Ecotourism Impact Report

Assessment of the environmental impact of tourists in DestiMED PLUS project destinations

DestiMED PLUS Project | Ecotourism in Mediterranean Destinations: From Monitoring and Planning to Promotion and Policy Support

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Executive Summary

Prepared within the context of the DestiMED PLUS project funded by the InterreMED Program, this report provides an assessment – realized through an Ecological Footprint extended Multi-Regional Input-Output (EF-MRIO) approach – of the anthropogenic pressures placed upon the Earth ecosystems by the regular tourists usually visiting the 6 countries (i.e., Albania, Croatia, France, Greece, Italy and Spain) in which the DestiMED PLUS Project pilot protected areas are located.

More precisely, this report quantitatively assesses the Ecological Footprint of various tourist typologies (i.e., daily excursionists and overnight visitors of both domestic and inbound origin) in the 6 considered countries, and compares such values with the Ecological Footprint of the average ecotourists experiencing the packages developed by each of the 9 pilot areas within the context of the DestiMED PLUS project. This comparison is intended to "prove with numbers" whether the type of tourism (i.e., ecotourism in and around protected areas) developed and promoted by the DestiMED PLUS project has a lower impact on the planet than regular mass tourism.

To further contextualize the project's findings and provide benchmark values to understand whether (and eventually the extent to which) properly conceived and constantly monitored ecotourism offers can help reduce the impact of tourism activities, results are also compared with the Ecological Footprint of destinations' residents, and of tourists when at home in their country of origin.

Main Findings

Results of this study show that:

- During the 2014-2019 period, the overall Footprint of the tourism sector in the 6 countries considered in this study has increased by 8%, going from 107 to 115 million gha.
- The highest increases in tourists' Footprint were found in Albania (+26%) and Greece (+23%), although in 2019, tourists visiting France, Spain, and Italy contributed the most to the Footprint of the 6 considered countries.
- In 2018, the latest year for which both tourists' and residents' National Ecological Footprint Accounts are available, tourists contributed on average to 18% of a country's Ecological Footprint, with values ranging from 10% in Italy to nearly 34% in Croatia.
- Irrespective of the country, the most relevant driver of the Ecological Footprint of regular tourists was found to be *Transport*, which includes both the transport to reach the destination and the travel at destination, and represents on average 60% of the total Ecological Footprint. *Other* expenditures (e.g., leisure activities such as culture and sports and organizational expenses such as tour operator and tourist guides) were found to be the second Footprint driver, followed by *Accommodation* and *Food & drinks*.
- Such results of the drivers' analysis depict a slightly different picture than the results of the ecotourism packages' Footprint in which, leaving aside the Footprint associated with reaching a destination (the single most important driver), the main Footprint driver at destination was found to be *Food & drinks*. This is explained not necessarily by the lowest value of *Food & Drinks* for regular tourists, but rather by the fact that *other expenses* and *accommodation* have a higher Footprint for regular tourists compared to ecotourists (for which the selection of small, locally operated accommodation facilities and that of outdoor activities - often not requiring motored vehicles - play a key role in lowering their Footprint).

