palma City Council is absent or not known.

The majority of the partners declares to have not a specific knowledge regarding the presence of incentive tourism, namely holiday trips offered as incentives by major companies to dealers and salesmen who achieve high targets in sales. More specifically, in Larnaka District this type of tourism is completely absent, while in Palma City Council and Albania is present.

Only few partners (Balearic Islands, Malta, Albania and Crete Region) state to have health tourism, namely tourism related medical assistance or treatment, in their areas.

The partners with the largest variety of categories of tourism are Albania, Malta, Region of Crete and the Balearic Islands. Such result is not surprising, considering that these are national and regional partners. Moreover, the fact that these destinations attract different categories of tourism may explain the high number of incoming tourists during the whole year, as in the Balearic Islands.

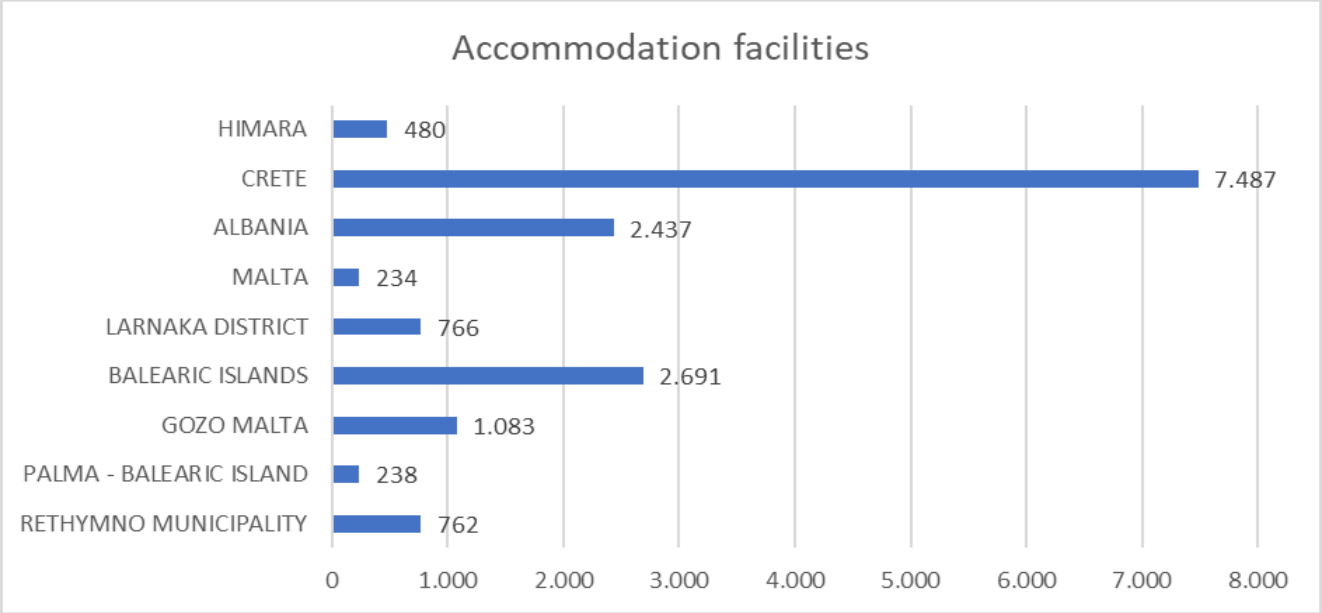
Figure 46. Categories of tourism



Completely absent	Absent	Don't know	Present	Strongly present
1	2	3	4	5

For what concerns the total number of accommodation facilities in the partners' territories, among all partners, Region of Crete has the highest number of tourist facilities. At national level, Albania has more tourist facilities than Malta. At regional level the highest number of facilities is present in Region of Crete. At local level, Gozo has the highest number of facilities.

Figure 47. Number of accommodation facilities in the partners' territories



From the analysis of the typologies of tourist facilities, it emerges that all the partners have a quite broad offer of tourist accommodation facilities, ranging from hotels to traditional homes, houses for renting and hostels etc.

The most present typology of accommodation facilities are hotels, considering all partners.

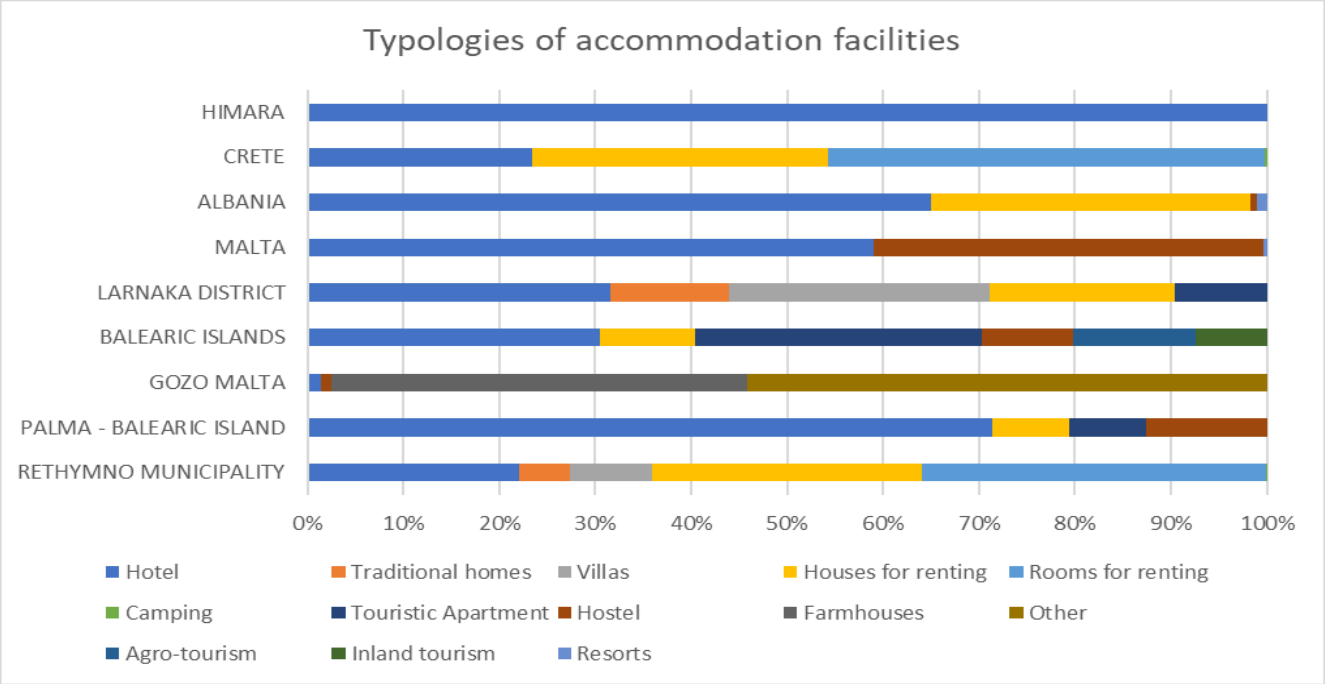
In four territories, the presence of hotels is above 50% of the total accommodation facilities (Himara, Albania, Malta and Palma). In particular, Himara Municipality provides data only regarding hotel facilities. It is reasonable to assume that data about the number of hotels are more easily accessible than other categories of accommodation.

Houses for renting have a percentage approximately of 20-30% in four partners (Crete, Albania, Larnaka District and Rethymno Municipality). Rooms for renting are present only in 2 partners (Crete and Rethymno Municipality), in both around 30-40% of all accommodation facilities. Camping is present, in a very low percentage only in 2 partners territories (Crete and Rethymno Municipality).

The Balearic Islands is the partner that indicated the higher variety of typologies of accommodation facilities: hotels, houses for renting, touristic apartments, hostels, agro-tourism and inland tourism facilities. It may be supposed that the higher number of tourists during the whole year may require a higher number of different typologies of accommodation facilities.

In Larnaka District and in Rethymno Municipality there are five different types of facilities. For Larnaka District there are hotels, traditional homes, villas, houses for renting and tourist apartment. For Rethymno municipality there are hotels, traditional homes, villas, houses for renting and rooms for renting.

Figure 48. Percentage of different typologies of accommodation facilities in the partners' territories

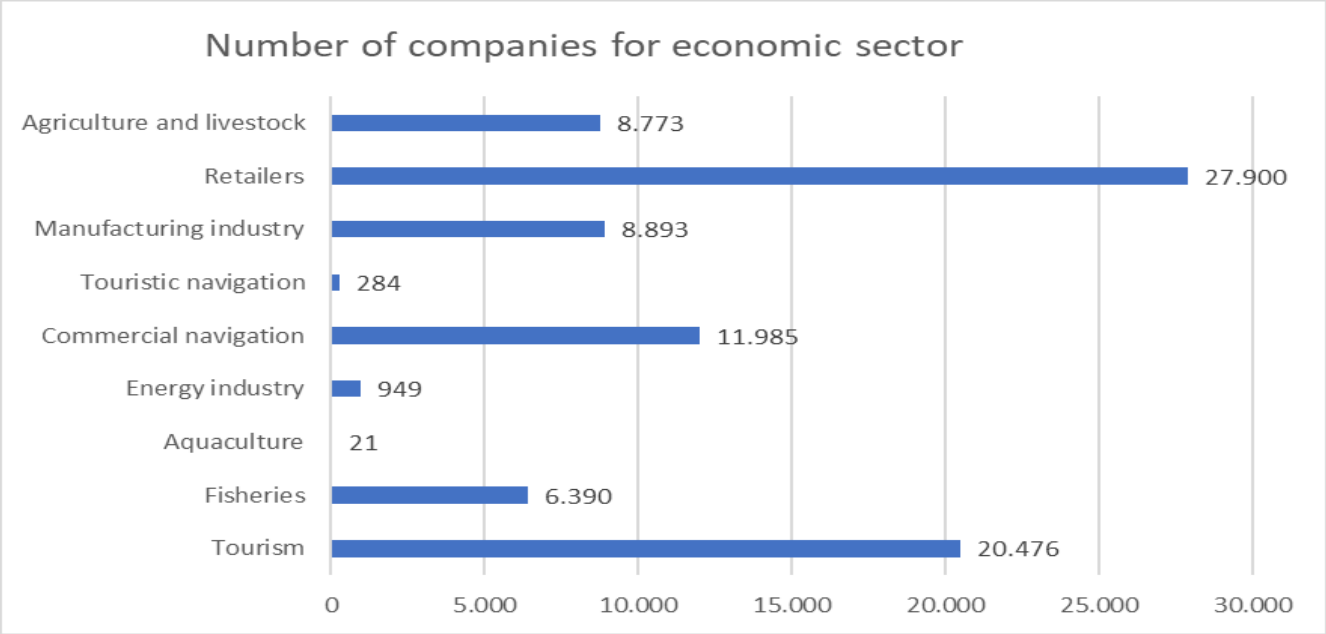


The section about **economic characteristics of the area** explores the presence of companies and their contribution to the economy according to the main economic sectors, namely tourism, fisheries and aquaculture, energy industry, commercial navigation, touristic navigation, manufacturing industry, retailers and agriculture and livestock.

In some cases, providing such detailed information has been a challenging task and thus, only five partners provided data regarding this section: Palma City Council, the Balearic Islands, Larnaka District, Albania and Himara Municipality.

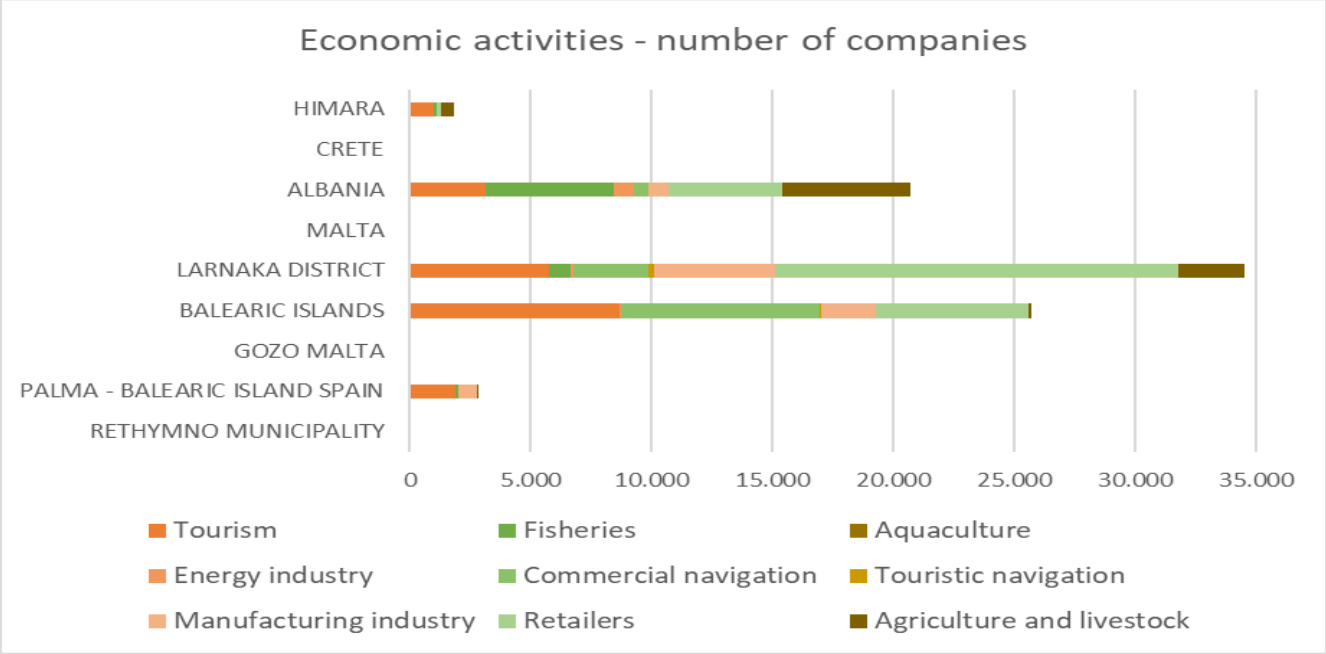
From the data, it emerges that for such territories retail sector is the main economic sector with the highest number of companies, followed by tourism sector and commercial navigation. Touristic navigation sector counts 284 companies among all partners. Agriculture and livestock and the manufacturing industry account for almost the same number of companies.

Figure 49. Number of companies for economic sector



The highest number of companies is located in Larnaka District, where there is a prevalence of retailer companies followed by touristic and manufacturing companies. Similarly, the Balearic Islands have a high number of companies, dominated by the tourism sector. Albania as national partner does not have a very significant number of companies, recording the majority of firms in the fisheries and in the agricolture and livestock sector.

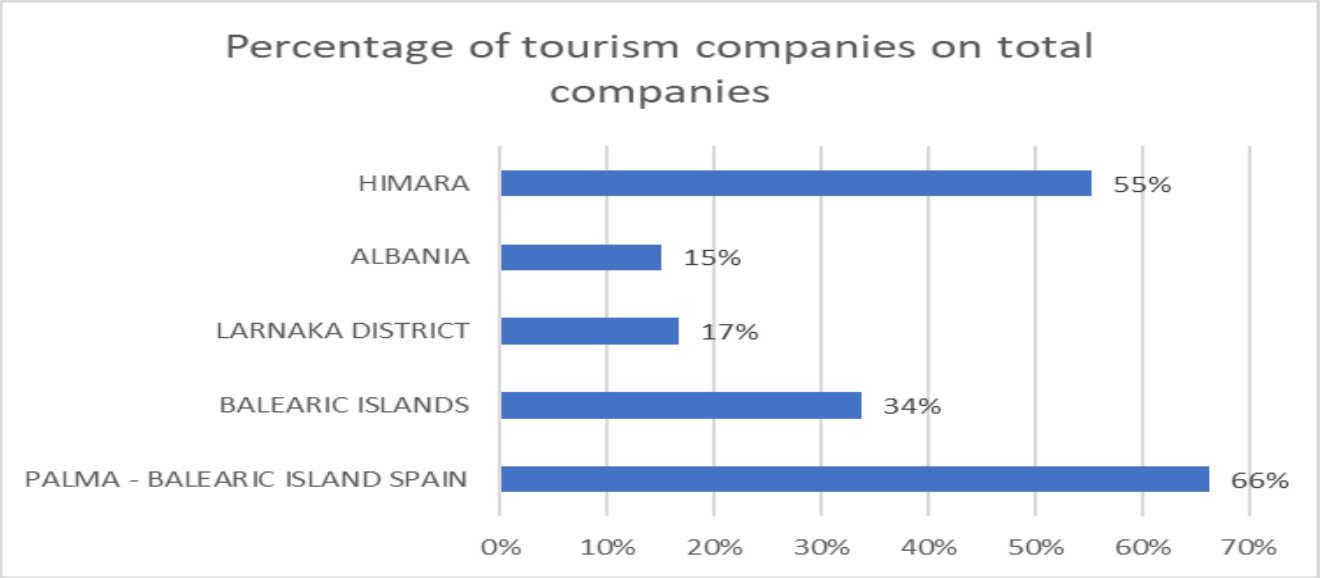
Figure 50. Number of companies for economic sector for partners



Focusing on tourism companies and according to data provided, Palma City Council and all the Balearic Islands Region have the highest percentage of tourism companies on the total number of firms present in the areas, confirming that are territories with a strong tourist calling. Even Himara Municipality has a relevant share of

tourism companies compared to the total amount of companies, while at the contrary, Albania's tourism companies share is limited.

Figure 51. Percentage of tourism companies on total companies

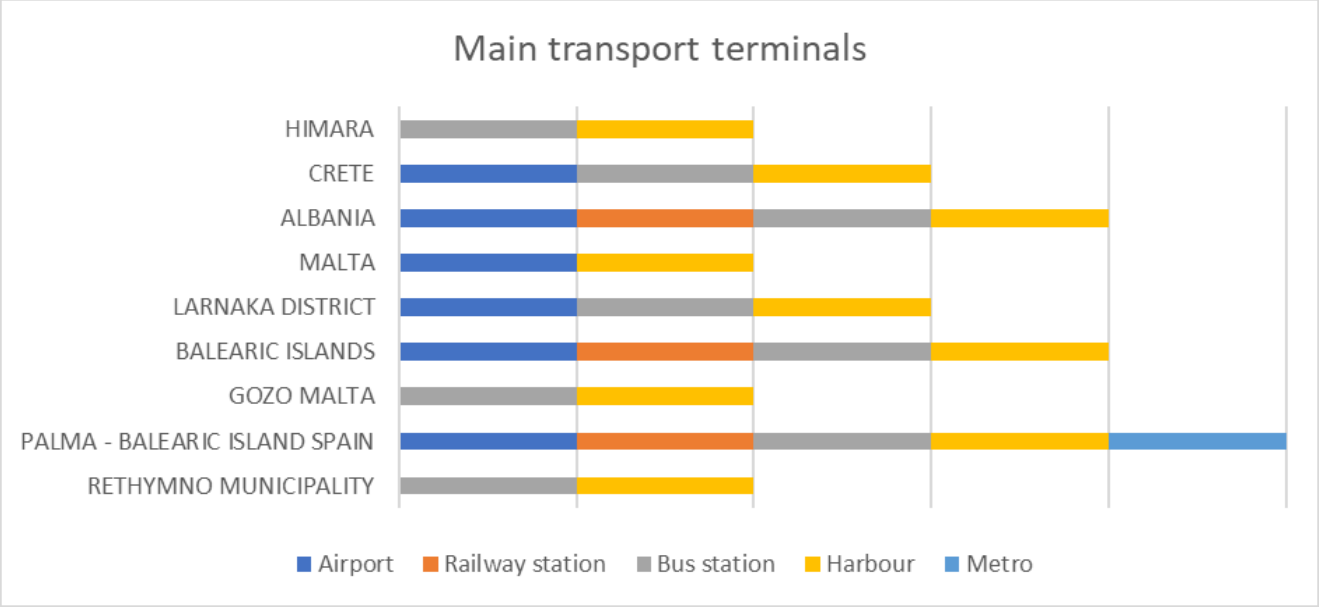


The section related to the **mobility of the area** aims at investigating the main transport terminals present in the area (airports, railway stations, bus stations and harbours), the characteristics of the main mobility issues and the main mobility problems connected with tourist flows, as well as the initiatives of green urban mobility and sustainable tourism mobility developed in the area.

Harbours and bus stations are the most common transport terminals and are present in all partners territories, followed by airports. Himara Municipality, Gozo and Rethymno Municipality have the smallest variety of transport terminals and do not have an airport. For these reasons these destinations are probably the most difficult area to be reached by tourists. Considering their dimension, such result is not surprising since they are quite small municipalities and region.

The partners with the largest variety of transport terminals are Palma City Council and, in general, all the Balearic Islands. It may be supposed that the higher number of tourists during the whole year is due even to the fact that these areas are quite easy to be reached. At national level, Albania has more transport terminals than Malta.

Figure 52. Main transport terminals for partners



In relation to mobility issues, all the partners manifest the need for an improvement of the mobility.

In general, it emerges that public transportation should be strengthened in order to increase destinations' reachability and limit the use of private cars. In fact, the use of personal vehicles is high among all the areas, and in some cases it is exacerbated by the morphological conformation of the territories. Boosting the public transportation services may increase the ease of movements within the territories. Some partners are already undertaking actions. Cyprus aims to increase the share of public transport from 6% to 13% in 2020. In order to shift passenger traffic from private cars to public transport, Cyprus is encouraging the use of buses and taxis by modernizing the bus and taxi fleet, adopting integrated ticketing, fostering the expansion of private bus companies and establishing new bus stations.
Another recurrent issue related to mobility is the road network, generally old, not good quality and not very extended. Certain areas have undertook roads rehabilitation and widening to reduce traffic jam (the cases of Malta and Himara).
As a consequence of the extraordinary use of private cars and the condition of road network, a problem of traffic emerges. To overcome such issue, the improvement of the pedestrian and bicycle lines supply in the urban centers becomes a necessity even for big areas, like the Balearic Islands.
Islands manifest the need for improvements of the connection with the mainland e between different cities present in the territories, as claimed by Palma City Council.

The main mobility problems connected with tourist flows are the sudden increase of the urban traffic during the summer period, when the tourists visiting such areas are more than the size of the resident population. Most of tourists use rental cars, generating problems related to an increase in urban traffic, problems of congestion, illegal parking, deterioration of roads, traffic accidents, noise pollution, increase of car emissions. Driving in narrow and old roads where tourists are not familiar is dangerous causing a significant number of traffic accidents, as stated by several partners.

Generally, tourists exert demand on the public infrastructure on all the partners territories, such as roads, ferry and boat system, for which they are not normally charged. For this reason, sometimes it is impossible to satisfy all tourists' needs in terms of inner mobility connection.

With regards to initiatives of green urban mobility, it emerged that some actions are common between the different territories, as for instance initiatives of bike, scooter and car sharing, even electric ones. Similarly, additional solutions regard electric or natural gas bus system and charging sites for electric vehicles. Moreover, bicycle lines and walking networks are quite widespread. Larnaka District is working towards the development of the Sustainable Mobility Action Plan to satisfy the mobility needs of residents and tourists. Himara Municipality declare to not have yet implemented initiatives contributing towards alternative forms of traveling.

In relation to the initiatives related to sustainable tourism mobility in the areas, some actions have been realized among partners. For instance, Rethymno Municipality has undertaken various initiatives to advance Sustainable Tourism Mobility and is implementing different innovative Sustainable Mobility Measures, as the Sustainable Urban Mobility Plan (SUMP), the installation of thermal cameras to provide real time traffic and mobility information, improvement of beaches accessibility. Albania has a Low Carbon Transport Plan (LCTP) for Durres city and Saranda city. Malta and Gozo have an Intelligent Traffic Management System (ITMS) that allow to manage traffic in an integrated way across wider areas. Larnaka District has adopted a Tourism Mobility card that is an incentive for tourists and residents to use sustainable modes of transportation for their leisure trips and is promoted and supported by hotels awarded by the Green Label.

The section concerning the **municipal solid waste management and initiative of waste prevention** gathers information about municipal solid waste (MSW) production, recycling rate, disposal rate, waste management system and initiatives of waste prevention.

Regarding the municipal solid waste, all the partners declare an increasing trend in the last 5 years, except for Albania that declares a stable trend. Himara did not provide any data about MSW trend.

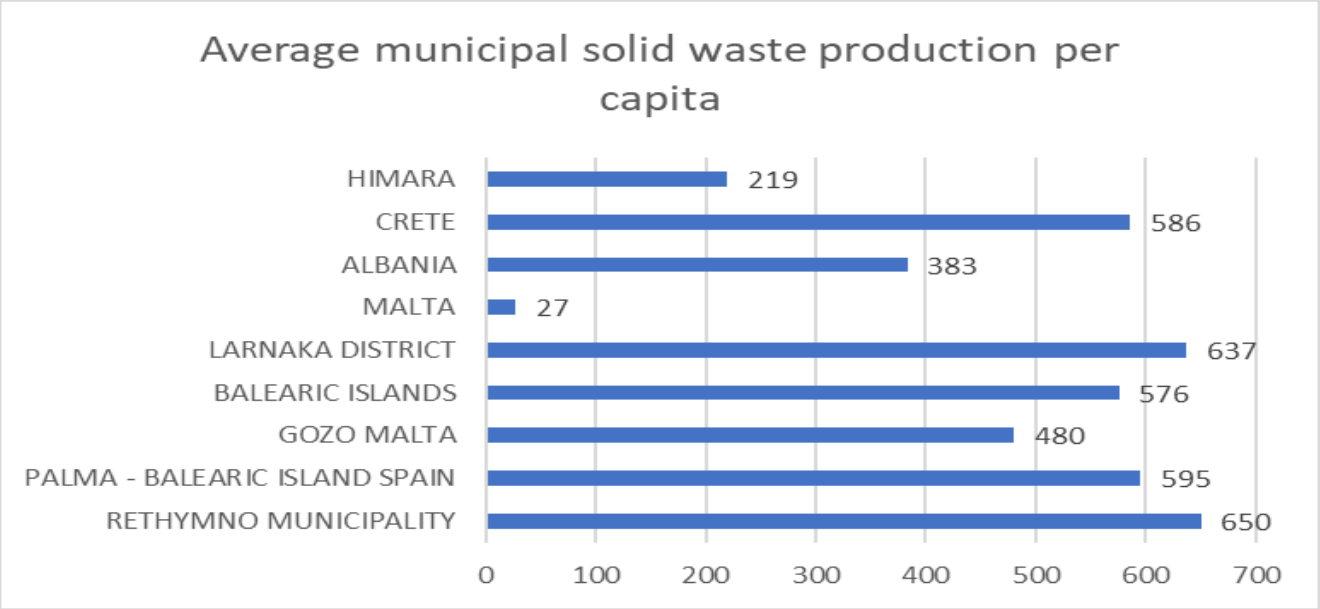
The average municipal solid waste production per capita is between 219 Kg/capita and 650 Kg/capita. Compared to the other territories, Albanian partners show the lower amounts of MSW per capita (Himara 219 Kg and Albania 383 Kg), whereas the Greek partners and Larnaka District declare the highest amounts (Rethymno Municipality 650 Kg, Region of Crete 586 Kg and Larnaka District 637 Kg). Also Spanish partners have high amounts of MSW per capita (Palma City Council 595 Kg and Balearic Islands 576 Kg).

Considering the EU average data about municipal solid waste production of 489 Kg per capita in 2018 (Eurostat 2019:b), five out of nine partners are above this benchmark: at regional level Crete, Larnaka District, the Balearic Islands and at local level Palma City Council and Rethymno Municipality. Regarding regional partners, the high level of MSW production per capita may be attributed to the high number of tourists arriving in these territories that may strongly contribute. Rethymno Municipality records particularly high amount of MSW produced per capita, even if the number of inhabitants is quite low, with around 55.000 residents. Even the presence of tourists (around 673.000 people last year) is not so strong compared to the other partners, but it may be supposed that, for a small municipality, such tourist flows are enough to increase waste production in a consistent way.