- Looking at the Ecological Footprint of an average tourist, the highest Ecological Footprint per bednight was found in Spain (0.060 gha tourist^{-1} day^{-1}), France (0.059 gha tourist^{-1} day^{-1}), and in Albania (0.051 gha tourist^{-1} day^{-1}), while the lowest was found for the tourists visiting Croatia (0.033 gha tourist^{-1} day^{-1}).
- When looking at tourists types (i.e., domestic vs. inbound tourists), 2019 results show that the average overnight domestic tourist presents a lower Ecological Footprint than the average overnight inbound tourist in Croatia, Greece and Italy; conversely, domestic tourists have a higher Ecological Footprint than inbound tourists in Albania, France and Spain. The dynamics contributing to such heterogeneous situations were beyond the scope of this report, and are thus to be still fully investigated.
- When comparing the Ecological Footprint per tourist per day (i.e., the Ecological Footprint of a tourist's bednight) of a regular tourist with thar of the DestiMED PLUS packages in each of the 6 DestiMED PLUS destinations, we found ecotourists to have a lower pressure (-37% on average) on the earth resources and ecosystem services, with values ranging from -1% in Albania (Divjake – Karavasta National Park) to -59% (Garrotxa Volcanic Zone Natural Park). This is a very important finding as it supports the claim that indeed the type of tourism promoted by DestiMED PLUS (and the MEET association more at large) places a lower Footprint on the Earth ecosystems than regular mass tourism (provided that it is promoted to proximity markets, as explained in the report).
- Once at destination, the Ecological Footprint of a tourist enjoying a DestiMED PLUS package (thus leaving aside the Footprint of international travel) is about 8% lower than the Ecological Footprint that same ecotourist would have in its home country. There are, however, cases (e.g., Divjake – Karavasta National Park in Albania) in which the ecotourist's Ecological Footprint is higher than its Footprint back at home.
- Moreover, in 6 out of 9 ecotourism packages, we found the Ecological Footprint of the ecotourist at destination to be lower than that of the local residents, thus once again providing an indication of the low-impact lifestyle and consumption patterns promoted by the DestiMED/MEET model.
- When looking in details at the DestiMED PLUS ecotourism package's Footprint values, we found that traveling to a destination causes a Footprint on the planet's ecosystems higher than that of vacationing in such destination. Promoting a regional or proximity tourism coupled with the use of trains, cars, or boats as the main mean of travel to reach a DestiMED PLUS pilot area can thus help reduce the average Ecological Footprint of a tourist.

Conclusion

Our results show that reshaping the tourist offer has the potentiality to contribute reducing anthropogenic pressures on resources and ecosystem services and to increase the awareness of local stakeholders and service providers, thus spreading environmentally friendly best practices across the territory. As seen with the service providers involved in the DestiMED PLUS project, involving local tourism stakeholders in the development and monitoring of sustainable tourism alternatives can constitute a way to increase their environmental awareness and influence their daily practices, thus triggering a positive cascade effect throughout territories.

To close, sustainability has become a priority for destinations, as the protection and conservation of natural assets is critical for income, employment, and future generations. As the tourism industry recovers from COVID, a need is felt for alternative tourism to be planned and managed considering the destination's ecological assets, as well as the environmental impacts of tourism activities, to ensure that it does not follow the same unsustainable path as mass tourism.

1 Introduction and aim of this report

This document represents DestiMED PLUS Project deliverable 2.3.6 "Ecotourism Impact report," and provides an assessment of the environmental impact of regular tourists in DestiMED PLUS Project pilot areas. Its goal is to quantitatively assess the Ecological Footprint of average tourists in the 9 pilot actions, to be then compared with the Footprint of the ecotourists experiencing the project's packages.

Building on UN data, Ecological Footprint Accounting (EFA) measures humanity's demand on nature (namely the *Ecological Footprint, EF*) and the capacity of the planet's ecosystems to supply ecological resources (namely *biocapacity, BC*). When applied to tourism, EFA tracks the demand for natural resources and ecosystem services that are needed to sustain tourism's activities (Mancini , et al. 2018), finding application both at product and at destination level (Galli et al., 2022). Over the past two decades, the tourism sector has been investigated through Ecological Footprint Accounting, with applications focusing on the impact of services provided, of tourists as well as on tourism development scenarios (Patterson, et al. 2007; Hunter and Shaw, 2007; Li and Hou 2011). Recently, Footprint applications have also focused on analyzing the environment pressures due to the provision of ecotourism products (e.g., in the DestiMED and DestiMED Plus projects) and international travel (Patterson, et al. 2007; Mancini et al. 2022). In this report, EFA is used to define and calculate the demand for natural resources and ecosystem services of regular tourists at national level, focusing on the Mediterranean countries where the DestiMED Plus pilot Protected Areas are located: Albania, France, Croatia, Italy, Greece, and Spain.

In line with previous Footprint assessments of other sectors (see for instance Baabou et al., 2017; Isman et al., 2018; Galli et al., 2020), the analysis of the tourism sector deploys a top-down approach based on national data, building on an Ecological Footprint extended Multi Regional Input Output (EF-MRIO) model. The analysis conducted in this report assesses how much of the overall national Ecological Footprint is due to residents vs. tourists for the six nations included in the DestiMED PLUS Project throughout the 2014-2019 period. The daily Ecological Footprint of an average tourist visiting the country is then calculated by dividing the total Ecological Footprint of all tourists visiting a country in a year by the number of bednights spent in the visiting country.

Finally, an assessment of the Ecological Footprint associated with international travel is undertaken to complement the environmental sustainability assessment of the tourists visiting the 6 countries, as travel to destinations is known to be a significant driver of global carbon emissions (see Lenzen et al., 2018).

As tourism is approaching a post-COVID-19 recovery, it is key for destinations to ensure that the development of alternative tourism offers does not follow the same unsustainable path of mass tourism. As such, a need is felt for such alternatives to be planned and managed considering destination's resource limits, as well as environmental impacts associated with tourism activities (Solomon, Suborna and Zahoor 2021), which should span beyond the sole climate change issue.

Building on this research, this report first describes the Ecological Footprint approach at national and sector level based on the standard methodology used by Global Footprint Network (Chapter 2). Then it provides the methodology adaptation to assess the Footprint of the tourism sector and of international travels (Chapter 3). Finally, results are shown in chapter 4 for the 6 countries involved in the project and the 9 pilot actions; results implications and overall conclusion are discussed in chapter 5.

2 Methodology

2.1 Overview: Ecological Footprint Accounting

Human socio-economic activities fundamentally depend on the capacity of the planet's ecosystems to provide primary resources (e.g., food and fibers) and life-supporting services (e.g., sequestering carbon emissions). As such, Ecological Footprint accounting measures humanity's appropriation of key ecosystems' services (Mancini et al., 2018a) by answering a simple research question: *How much of the planet's (or a region's) regenerative capacity does a specific activity (or a set of activities) require from nature?*
To measure and map human dependence on biocapacity, Ecological Footprint accounting relies on two principles: additivity and equivalence.

Additivity: given that human life competes for biologically productive surfaces, these surface areas can be summed. The Ecological Footprint (EF) adds up all human demands on nature that compete for biologically productive space, such as providing natural resources, accommodating urban infrastructure, or absorbing excess carbon from burning fossil fuels. The Ecological Footprint then becomes comparable to the available biologically productive space, or biocapacity (BC).

Equivalence: biologically productive areas vary in their ability to produce ecosystem services (i.e., biological resources and services used by people). Therefore, areas are scaled proportionally to their biological productivity. As such, the unit of measurement for Ecological Footprint accounting, the **global hectare (gha),** represents a rate of biological regeneration equal to that of a world-average biologically productive hectare (see also Box 2.1). This regenerative productivity can be used for resource production, waste sequestration, or physical occupation, which are mutually exclusive (e.g., urban infrastructure can occupy productive areas).

BOX 2.1 - What is a global hectare?

A global hectare (gha) is an area-equivalent unit representing the capacity of a hectare of land with world-average productivity. Dividing the total biocapacity of Earth by the total number of bioproductive hectares yields the value of an average "global hectare". A gha is a measure of the inherent capacity of the biosphere to produce useful biomass that is harvested by humans.

A parallel with the unit CO_2eq can further clarify the nature of this unit. The release of 1 ton of CO_2eq does not mean that this amount has actually been released. Rather, it means that various greenhouse gases with the equivalent global warming potential of 1 ton of CO_2 have been released. Similarly, having an Ecological Footprint of 2.8 gha does not mean that 2.8 ha of physical land are used. It rather means that the equivalent capacity of 2.8 ha of land with world average productivity is needed to produce (via photosynthesis) the resources and services one demands – this biocapacity could be anywhere in the world and could be originating from an actual land area smaller or larger than 2.8 hectares.