Himara Municipality has a lower number of inhabitants than Rethymno Municipality (respectively around 25.000 and 55.000 residents), and nine times lower presence of tourists (respectively around 72.000 and 670.000

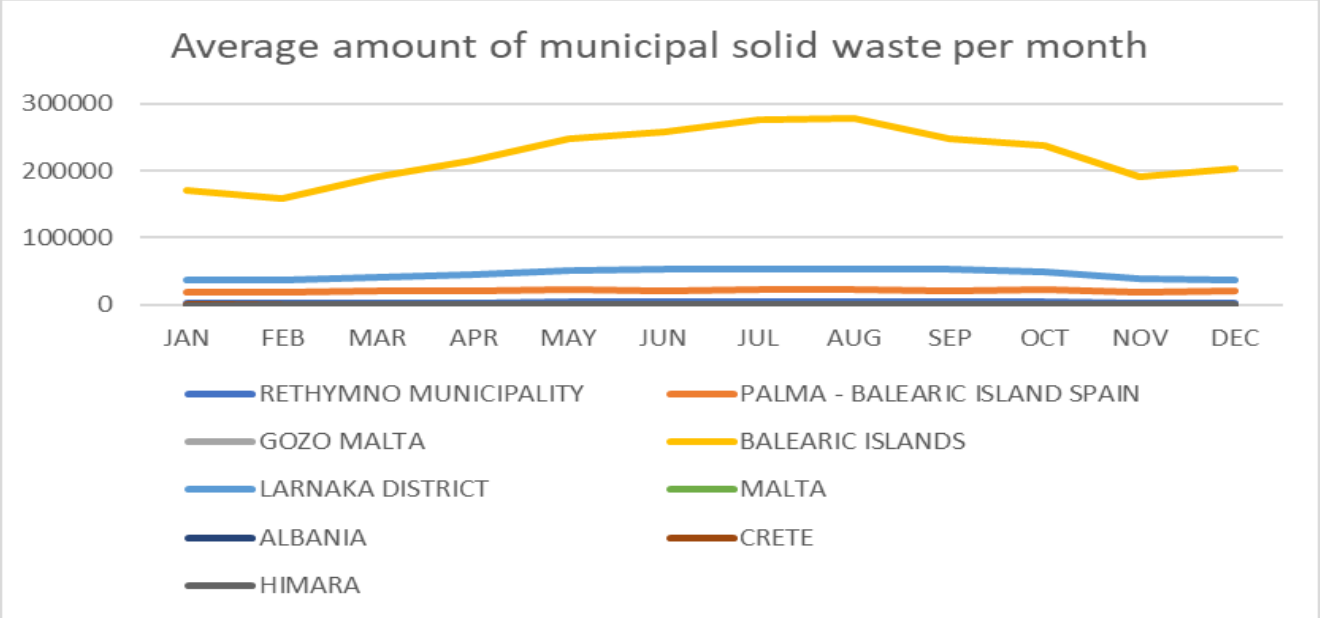
incoming tourists last year). It may be supposed that tourist flows
have an impact on MSW production per capita of Himara and Rethymno municipalities.
In general, it might be noted a correlation between waste production per capita and the presence of tourists, particularly relevant for small local areas.

Figure 53. Average municipal solid waste production per capita



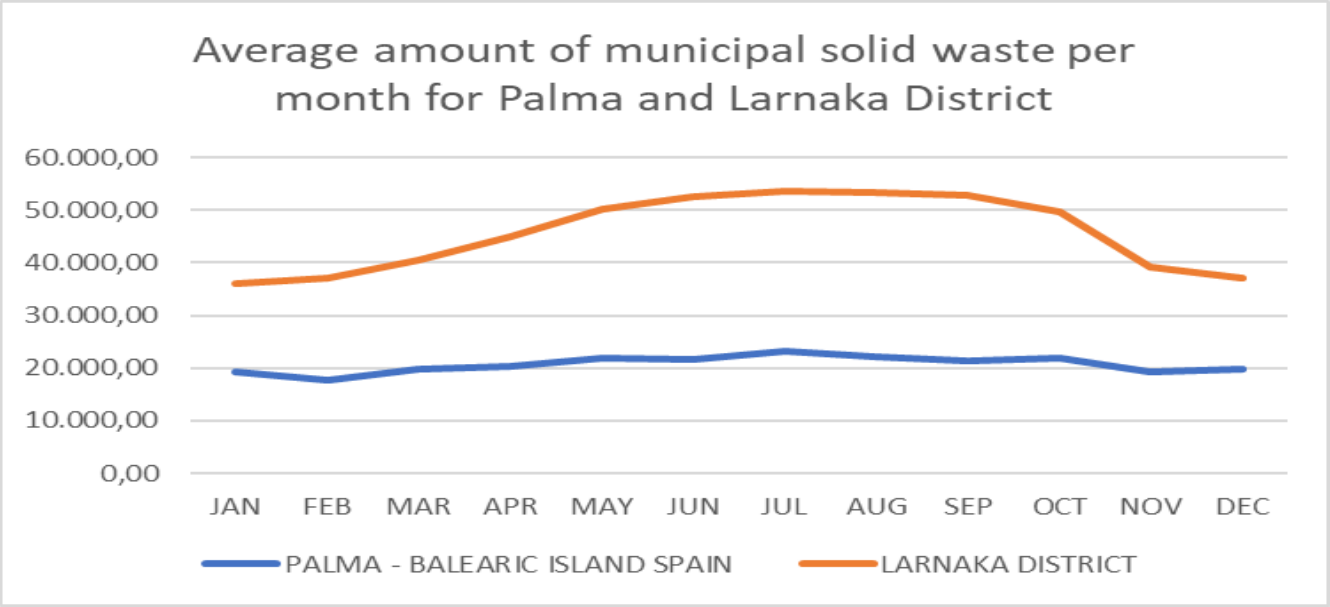
Considering the average amount of municipal solid waste per month it emerges that the Balearic Islands is the partner with the highest level of municipal solid waste generated during the entire year, followed by Larnaka District and Palma City Council. Malta, Albania and Gozo did not provide any data.
For the Balearic Islands the MSW production trend is increasing between February and August, where it reaches the peak of production. In August MSW production is nearly double the one in February. After August, the trend starts declining.

Figure 54. Average amount of municipal solid waste per month



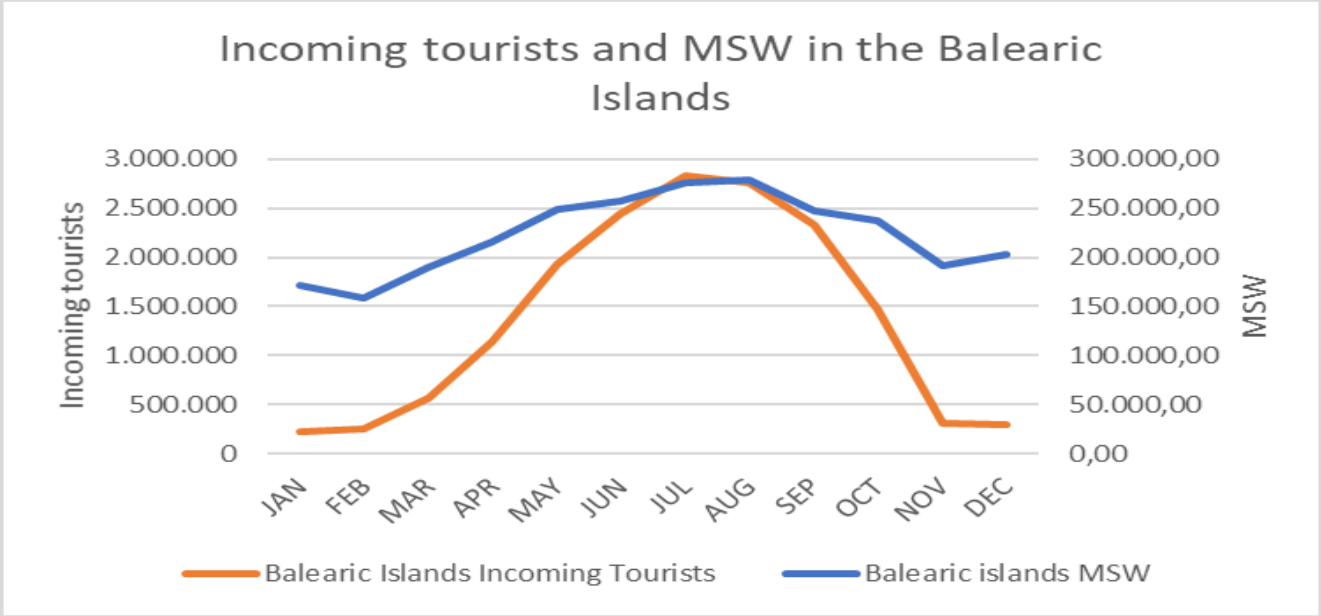
Analyzing more in details, the same pattern is found for the MSW production of Palma City Council and Larnaka District, even Spanish amounts are lower in absolute terms. Moreover, Palma City Council shows a flatter trend in waste production during the year, demonstrating that tourism, especially in summer period, does not affect so heavily MSW production.

Figure 55. MSW production per month Palma City Council and Larnaka District



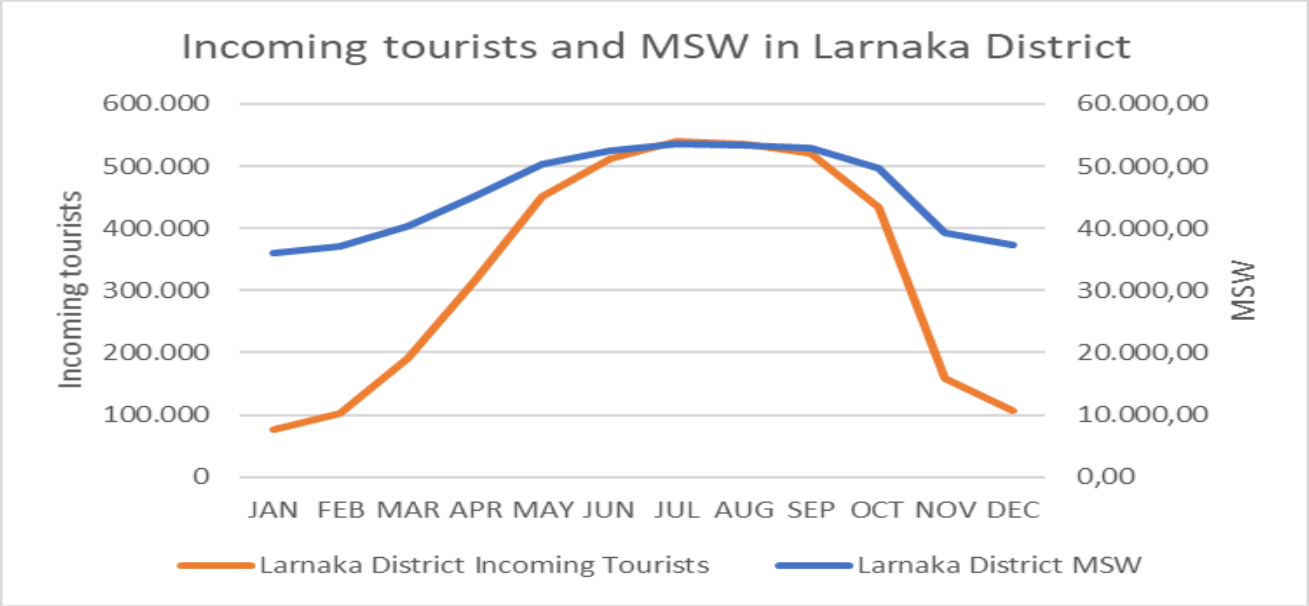
Comparing MSW production with the number of incoming tourists for the Balearic Islands, it emerges that incoming tourist's trend is very similar to the one of MSW production. Both trends start increasing from February and touch the peak in summer months.

Figure 56. Incoming tourists and MSW in the Balearic Islands



A similar evidence is found for Larnaka District, that records an increasing trend starting from February, reaching the peak in the period from May to September and then declining.

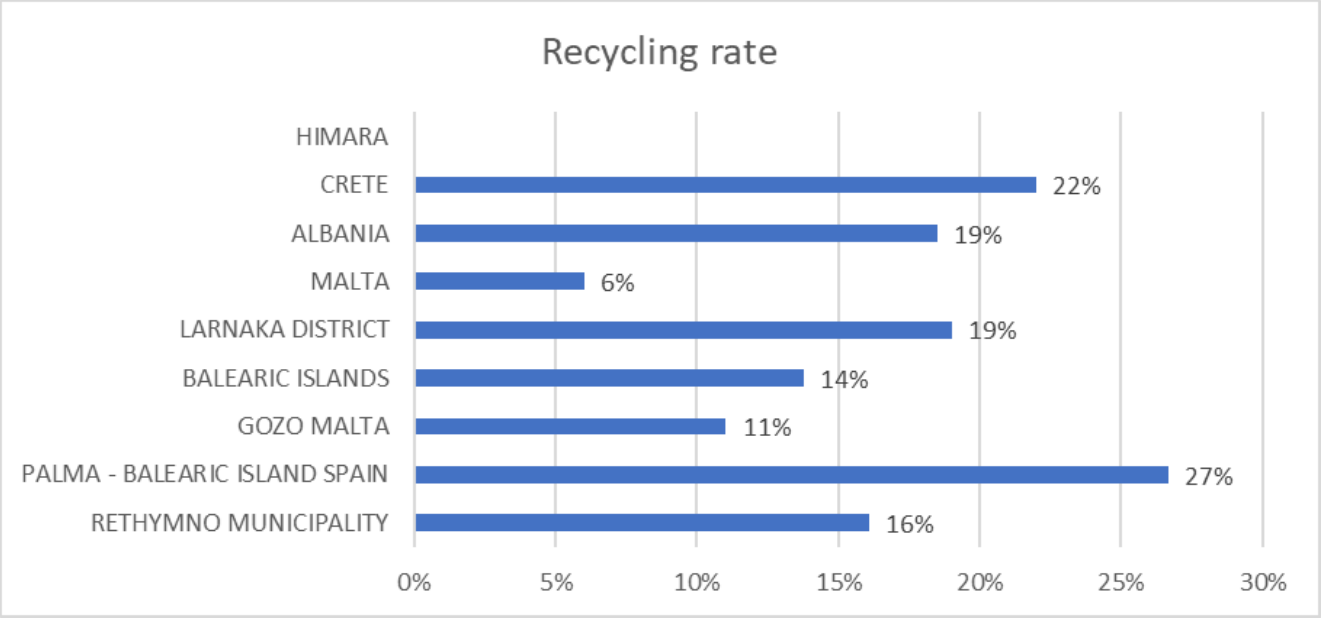
Figure 57. Incoming tourists and MSW in Larnaka District



Such evidence may suggest that a relation between incoming tourists and MSW production exist in these cases.