The most widely used application of Ecological Footprint accounting is the National Footprint Accounts (NFAs), a framework annually published by Global Footprint Network, which provides annual accounts of biocapacity and Ecological Footprint for the world and nearly 200 countries, with historical data reaching back to 1961[1] (Lin et al., 2018); each NFAs edition provides updated results for the entire accounting timeline.

Describing Ecological Footprint Accounting at a glance goes as follow: for each country included in the NFAs, data on the amount of natural resources (e.g., food, fibers, timber, etc.) demanded (or carbon dioxide released) is first divided by the yield (or average carbon sequestration) of the ecological assets (i.e., land type) providing such resource (or sequestration services). The values obtained are then multiplied by equivalence factors and summed together to generate final national Ecological Footprint values in terms of hectare-

[1] National Footprint Accounts (NFA) data for all countries of the world is freely available at: http://data.footprintnetwork.org/#/. This continuously updated framework is based on United Nations (UN) data sets of over 15,000 data points per country and year.

equivalent units (i.e., global hectares, gha), according to the additivity and equivalence principles mentioned above.

The resources and services considered in the analysis – and the associated land-types (Figure 2.1) – includes plant-based food and fibre products, livestock and fish products, timber and other forest products, waste absorption (CO_2 from burning fossil fuels), and space for urban infrastructure (Borucke et al., 2013).

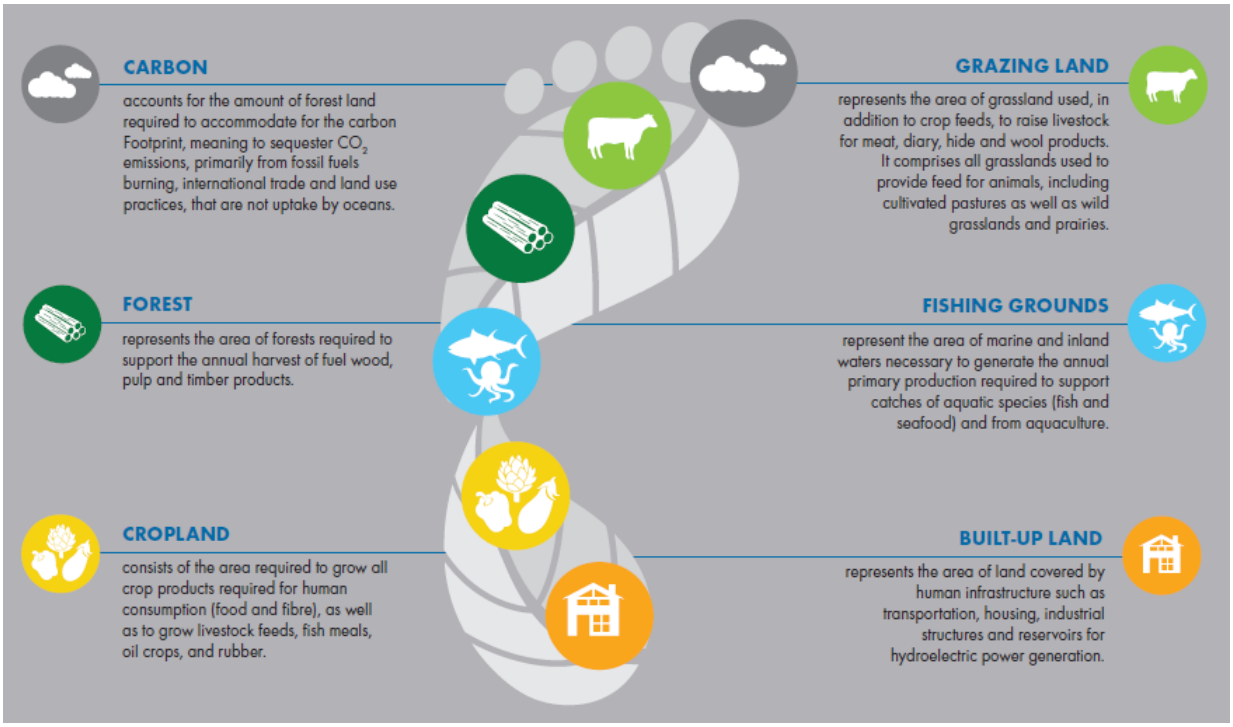

Figure 2.1 Major categories in Ecological Footprint and biocapacity accounting.