Regarding recycling rates, Palma City Council records the highest recycling rate of 27%, followed by Region of Crete with 22%, Albania and Larnaka District with 19%. Malta has the lowest recycling rate of 6%. Himara did not provide data. Considering EU data attesting that 47% of municipal solid waste was recycled (materials recycled and composted) in 2018 (Eurostat 2019:b), partners' recycling rates are quite low.

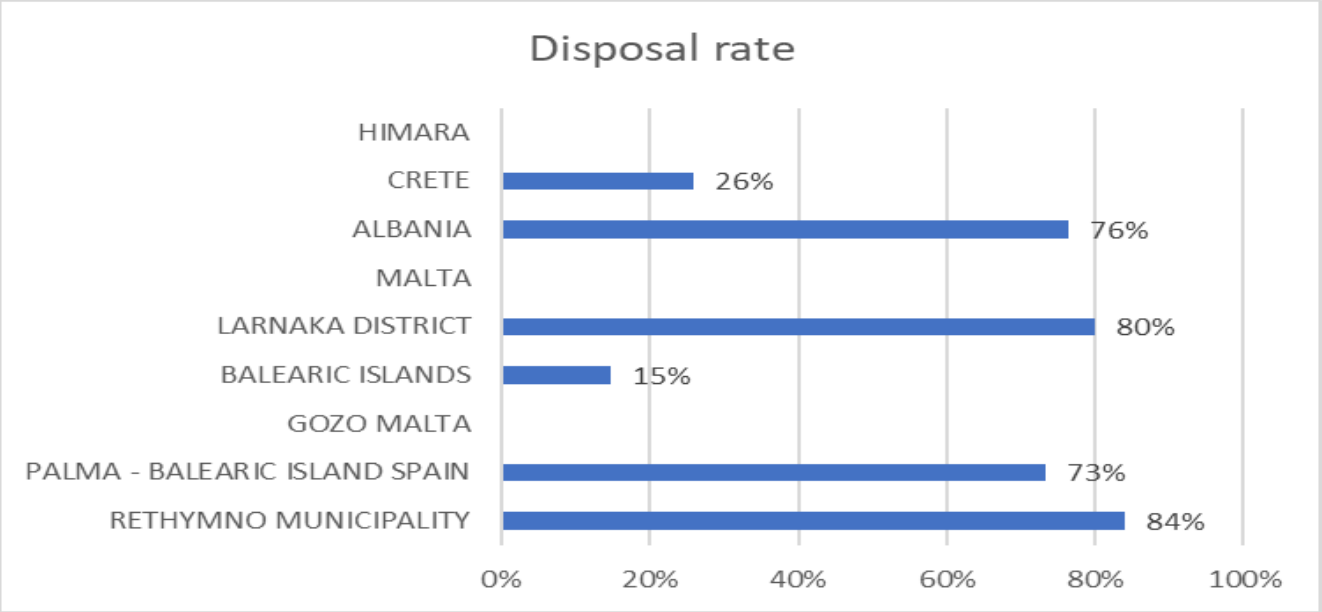
Figure 58. Partners' recycling rate



However, all partners declare a positive recycling rate trend in the last 5 years, except for Albania that states a negative trend.

Disposal rates are quite high, and in four partners' territories are above 70%. Considering the European landfilling rate of 23% in 2018 (Eurostat 2019:b), unsatisfying data emerge from partners. Only the Balearic Islands are under this benchmark. Himara, Malta and Gozo did not provide data.

Figure 59. Disposal rate for partners



Disposal rates trends in the last 5 years are increasing for Palma City Council, Region of Crete and Himara Municipality. Negative disposal rates are recorded in Albania and Rethymno Municipality, stable in the Balearic Islands and in Larnaka District, fluctuating in Gozo. Malta did not provide data. It may be assumed that a relevant work is to be done among all partners to reduce solid waste production and to promote recycling.

Regarding waste management system, in most cases the services are provided by the municipal company or subcontracted to a private company. In Rethymno Municipality part of the services is subcontracted to a private company in order to face the increased needs during the touristic period. Only few partners have door to door system, generally not widespread along all the territories but limited to certain areas, as city center. Waste bins are often insufficient and do not allow a correct sorting between different types of waste, as occurred in Gozo where a mixed collection system is adopted.

Waste transportation is a further issue because often waste have to be shipped, as in Rethymno Municipality, or to be transported long distances to the treatment plants, as in Himara Municipality.
In some partners territories, landfilling or incinerating are the prevalent waste destinations. Landfills and dumping sites are present in Larnaka District and Albania.
Albania has revised his national strategy on waste management, but implementation remains at an early stage. Economic instruments to promote recycling and prevent waste generation remain limited. The construction of an incinerator in Elbasan which started to operate last year and plans for further investment in incinerators pose concerns in terms of compliance with EU principles since disposal and incineration are the least preferred.

In Crete, the lack of investment and the shortage of staff result in
a waste management system not working properly. Even the information process of the residents is not so efficient.

Initiatives of waste prevention are present among all partners. Rethymno has elaborated the local waste management plan of the municipality following the Regional Waste Management Plan.
Gozo has launched several campaigns and participated in projects focused on waste prevention and subsequent education: a zero waste project, a campaign where residents can recycle plastic bottles and spent light bulbs at the Civic Amenity Sites, environmental education to all kinds of educational institutions, a website and an online tool enabling individuals to give and receive free second-hand goods and other related projects.
Palma City Council approved a program of waste prevention. The Balearic Islands instituted a law that aims to tackle high level of waste with an approach at European level. The regional law establishes a series of objectives in the field of prevention, reuse, preparation for reuse and recycling of domestic and commercial waste. The Balearic Islands, through the sustainable tourism tax, approved a call for aid for circular economy and insertion of people at risk of social exclusion, and also grants for waste prevention for municipalities.

Larnaka District implemented a series of measures, as mandatory separate collection of organic, plastic and paper waste, increasing landfill tax, measures to reduce plastic goods transport (e.g. fees on plastics bags), promotion of home composting and less taxation to households that are implementing composting, information campaigns, communication line (via internet and / or telephone) whereby guidance on waste prevention is provided to citizens, Green Public Procurement, product exchange and reuse programs.
In Albania, the Urban Research Institute is partner of some projects whose focus is solid waste management, through development of an integrated solid waste management plan for the two municipalities selected.
Region of Crete is engaged in finalizing within 3 years all projects concerning waste prevention, including plant for waste treatment and sanitary landfill.

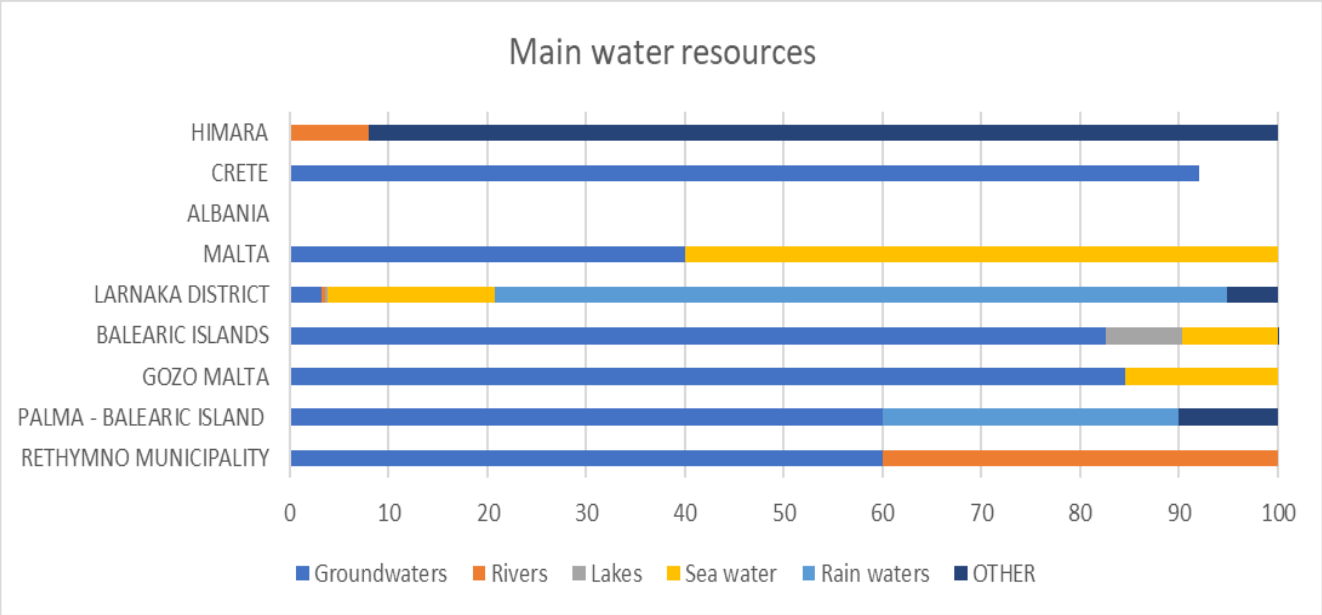
Himara Municipality carried out a professional treatment for all the beaches during the summer season and increased waste collection during summer times. Himara Municipality and the contractor add more temporary staff during the summer season in order to keep the situation under control in the more crowded areas. Referred to the marine prevention, the municipality determines exactly the place where the sea transport vehicles and this has a direct impact to the marine waste prevention. The municipality adds the capacity of the wastewater during the summer season.

The section about **water management system and water consumption** investigates the main water resources of the area (groundwaters, rivers, lakes, sea water after desalinization process, rainwater), the water consumption per capita in the last year, the average consumption per month in the last year, the trend over the last five years and the price for summer times water consumption according to main categories of users, namely private households, agriculture, industry, public sector, accommodation facilities, tourist facilities. Moreover, the description of the water supply system, the wastewater management, the qualitative and quantitative status of water bodies and main problems affecting the water resources and initiatives of prevention have required.

The main **water resources** in the partners' territories are groundwaters. For six partners groundwaters count for 40% or above on the total water resources. In the Balearic Islands, Gozo, and Region of Crete this percentage is over 80%. Crete has the highest percentage of groundwater' utilization, above 90% while Larnaka District has the lowest percentage of groundwater' utilization, under 5%.

Another common water resource is sea water after desalinization process, present in Malta (about 60%), in Larnaka District, in the Balearic Islands and in Gozo. Water from rivers is utilized mostly in Rethymno Municipality (40%) and in Himara (below 10%). Himara is the partner with the highest percentage of water derived from other sources (springs and artificial reservoirs, over 90%), whereas Larnaka District among other water resources mentions recycled water and Palma City Council reservoirs.
Larnaka District is the partner that has more different water resources, while Himara and Rethymno has only two water sources. It may be supposed that, in these cases, tourist's presence could generate problems for the availability of water, especially in summer months where scarcity of water may be recorded. This could lead to a higher pressure on water resource.

Figure 60. Main water resources in partners' territories



Regarding **water supply system,** a varied situation emerged from partners.
Rethymno water supply system operates under the supervision of the municipal water and waste companies (both belonging to the wider public sector) and relies on public wells and springs.
In Palma City Council water supply system is completely public and run by a municipal company too. There are only two small reservoirs with 4 months of supply capacity. Most of the fresh water is from ground water when the weather is as usual and from desalination of seawater when the weather becomes dry.
Gozo is served by Malta water distribution system, a complex and vast network that leads approximately 142,000 water service connections. Malta utilize three desalination plants located along the coast of the Maltese islands and a distributed groundwater abstraction network composed of pumping stations and boreholes.
In the Balearic Islands there is a mix system: public management managing the supply on discharge (large wells, desalination plants, much of the sewage treatment plants, etc.) and private management managing the rest of the municipal supply that is not of public competition. The supply network starts from natural sources, wells and desalination plants.
Larnaka District is served by the Government Water Supply Systems (GWSS), that are part of the infrastructure of the Government Water Work, serving more than 180 local Water Supply Communities with a rate exceeding 80% of the total drinking water requirements throughout Cyprus.
In Albania, Local Government Units have the authority and the responsibility for the provision of water supply and sanitation services in their respective service areas. Fresh water sources with an average quantity of 8700

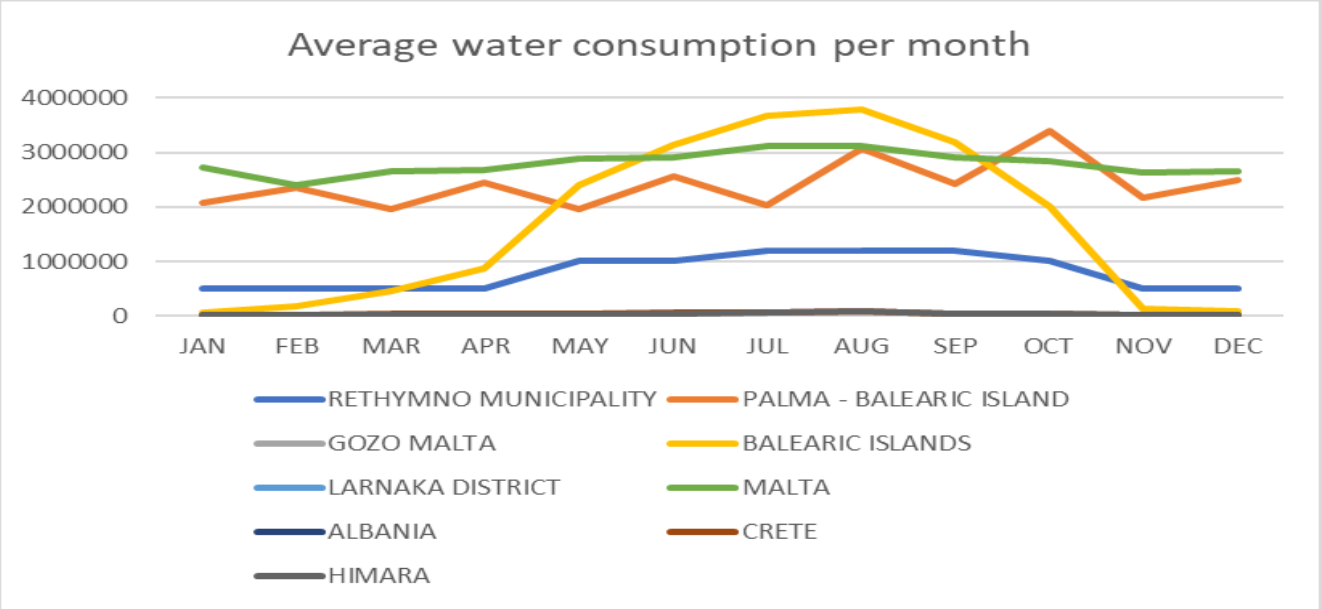
cubic meters per capita per year constitute a major resource for
Albania. They exist as natural springs, rivers, lakes, and groundwater aquifers. The water resources in Albania are distributed, hydrographically, across six watershed basins, which all flow in a westerly or northwesterly direction across the country.
In Crete, water supply is under the responsibility of the local municipality.
In Himara Municipality runs a public entity which is responsible for the water supply in all the territory of the municipality. This entity invests in new projects for water supply and also investments related to the maintenance of the existing water supply system.