Based on a consumer perspective (see Box 2.2), the Ecological Footprint of a country is estimated by calculating the Ecological Footprint of all what is produced within that country and then adding the Ecological Footprint embedded in imports and subtracting that embedded in exports (see Figure 2.2). The Ecological Footprint (EF) is then compared to the biocapacity (BC) of that country, which is a measure of the ecological assets available within the national borders (including forest lands, grazing lands, cropland, fishing grounds and built-up land) and their capacity to produce renewable resources and ecological services sustained under current technology and management schemes (Mancini et al., 2018a).

BOX 2.2 – The consumer approach in Ecological Footprint accounting

In a highly globalized world in which goods and services are traded internationally, the place of goods production and related use of resources is usually different from where final products are consumed. Consequently, associated environmental impacts are manifesting far away from where their drivers occur.

The ***consumer*** approach deployed by Footprint indicators aims at assigning responsibility for human's impact based on where the final demand takes place (Galli, 2015b). This is opposed to the more common *producer* approach in which the impact of a given product is assigned to the place in which the production activity takes place, irrespective of where that product ends up being consumed – see for instance the IPCC method for the GHGs inventory (Bastianoni et al., 2004; Peters, 2008).

The Ecological Footprint methodology applies a consumer approach according to which the resources' consumption of any given product/activity is assigned to the end consumer of that product/activity, irrespective of where the product/activity is produced.

Ecological Footprint and biocapacity are both expressed in global hectares (gha), a unit representing area of world-average productivity (Galli et al., 2007; Box 2.1). Further details on the Ecological Footprint and biocapacity calculations are provided in Annex 1.