With regards to **wastewater management,** at local level mostly the wastewater management system is under control of the municipality authority or the same entity described for water supply system.

In Larnaka District, to alleviate water shortages, serious consideration has been given to wastewater reclamation and reuse. There are 53 main Urban Wastewater Treatment Plants (UWTP) in operation.
In Malta there are three Wastewater Treatment Plants which are responsible for the treatment of 100% of the wastewater generated in Malta. A percentage of the secondary treated wastewater (approximately 19,000m3/day) are being treated using an advanced wastewater reclamation process (ultrafiltration, reverse-osmosis and advanced oxidation processes) resulting in the availability of very high-quality reclaimed water which is being distributed for agricultural and industrial purposes.
In Albania, according to their performance analysis, wastewater sewerage coverage was 52% in 2018, with an increasing trend.

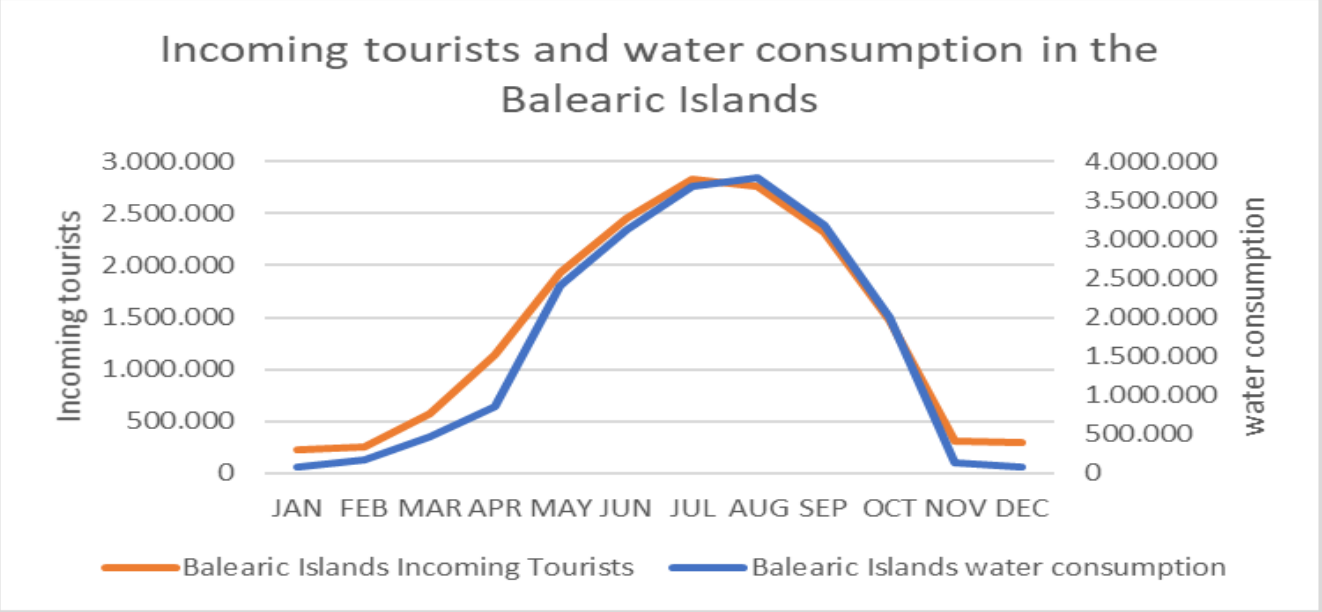
The **water consumption's trend** in the last 5 years is increasing in all the partners territories.
Malta has the highest water consumption during the entire year (about 33 million).
Among all partners, the Balearic Islands have the highest peak of water consumption in August, followed by Malta and Palma, those recording high consumption levels of water attested more stable during the year.
The highest peak of water consumption in summer months may be related to seasonal tourism, as occurred for municipal solid waste.
Rethymno Municipality presents the same pattern of the Balearic Islands, even if in absolute terms Rethymno shows lower consumption levels, starting to grow from April and reaching the peak in summer months. Gozo, Larnaka District and Albania did not provide any data.

Figure 61. Average water consumption per month



Comparing the affluence of incoming tourists and water consumption in the Balearic Islands, it may seem that there exist similar trends. Water consumption grows very fast as incoming tourists increase, then reaches the peak in summer months and finally declines very quickly as incoming tourists decrease.

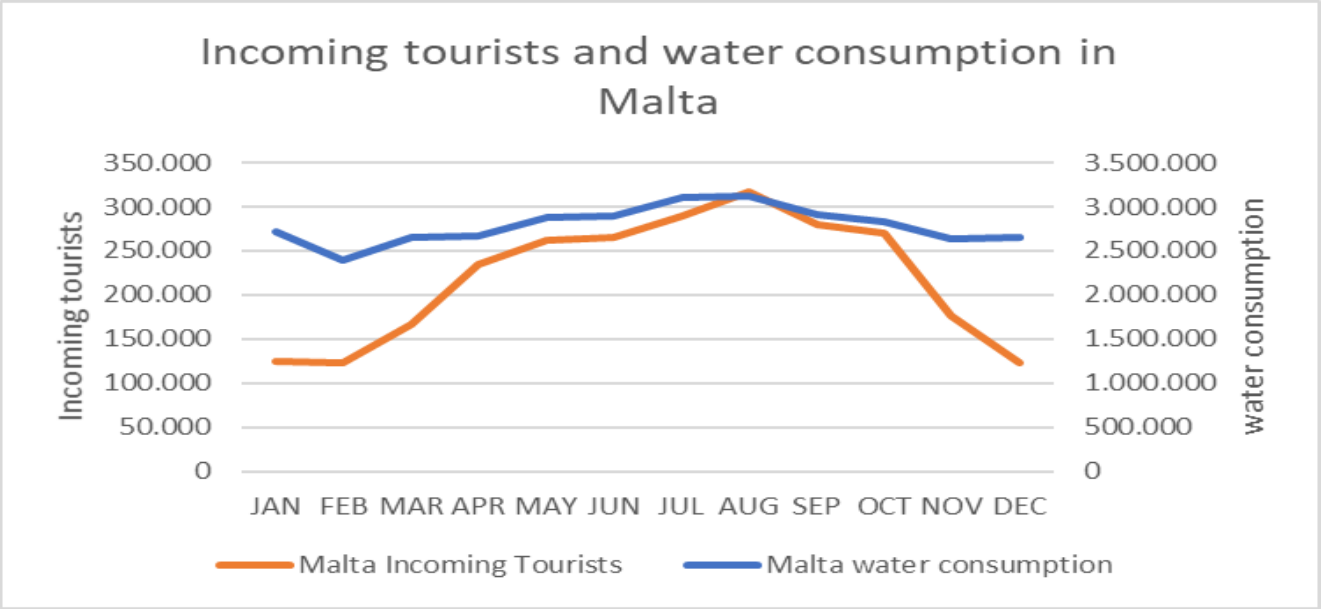
Figure 62. Incoming tourists and water consumption comparison in the Balearic Islands



Comparing the affluence of incoming tourists and water consumption in Malta, it may seem that correlation is not so strong as in the Balearic Islands. The level of water consumption during the whole year remains high and, even if it grows from February to August as the incoming tourists' trend, the increase in water consumption is very slight compared to incoming tourists' growth. Water consumption level remains high even in autumn and

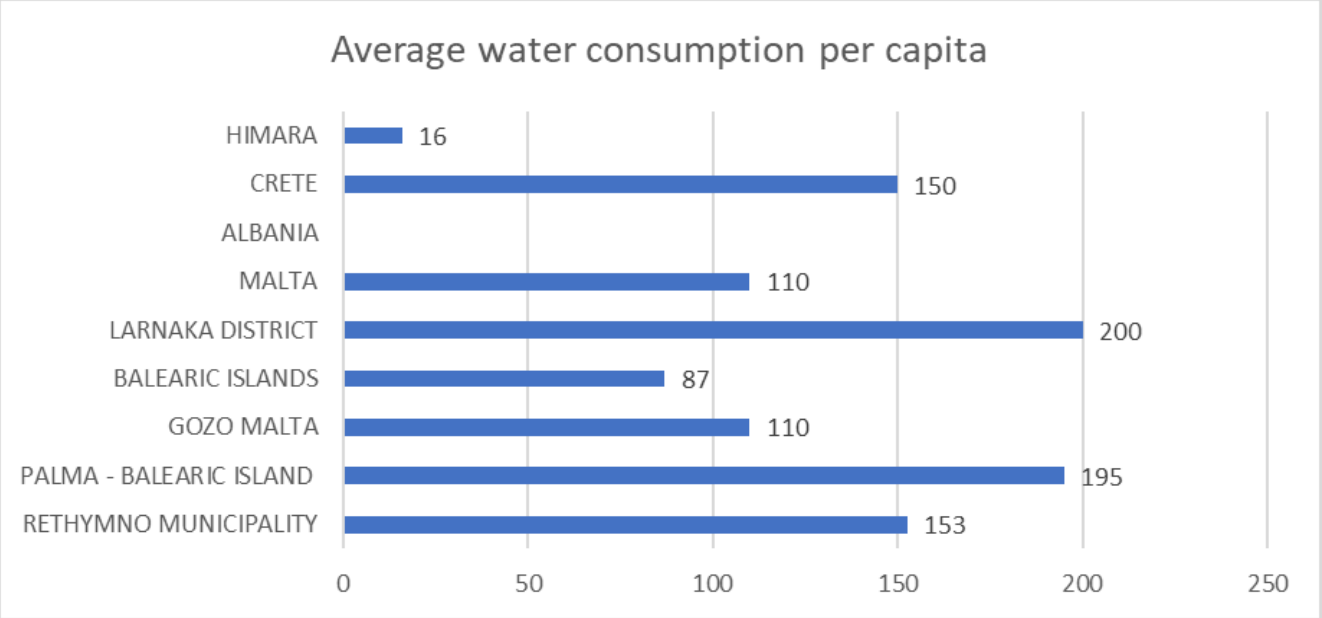
winter, where the affluence of incoming tourists is lower. This may seem to reveal that the high level of water consumption in Malta is partially due to incoming tourists and partially to other drivers.

Figure 63. Incoming tourists and water consumption comparison in Malta



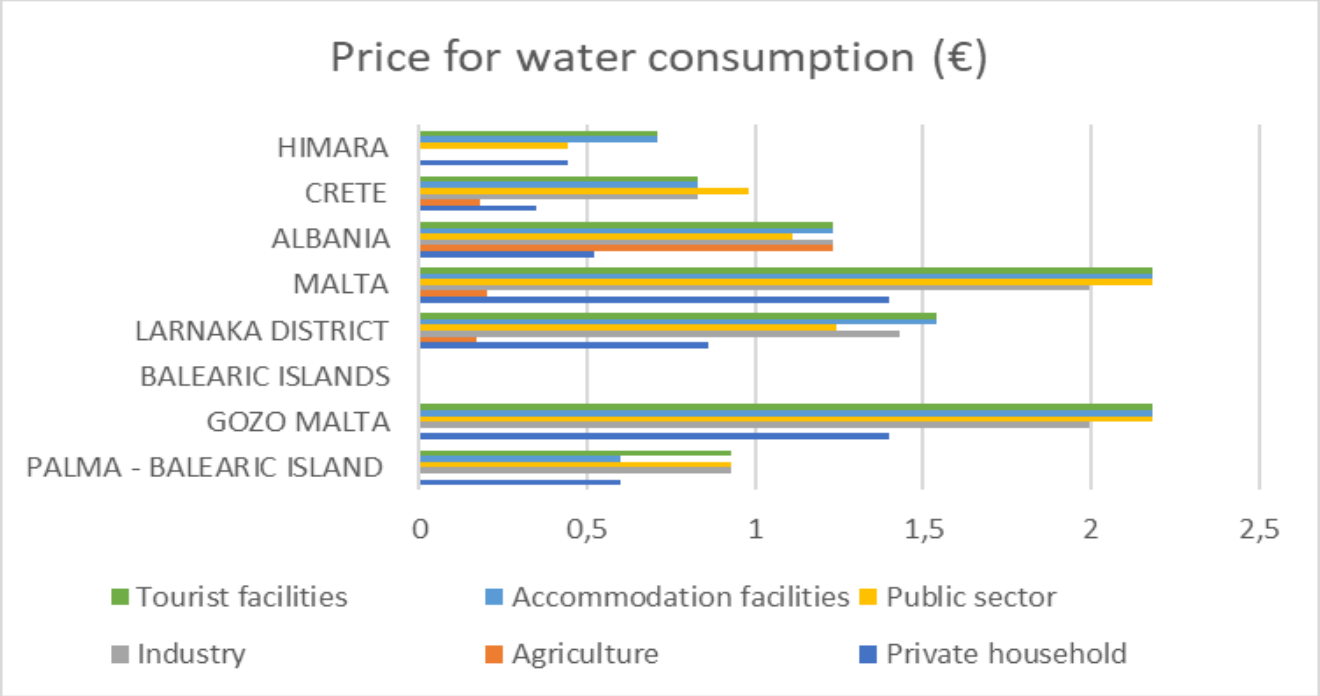
Average water consumption per capita is high for four partners: Crete, Larnaka District, Palma City Council and Rethymno Municipality (150 liters pro capita and above). Larnaka District has the highest consumption per capita, while Himara Municipality the lowest. It may be assumed that high level of water consumption per capita is due, in a certain part, to touristic flows, as the cases of Palma, Larnaka District, Crete and Gozo where incoming tourists are more than inhabitants. Since water consumption is calculated on inhabitant's basis, tourist flows can affect average water consumption. Albania did not provide any data.

Figure 64. Average water consumption per capita



Highest prices of water consumption are registered in Gozo and Malta (over 1,5€/m^3), the lowest are registered in Himara Municipality. Water prices for tourist facilities are often the highest ones, followed by accommodation facilities, public sector and industry. Lower prices are registered for agriculture sector. Private household water prices oscillate between a minimum of 0,35€ in Crete and a maximum of 1,39€ in Gozo and Malta.

Figure 65. Price for water consumption



The status of ground water bodies is low in almost all partners. Except Rethymno, where ground waters are in a sufficient quantity and a very good quality, the rest of the ground waters in the partners' territories are often polluted by the intrusion of sea water. This problem is present in Albania, Palma, and Malta probably due to over exploitation and, in case of Palma, a heritance of an unsustainable ground water's management during nineties. In Palma there are also aquifers with nitrates and phosphates pollution's under agricultural areas. The aquifer located under the airport is also polluted by fuel.
Malta is among the three southern EU states (along with Cyprus and Spain) where the groundwater levels are drying up fast and has the highest number of groundwater reserves described as being in a "poor" state (80%). Even in the Balearic Islands the situation regarding quality and quantity of ground water is problematic. Crete and Himara did not provide information.

The quality of surface waters is higher than ground waters, with a level from moderate to good quality, sometimes excellent, as the coastal waters of Rethymno. Some partners underlined the relevant problem of marine plastic litter, present in the sea, beaches and coastal area.
The Balearic Islands for chemical and ecological state still have a quite low-quality level for surface waters. For the current situation would meet the environmental objectives of the ecological status 55 masses of surface water, that is 32% of the total. As soon as to the chemical state, 78 water masses would fulfill the environmental objectives surface, representing 46% of the total.

All partners underlined issues affecting the water resources present in the area to whom solutions still need to be implemented.
Most of the partners stated that the Mediterranean climate combined with climate change is a very relevant problem due to the intensification of extreme events like drought, low levels of rainfall and high temperatures that results in low natural water availabilities and significant losses through evapotranspiration. Anthropogenic activities and overexploitation generate issues in qualitative and quantitative availability of water resources causing pollution from fertilizers and saline water intrusion which affect natural ecosystems. Water shortages are a common phenomenon in these areas even because water systems are often old causing leakages and need maintenance programs.
Moreover, water stress aggravates in touristic period. Tourists are not aware of the poor water condition of these areas and consume relevant amount of water as in their home country, amplifying water scarcity.

Rhetymno Municipality has an old network wells which exhibit salivation and reduced flow and water supply network consists of a large number of old small tanks that need to be maintained. Crete decreasing precipitation trend combined with a rising temperature is leading to substantial reduction of water availability. The impact of climate change on the water resources status for the island of Crete has been assessed for a range of 24 different scenarios from a combination of projected hydro-climatological regimes, demand and supply potentials. Overall, a robust signal of water insufficiency is projected for all the combinations.

Palma suffers cyclical droughts, known among local people but not among visitors, who usually come from countries where lack of water is not a problem. For this reason, there are always awareness campaigns to inform them of water scarcity problems.

The same situation is present in Gozo and Malta, where the high density of population combined with Mediterranean climate generates water availability problems. Extensive water leak management and repair program have been developed investing even in an ambitious water reuse program to further fill in the gap between supply and demand. A rising block tariff mechanism has been established as an incentive to limit water consumption.

The main problems of the Balearic Islands are overexploitation, nitrate contamination and marine intrusion (salinization) directly linked to exploitation. In addition, average tourist consumes three times more water per day than a resident, all this combined with typically Mediterranean summers with prolonged episodes of drought, results in a high pressure on water resources. The specific initiatives to preserve the water sources are extraction restrictions, control over the exploitation of particular wells, forecasting future water demand, extension of desalination plants, rationing or distribution of water in times of drought.

Larnaka District suffers from the highest water stress level in Europe, particularly in years of excessive drought. The government of Cyprus has developed some specific measures to fight water scarcity: market-based instruments to ensure that the ‘user pays’ principle becomes the rule, an increasing water tariff according to the water consumption., targeted use of funding to encourage water saving, improving drought risk management through comprehensive plans with mapping and warning systems. Fostering a water-saving culture with higher awareness among visitors themselves is a necessity.

In Malta vulnerability of coastal waters and land-based activities affect marine waters through discharges of waste streams into coastal waters. These activities are exerting a significant pressure on the coastal zone, and if not managed effectively can lead to the deterioration of this area and associated ecosystems.

Albania applies performance-based contracts between municipalities and water utilities. Further progress has been achieved in the licensing process for wastewater collection and treatment. However, the performance and connections to wastewater systems need to be improved. The integrated water resource management strategy has been developed but not adopted yet. There is a strong need to extend sewer networks and treatment plants, notably in urban, coastal and tourism areas.

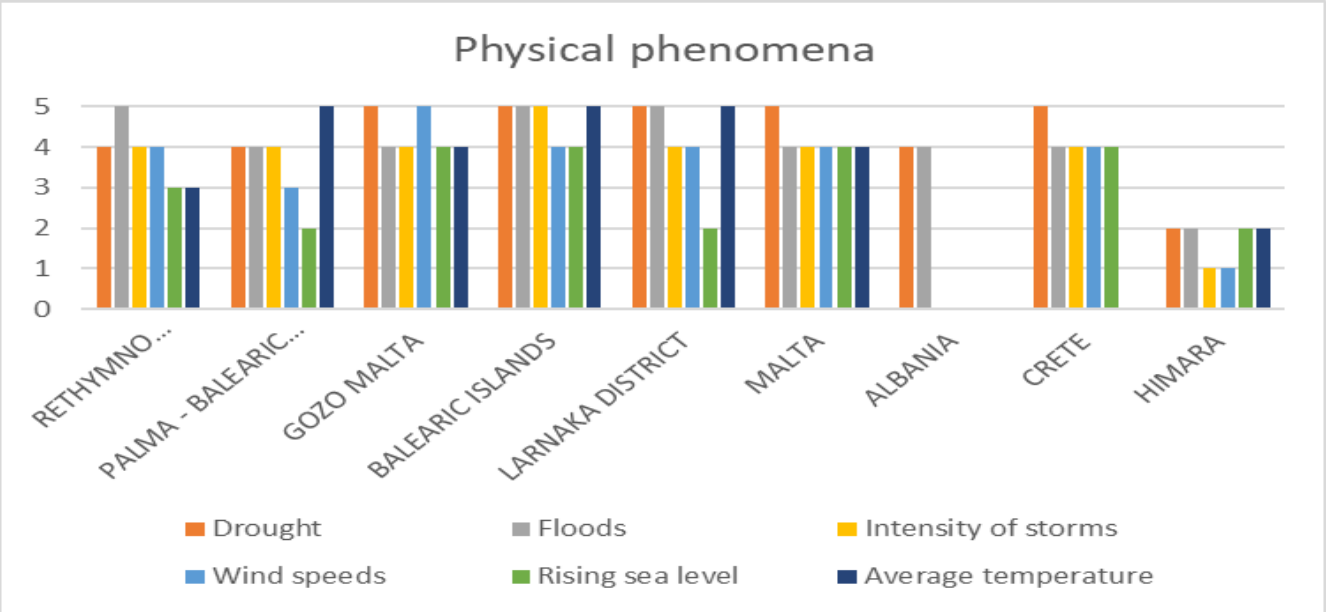
Himara Municipality has problems of draining and amount of water needed.

The section related to **actual and potential risks** explores the risk of subsidence in the area, as well as the impact of climate change on a series of physical phenomena, namely drought, floods, intensity of storms, wind speeds, rising sea level, and average temperature.

Three partners indicated that their territory is at risk of subsidence: Crete, Albania and Larnaka District.

Most partners recognize a strong effect of climate change on physical phenomena in their territories. Accordingly, climate change has an impact on drought, flood, storm, wind and on sea level. Only subsidence is not related to climate change. Himara Municipality is the only partner that asserted an absent effect of climate change on physical phenomena.

Figure 66. Climate change impact on physical phenomena



Completely absent	Absent	Don't know	Present	Strongly present
1	2	3	4	5

The section about **energy resources management** explores the main energy resources of the area (coal, natural gas, oil, solar energy, wind power, geothermal, wave and tidal power, hydropower, biomass), the electricity and natural gas consumption per capita in the last year, the average consumption per month in the last year, the trend over the last five years and the price for electricity and natural gas consumption according to main categories of users, namely private households, agriculture, industry, public sector, accommodation facilities,

tourist facilities. Furthermore, the electricity and natural gas delivery system of the area and the diffusion of renewable energy technologies have been investigated.

In partners' territories, the main energy resources are solar (present in six areas), natural gas (present in five areas), oil (present in four areas). Even if solar is the most present energy source, its contribution in percentage is very low in all the partners territories (less than 10%). At the opposite, oil is used heavily, with percentages ranging between 40-50% and above. Larnaka District is the territory where oil is more utilized (near 90%), followed by Rethymno Municipality (near 75%) and Albania (about 60%). Natural gas has high percentage of utilization in Malta and Gozo (around 95%). Coal is often present among partners' energy sources but with low percentages of contribution: the highest coal user is Palma (around 35%).

Extreme situations are present in Himara, that declare only hydropower energy resources, and, as mentioned above, in Larnaka District and Malta.

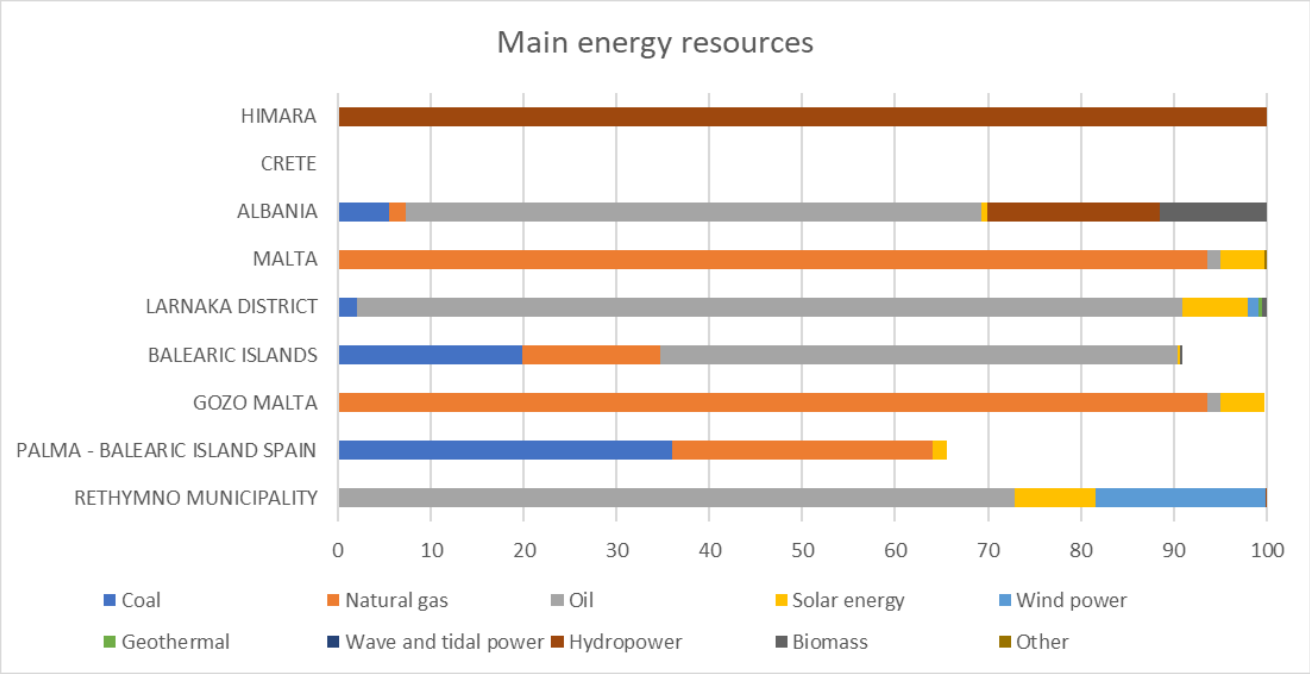
The highest variety of energy sources is found in Albania. Such result is not surprising, considering that is a national partner.

The Balearic Islands declare other energy sources, namely energy from waste, liquefied petroleum gases, imported electricity (near 9% overall). Similarly, Palma indicates energy from waste incineration and electric cable from Spain (near 33% overall).

Partners using more renewable energies are Hymara, Rethymno (about 25% of solar and wind power) and Larnaka District (even if above 10%). Except for these partners, the implementation of renewables technologies is quite low, considering the average EU share of renewable energy in gross final energy consumption for 2018 near 18% (Eurostat 2020).

It may be assumed that Larnaka District, the Balearic Islands and Rethymno Municipality may incurred in some difficulties in shifting their current energy resources system towards a more "sustainable" one, since their intense use of oil.

Figure 67. Percentage of main energy resources



Electricity and natural gas delivery systems vary significantly among partners.

In Rethymno Municipality there is no natural gas delivery network
and two high voltage transmission lines (150 KV) of the Public Power Corporation are passing through the municipality. There is no natural gas delivery network in the whole Crete Island. Developments concerning the country's internal electricity interconnections are considered of major importance. An important advancement in electricity market operation was recently achieved, since from January 1, 2018 Greece's electricity market became fully liberalized.

In Palma, energy and gas suppliers are run by private companies. The gas network is not still completely deployed all over the island. It is only deployed in the most populated cities. The system is absent even in the whole Balearic Islands. A link with the Iberian Peninsula is present to guarantee electricity demand at times of maximum consumption.

In Gozo and Malta electricity is distributed to the users through a grid system. Natural gas is imported using liquefied natural gas (LNG) tankers to an LNG floating storage unit at the power plant. There is no distribution system for natural gas since this is solely used for electricity generation.

In Larnaka District there is no natural gas delivery system. The electricity delivery system is managed by the Electricity Authority of Cyprus (public organization).