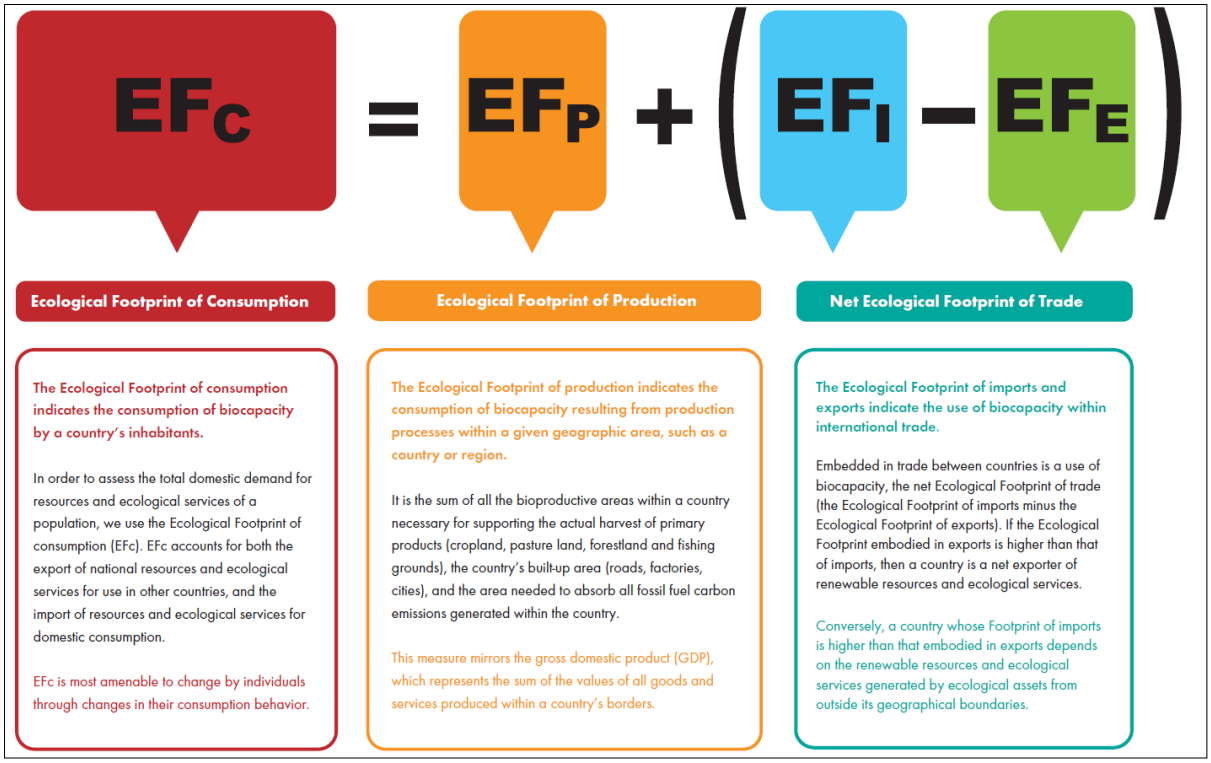

Figure 2.2 Tracking production, consumption, and net trade with the Ecological Footprint.

2.2 Consumption Land Use Matrix

Within the NFAs, Ecological Footprint results do not usually show which economic activities are posing a demand on resources but rather the consequences, in terms of land appropriation, of demanding the outputs of economic activities (Mancini et al., 2018a). Still, attributing the overall demand on nature to particular human activities is essential to then be able to understand our behavior and act for a more sustainable lifestyle. This requires an additional analytical step beyond basic Ecological Footprint accounting (Galli, 2015a) and such step is primarily represented by Environmentally-Extended Multi-Regional Input-Output Analyses (EE-MRIO) (Wiedmann et al., 2006).

Multi-Regional Input-Output modeling is an economic approach to track financial flows between countries' major economic sectors. MRIO models can be extended from financial flows to estimate resource flows by incorporating data from the National Footprint and Biocapacity Accounts. In the Environmentally-Extended Multi-Regional Input-Output Analysis conducted by Global Footprint Network, Multi Regional Input-Output (MRIO) tables from the Global Trade Analysis Project (GTAP) database[2] are used to translate land-based Ecological Footprint results drawn from the NFA into activity-based Ecological Footprint results (see Weinzettel et al., 2014 for further details), thus shifting the debate from where human pressure is being placed to the human activities responsible for such pressures (Galli et al., 2017). Such environmental extension of the GTAP MRIO model with Ecological Footprint data is named Ecological Footprint extended

[2] Global Trade Analysis Project (GTAP 9 Data Base) consists of 57 sectors – 12 of which are agricultural – and includes 140 countries and regions (Narayanan and McDougall, 2015).

MRIO (EF-MRIO) analysis and the results it provides allow to track detailed resource flows between countries' major economic sectors, to further sub-categorize national Footprint data into more specific consumption and industry related components. The outcome of this additional calculation step is called Consumption Land-Use Matrix (CLUM).

CLUMs provide a breakdown of a country's consumption Footprint into its components following the UN COICOP classification. According to the COICOP[3] classification, expenditures are due to 1) the household consumption; 2) government; 3) Gross Fixed Capital Formation (GFCF). The household consumption component refers to consumables paid for by households and can be also disaggregated into 12 consumption categories and related Footprint values. Government refers to the consumables paid for by government, such as school supplies in public schools, police equipment, and paper for public administration. Gross Fixed Capital Formation refers to lasting goods and assets, such as construction of buildings, roads, factories, and associated equipment.

Each sector produces a specific set of products and services. An EE-MRIO analysis thus estimates how much Footprint it takes, on average, per dollar of value generation ("Footprint intensity per dollar value-add"). This can be compared across other sectors or the same sector in different countries. It can also be benchmarked against global biocapacity/global GDP, or with a country's biocapacity/country's GDP to determine a country or sector's resource efficiency.

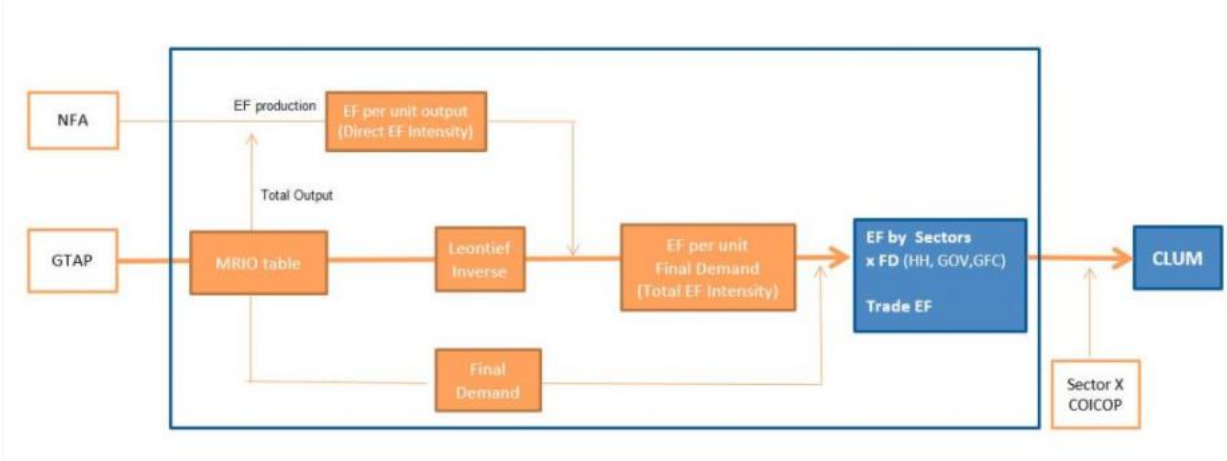

Figure 2.3 Structure of Ecological Footprint MRIO analysis.

[3] The Classification Of Individual Consumption According to Purpose (COICOP) is the internationally agreed classification system for reporting household consumption expenditures. It is published by the United Nations Statistics Division for use in expenditures classification, National Accounts, Household Budget Survey and the Consumer Price Index.

3 Ecological Footprint application to the tourism sector

3.1 Tourism definitions

Tourism and Travel is a quite complicated sector given its interactions and overlaps with other sectors for providing offers and services to the final users. To guide the report's readers and help set system boundaries, the main tourism definitions drawn from the UNWTO (United Nations World Tourism Organization) glossary page [4] and the UN Statistics Division (UNSD, 2010) are listed here.

For tourism statistics, **a traveller** is someone who moves between different geographic locations, for any purpose and any duration. **A visitor** is a traveller taking a trip to a main destination outside its usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited. These trips taken by visitors qualify as tourism trips (see Figure 3.1).

A visitor is then classified as:

- **tourist (or overnight visitor)**, if its trip includes an overnight stay, or
- **same-day visitor (or excursionist)**, if its trip does not include an overnight stay.

Arrivals at the border refers to the number of international visitors who arrive during a given year in a given country. This indicator includes non-resident citizens of the destination country, but excludes foreign residents in the given country.

A night spent or a bednight (overnight stay) is each night a guest / tourist (resident or non-resident) actually spends (sleeps or stays) in a tourist accommodation establishment or non-rented accommodation.

Domestic visitor is therefore a visitor who travels within its country of residence; it is a domestic visitor and its activities are part of domestic tourism. Conversely, an **International visitor** is an international traveller who qualifies as an international visitor with respect to the country of reference if: (a) it is on a tourism trip and (b) it is a non-resident travelling in the country of reference or a resident travelling outside of it.

Therefore, Tourism could be defined either as domestic, inbound or outbound tourism.

Domestic tourism includes the activities of a resident visitor within the country of reference either as part of a domestic tourism trip or part of an outbound tourism trip.

International tourism, can be either inbound tourism or outbound tourism:

- **Inbound tourism** includes the activities of a non- resident visitor within the country of reference on an inbound tourism trip.
- **Outbound tourism** includes the activities of a resident visitor outside the country of reference as part of an outbound tourism trip.