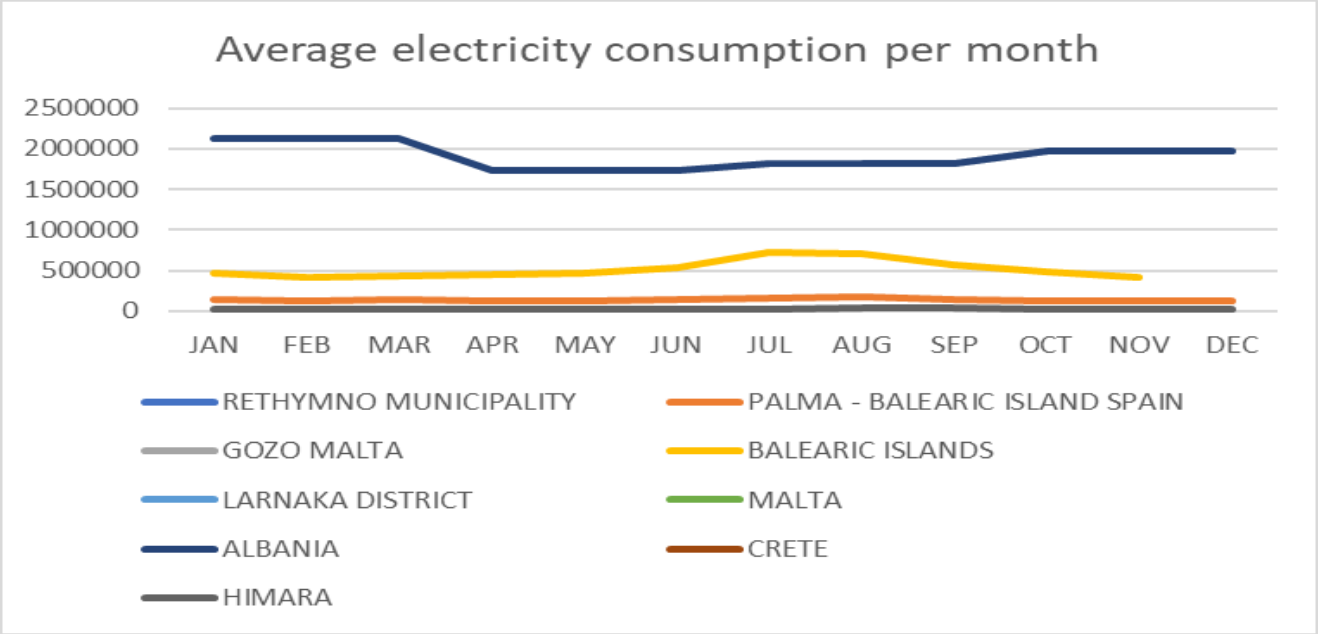
In Albania there was some progress in the gas sector and on interconnection lines. However, the country has to accelerate implementation of the connectivity reform measures, especially by removing legal and contractual obstacles to integrating energy markets. The electricity delivery system in Himara is managed by a public centralized entity which it has its own delivery system in every region and city. Natural gas is delivered by private petrol stations.
Regarding the promotion through economic incentives or specific laws or other solutions and the diffusion of renewable energy technologies four partners did not implement specific promotion measures while the other partners need to improve their ones.
Rethymno Municipality has a scarce presence of wind farms (private) and small photovoltaic plants (private). In the whole Crete, energy saving initiatives shall be focused on the sectors related to tourism like accommodation and food service activities. The collaboration between citizens, stakeholders, municipalities, the Region and the State should be strong and committed for a sustainable and smart energy and climate policy and planning.
The development of renewable energies in Palma is low because local people are concerned about landscape impact. In addition, until a year ago, there was a Spanish law punishing self-consumption. Currently subsidies are being offered in the Balearic Islands to citizens who wish to carry out such facilities in their homes. Electricity from renewable energy sources represents only a small part of the annual electricity production. There are also several projects of photovoltaic solar parks as well as solar plants in public buildings.
Malta drew up a comprehensive list of all ongoing, existing and planned policies and measures in line with their National Renewable Energy Action Plan to promote the growth of energy from renewable sources.
Cyprus, where Larnaka District is situated, has the highest potential for solar power of any European Union country, but currently imports most of its energy requirements. It currently has a 10 percent renewable energy share but, according to the Cyprus Renewable Energy Roadmap, the island could generate between 25 to 40 percent of its needed electricity supply by 2030 via RES.
The supply with prime energy in Albania has been dominated by fuel, hydropower plants and biomass. Domestic energy sector has been supported by energy imports, especially by fuel products and energy imports. Historically, energy needs have been accomplished almost exclusively by the hydropower plants. Water resources are the most important natural resources in Albania. However, the country suffers from significant

transmission and delivery losses. In Himara Municipality there is
not installed any renewable energy technologies (it may be supposed in this case that energy from hydropower which covers all Himara demand comes from Albanian grid).

The electricity consumption's trend in the last 5 years is increasing for four partners (Palma, Gozo, Larnaka District and Malta), decreasing for three partners (Rethymno Municipality, the Balearic Islands and Crete) and stable for one partner (Albania). Himara did not provide data.

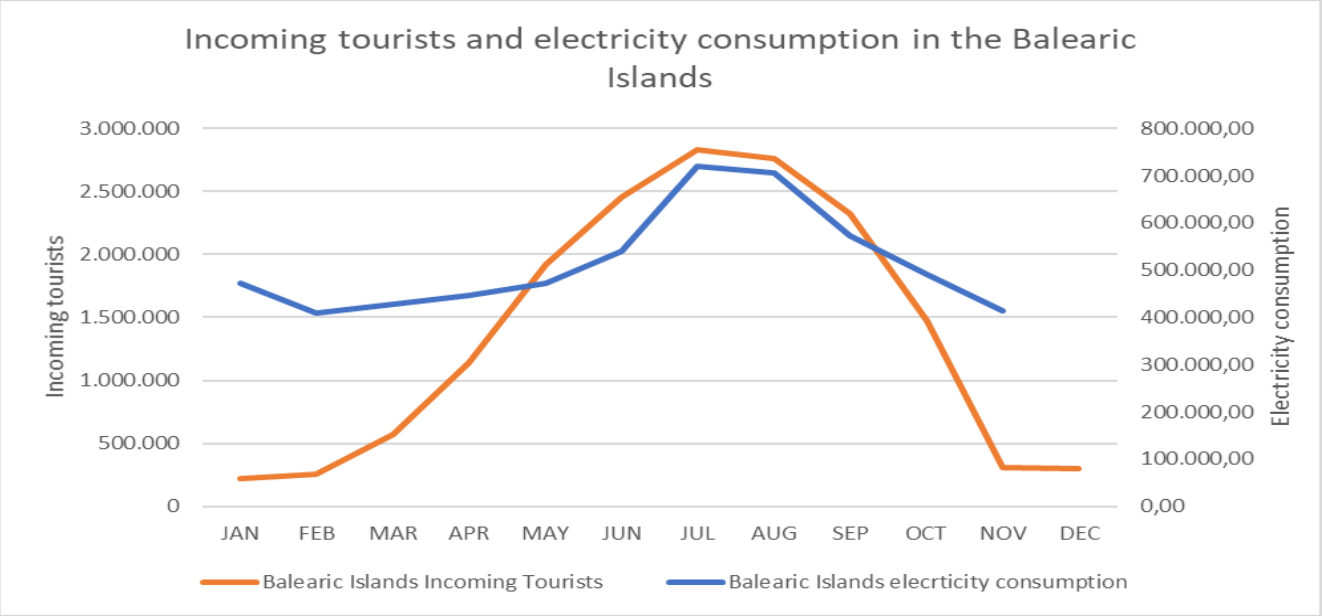
The natural gas consumption's trend in the last 5 years is increasing in all the partners that provide information (Palma, Gozo, the Balearic Islands and Malta).
Average electricity consumption is high for Albania, with a descending trend from March to April, a lower level for all period from April to October.
The Balearic Islands presents an increasing trend in all summer period. This is may be explained by tourist flows in summer season.

Figure 68. Average electricity consumption per month



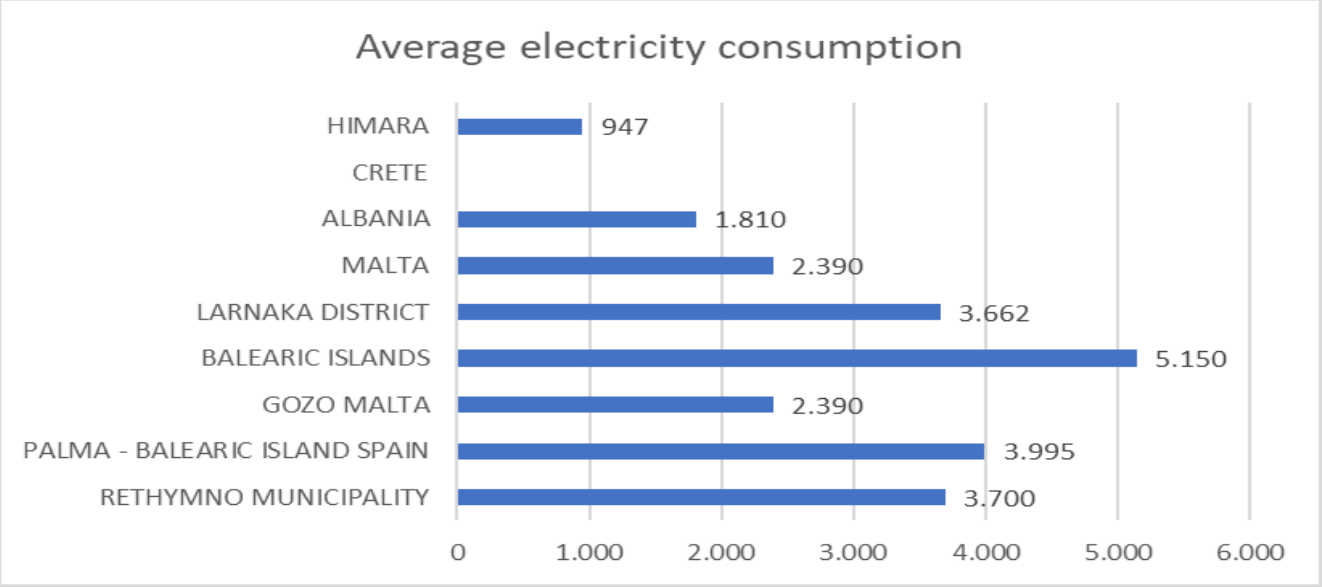
Comparing the number of incoming tourists and the average electricity consumption per months in the Balearic Islands, it seems to have a correlation. In fact, electricity consumption grows as number of tourists starts to grow in February and both touch the peak in July and August, when air conditioners are turned on due to high temperatures.

Figure 69. Incoming tourists and electricity consumption in the Balearic Islands



Average electricity consumption per capita is quite high, with the highest value registered in the Balearic Islands and the lowest in Himara Municipality. Region of Crete did not provide data.

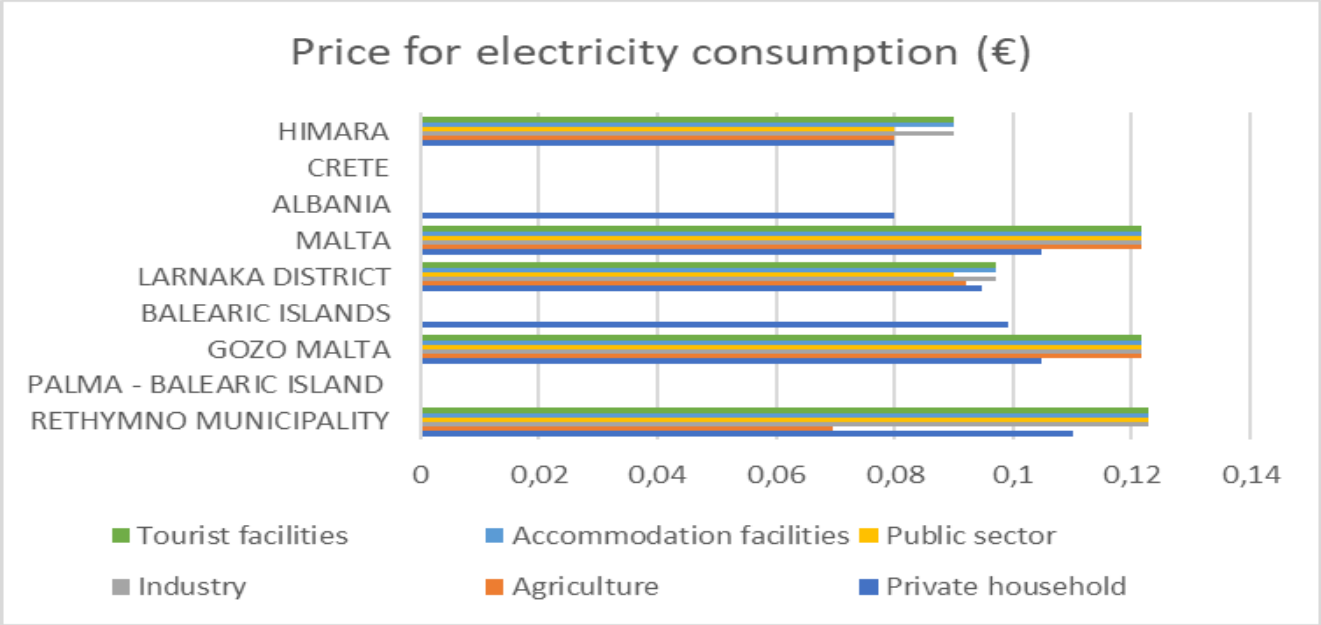
Figure 70. Average electricity consumption per capita



For almost all partners, non-household electricity is near 0,12 €/KWh. Only in Himara and Larnaka District prices are below 0,1 €/KWh. Considering that non household electricity prices in EU are in a range between 0,07 €/KWh and 0,17 €/KWh during the first half of 2019 (Eurostat 2019:a), the non-household electricity prices of partners' territories are in line with European average.

Household electricity prices are in a range between 0,08 €/KWh in
Albania and Himara Municipality and 0,11 €/KWh in Rethymno Municipality. Considering that household electricity prices in EU are in a range between 0,10 €/KWh and 0,31 €/KWh during the first half of 2019 (Eurostat 2019:a), household electricity prices in partners' territories are quite low. Crete and Palma did not provide data, Albania and the Balearic Islands provide only household data.

Figure 71. Price for electricity consumption



The section concerning **protected areas and land uses** aims at mapping the protected areas of the area according to IUCN protected area category system and the mainland uses of the area according to CORINE program.

All partners have, in their territories protected landscapes or seascapes.

Larnaka District is the partner with most different types of protected areas, from strict natural reserves to national parks, natural monument, protected area with sustainable use of natural resources and other types of protected areas. The Balearic Islands and Albania presents different typologies of protected areas too, due probably to their geographic dimension. Tourists presence in these areas must be monitored to ensure their protection.

In Gozo nature reserve and a protected landscape/seascape are present, while Palma has a national park. Crete did not provide data.

The main land use of the partners' territories (according to CORINE program) is agricultural use with arable lands. Artificial surface uses like urban fabric or industrial, commercial and transport units ranked second. Particularly high the extension of forests and semi-natural areas in Albania.

The last section related to **Circular Economy initiatives** intends to identify any issued laws or adopted solutions focused on such issue, following the recent EU Circular Economy directives.
In partners areas it emerges the need to implement or improve circular economy initiatives. In fact, there is not a specific plan on circular economy but only some policy interventions on waste management.
Rethymno Municipality's Waste Management Plan is stated to follow EU directives ad is under improvement.

The Balearic Islands and Palma, thanks to a regional law of waste
and contaminated soil which will enter into force next year (2021), will ban the use of any single-use plastic utensil.
In Malta (and Gozo) a Single Use Plastic Products Strategy has been implemented. Other interventions are under investigation. The Governance of Agricultural & Bio-resources Agency has identified a way forward for the management of slurries, which cannot be applied to soil. The policy direction is to dewater the slurries and separately treat the liquid fraction from the solid parts of the dewatered manure. The main emission reduction once this measure is implemented will be through the stabilization of the organic content. Additionally, this will allow that the current practice of having slurries discharged in the wastewater network to be discontinued, thus relieving wastewater management plants. Policies and measures charted out in the current Waste Management Plan 2014-2020 shall be further reinforced in the next Waste Management Plan 2021-2030. The ultimate objective remains invariably the efficient use of resources to attain the ambitious waste targets agreed to recently.
Cyprus, where Larnaka District is situated, has been a harmonization with the CE directives. The circular use of materials in Cyprus was 2.3% in 2016, well below the EU average (11.7%). In the other hand, Cyprus has higher than the EU28 average as to the number of people who are employed in the sector of circular economy (1.99% of total employment in 2016 compared with the EU average which is 1.73%). At present there is not a general policy framework for circular economy in Cyprus. Policy measures and funding and other means of promoting circular economy still rely heavily from financing from the European Structural and Investment Funds.
In Albania some laws are present even though not specifically focused on Circular Economy, as for instance the law on Integrated Waste Management, Environmental Protection, a regulation on treatment of construction waste and rules for the control of PCB/PCT disposal. Crete did not provide info on circular economy initiatives.

6.4 Preliminary conclusions

Filling out the document *"Partners' territories preliminary information"* by INCIRCLE partners has represented a fundamental step in project development, since it has allowed to collect precious data and useful information about the territories involved in the project, able to define the characterization of such areas. From the analysis carried out, it is possible to draw some preliminary conclusions regarding specific environmental-socio-economic aspects of the partner territories.

The partners show considerable variability in terms of the number of inhabitants due to their different sizes and scale. The majority presents an increasing trend in the number of residents in the last 5 years, indicating that such areas in a phase of development and population growth.

The territories analyzed are tourist destinations with a significant number of tourist presences and an increasing trend over the last 5 years. Among INCIRCLE partners, the Spanish area, with the Balearic Islands, presents the highest tourists flows, followed by the Greek island of Crete. Albania records relevant tourists flows, mostly due to partner's scale as it represents a national partner.

The greatest number of tourists is recorded in summer months, in particular between June and August, where the highest attendance values for all the partners occur. However, during the year, there is a certain variability in the distribution of tourists among the partners. Some countries have a massive and accentuated tourist presence in the summer months compared to the winter months, such as Albania or the Balearic Islands. It may be assumed that their tourist offer is very targeted for a type of tourism that takes place in the summer months.

Other partners have a distribution that presents slight differences between the number of tourists in the summer and winter periods, due probably in part to a certain degree of appeal also in the other months of the year and in part to a lower ability to attract tourists in the summer months, as Malta (at national level) and Larnaka District (at regional level). In terms of interactions with local residents, the tourist presence requires particular attention in some areas as the Balearic Islands and Region of Crete, where during summer months the number of tourists is higher than the number of inhabitants. In other partner territories such condition does not occur, as in Albania.

In all partners' territories both domestic and international tourism are present, but the latter is certainly the one that contributes more to the value of the tourism sector and also to the economy in general. Such evidence is corroborated especially in some areas where tourism represents undoubtedly the most important sector, as for instance at local level Rethymno Municipality, Palma City Council and Gozo and at regional level the Balearic Islands. All partners declare a very varied type of tourism. The fact that these destinations attract different categories of tourism may explain the high number of incoming tourists during the whole year in certain territories. In terms of number of tourist facilities, the Greek area (Region of Crete and Rethymno Municipality) along with the Spanish one are the best equipped and with the most varied offer in terms of accommodation typologies. It may be supposed that the higher number of tourists during the whole year may require a higher number of different typologies of accommodation facilities.

Regarding the economic characteristics, it emerges that such territories do not present a highly developed industrial fabric, with a limited number of companies. Generally, the first economic sector is the retail, followed by tourism sector, to underline its relevance in the economy of the countries involved. The Spanish area is the one with the highest presence of tourism companies compared to the number of total companies. Albania still has development margins, since tourism companies are quite limited. An exception is represented by Himara Municipality, which instead has a relevant share of tourism companies compared to the total amount of companies.

Concerning mobility, partners present opportunities for improvement. The Spanish area is the most easily accessible given the numerous possibilities offered in terms of available transport terminals present in the area. Mobility issues are claimed mainly by local partners, such as municipalities often reachable only by cars. In general, it emerges that public transportation should be strengthened to increase destinations' reachability and limit the use of private cars. The use of personal vehicles is high among all partners, and, in some cases, it is exacerbated by the morphological conformation of the territories. The presence of tourists is a significant problem that generates pressure on the mobility services offered, for which they are not normally charged. For this reason, in some cases it results impossible to satisfy all tourists' needs in terms of inner mobility connection. The massive use of rental cars leads to problems related to pollution and congestion, as well as traffic accidents due to poor familiarity with the inadequate conditions of roads.

Sustainable mobility initiatives have been undertaken by some partners, mainly in terms of strengthening of public transport, adopting integrated ticketing, improvement of the pedestrian and bicycle lines supply, intelligent traffic control systems, incentives for public mobility. However, these are often uncoordinated and not integrated initiatives. Even though these solutions go in the right direction, still there is the need for further improvements. Ambitious sustainable mobility actions have been undertaken locally by Rethymno Municipality, which has developed various initiatives within a sustainable mobility plan, and at national level by Albania with a Low Carbon Transport Plan (LCTP) which is currently developing in two cities.

With regards to initiatives of green urban mobility, it emerged that some actions are common between the different territories, as for instance initiatives of bike-sharing, scooter-sharing, and car-sharing, even electric ones. Similarly, additional solutions regard electric or natural gas bus system and charging sites for electric vehicles. Moreover, bicycle lines and walking networks are quite widespread. The case of Larnaka District is worthy of mention, since it has developed a sustainable mobility action plan.

Municipal Solid Waste (MSW) production is quite high in almost all partners areas and has been growing during the past 5 years. During the last year, the partners that generally presented a greater number of tourists also had a high level of MSW in the summer months, as the Balearic Islands and Larnaka District. A possible correlation between these two phenomena may be supposed. Even in small municipalities, where the presence of tourists is not so strong compared to the other partners, it may be supposed that such tourist flows are enough to increase waste production consistently. However, other cases, like Palma City Council, ,manifest a correlation that is less evident with a flatter MSW production trend during the entire year, probably indicating that other factors affect such high level of MSW production.

Regarding recycling and disposal rates, data are not comforting. All partners' territories record low recycling rates, even if with positive trends in the last 5 years, and very high disposal rates. It is advisable to work more on such issues, in order to reduce solid waste production, promote recycling and decrease disposal. In very few cases, there is a door-to-door collection service, generally limited only to the urban center. Waste transportation involves various problems due to the lack of suitable treatment plants in the area and the consequent long distances to the closest incineration plants or landfills.

Waste prevention initiatives are widespread among all partners, generally at implementation phase and still not fully developed. The most common measures undertook refer mainly to citizenship and tourist training and information systems, mandatory separate collection of waste and landfill taxes. The Spanish and the Greek areas, together with Malta seem to be the most proactive with numerous initiatives and projects. In the Balearic Islands, a regional law establishes a series of objectives in the field of prevention, reuse, preparation for reuse and recycling of domestic and commercial waste, while Palma City Council approved a program of waste prevention. At national level Albania has revised its national strategy on waste management, but implementation remains at an early stage.

As far as water resources are concerned, great use is made of resources coming from the subsoil which are by far the most stressed. Regarding the water supply system, a varied situation emerged from partners. In general, the water system is managed at municipal level and, in some cases, there is a mixed public-private system as the case of the Balearic Islands. The same applies to wastewater management, whose sewerage and treatment plants need to be enhanced.

Water consumption is increasing among all partners and has the highest consumption in the Balearic Islands and Malta. Similarly to waste production, it seems to exist a strong correlation between water consumption and the presence of tourists, as the case of the Balearic Islands. Such correlation is not observable for all the partners involved, as the case of Malta, where water consumption, although higher in the summer months, does not register a growth comparable to that of the number of tourists.

The status of groundwater bodies is low in almost all partners' areas. A critical situation is recorded both in terms of quantity and quality. The Mediterranean climate favors evaporation and the intensification of extreme events due to climate change has made the availability of water problematic. Human activities and the overexploitation

of water resources have caused common problems among partners, such as pollution due to the intrusion of marine waters, nitrates and phosphates pollution's under agricultural areas. The situation of water stress becomes particularly dramatic during the summer period because it is exacerbated by the presence of tourists, who are not aware of these critical issues and consume relevant amount of water as in their home country, amplifying water scarcity. This could lead to higher pressure on water resources. The presence of old infrastructures and frequent leaks aggravates this pressure.

Awareness campaigns to inform tourists about water scarcity issues are the most common actions undertook by partners. At national level, Albania has developed - not adopted yet - the integrated water resource management strategy. In Malta extensive water leak management and repair programs have been developed, investing even in an ambitious water reuse program to further fill in the gap between supply and demand. Other solutions often adopted refer to market-based instruments to ensure that the 'user pays' principle becomes the rule, an increasing water tariff as an incentive to limit water consumption or a well control system, forecasting future water demand, an extension of desalination plants, rationing or distribution of water in times of drought. In most cases, occasional interventions rather than real plans for the management of water resources have been conducted. There are rooms for improvements in terms of reducing the level of pollution and renovating the infrastructure to ensure greater water availability. In most cases, water reuse programs still seem not very developed and could represent important areas for improvement.

The majority of partners' territories are affected by the risk of subsidence and climate change has serious effects on numerous physical phenomena such as drought, flood, wind speeds, intensity of storms and sea-level rise.

Further issues regard energy. As energy resources, the most used in partners' territories are non-renewable ones: oils, natural gas and carbon. Oil and natural gas are used in so high percentages that some partners, especially at regional level, may incur some difficulties in shifting the current energy resources system towards a more sustainable one. Although present in all partners areas, the share of energy derived from renewable sources is very residual and has a large margin for improvement. Only at local level a higher percentage can be observed.

The electricity and natural gas distribution system is not always well structured. The morphological conformation of some territories does not support such system, as for instance the case of islands far from the mainland. At the local level, the distribution system is often managed centrally by a public entity and transportation in these areas is particularly difficult: the electricity distribution network is not very developed and the gas distribution network is either not present or is delivered by private petrol stations. The situation is also similar at regional and national levels. In Albania there has been some progress in the gas sector and into interconnection lines. However, the country has to accelerate the implementation of the connectivity reform measures, especially by removing legal and contractual obstacles to integrating energy markets.

Regarding the promotion and the diffusion of renewable energy technologies, four partners do not implement specific promotion measures while the other partners provide some initiatives with room for improvement.

Local partners are those with a lower presence of installed technologies based on renewable sources, generally with small private plants. It may be due to the difficulty that a small municipality may encounter in investing consistently in renewable energies. At regional level, it seems curious the case of the Balearic Islands, where a law, now no longer in force, punished self-consumption of energy and thus, not encourage the spread of renewable energy plants. The production of renewable energy is quite limited also in the Larnaka District, but according to the Cyprus Renewable Energy Roadmap this should increase. At the national level, only Malta has

developed a National Renewable Energy Action Plan to promote the growth of energy from renewable sources. In fact, in Albania the electricity supply has always had a strong hydroelectric component, but in recent times, it has increasingly relied on energy imports and the use of oil is now widespread.

The potential of renewable energies has not yet been fully understood and has broad room for improvement, as well as energy plans for the diffusion of RES are not very widespread.

Electricity consumption trends in the last five years show differences between partners: increasing for four partners (Palma, Gozo, Larnaka District and Malta), decreasing for three partners (Rethymno Municipality, the Balearic Islands and Region of Crete) and stable for one partner (Albania). Trends in natural gas consumption are growing in all partners' areas, indicating that this energy source is maybe the one that will play a major role in the upcoming years. Electricity consumption trends during the last year display some differences too. For some of the partners, consumption remains substantially flat during the year with slight variations. For others, such as the Balearic Islands, electricity consumption peaks in the summer month. Probably even in this case, a cause may be imputed to the massive presence of tourists during summer times.

Protected areas are present in all partners' territories. Tourists presence in these areas must be monitored to ensure their protection.

Referring to initiatives focused on Circular Economy (CE), it emerges the needs to extend, improve or implement such actions in the partners' areas. In fact, none of the partners has issued a specific plan on circular economy, mainly implementing policy interventions on waste management. Potentially local partners may encounter greater difficulties in developing such solutions, even if the case of Rethymno Municipality indicates that an inversion is possible. In fact, the Waste Management Plan of Rethymno strictly follows EU CE directives and is currently under improvement. Solutions at regional level have yet to be developed. In Larnaka District there is not a general policy framework for CE and the circular use of materials is well below the EU average. At national level, some plans have been developed, as for instance the case of Malta that has implemented the Single-Use Plastic Products Strategy for the reduction of disposable plastics. On the contrary, in Albania, although there are some laws on environmental aspects related to waste management, there is not a specific focus on the circular economy.

In terms of circular economy, it emerges that is a very critical issue for partners, since actions geared to CE have not been developed. At the same time, it represents an important opportunity since the recent EU Circular Economy directives. A strong effort in terms of collaboration and engagement of all actors is required at any level.

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