For the purpose of this research, a stricter definition of domestic tourism has been applied, excluding the activities related to outbound trips. This choice is motivated by the nature of the research, which sees at its centre the destination country, with the scope to track the impact of tourism in the country of reference, due to both residents (domestic tourism) and non-residents (inbound tourism). For the same reason, outbound tourism' impact is not tracked in this assessment.

[4] https://www.unwto.org/glossary-tourism-terms Glossary of tourism terms

Both daily visitors (or excursionists) and tourists (overnight stays) have been taken into consideration in the Footprint assessment conducted within the DestiMED Plus project (see Figure 3.1), the first ones to assess the overall impact of tourism activities in the country (i.e., both due to tourists and same-day visitors), and the latter to assess the Ecological Footprint per tourist per night, and benchmark it against the Ecological Footprint values from DestiMED PLUS project.

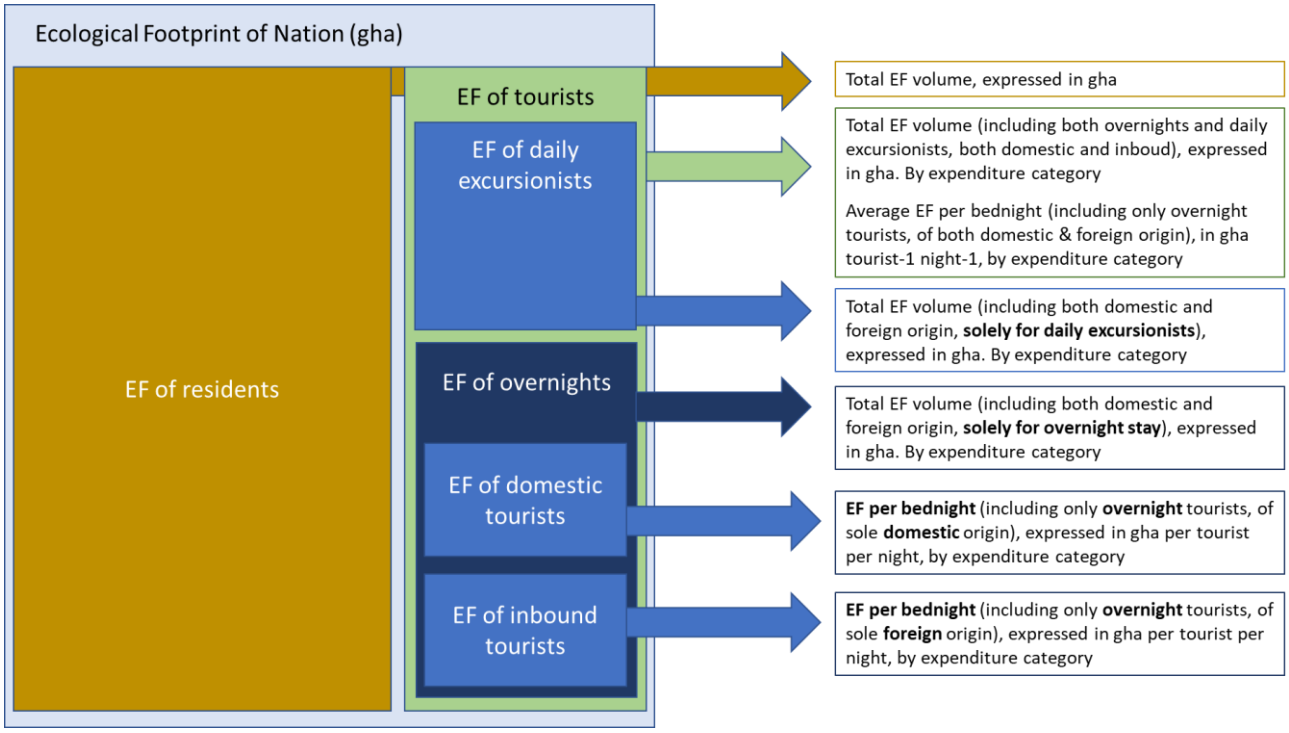

Figure 3.1 Flow chart and definitions of the Ecological Footprint assessment for a country's tourists.

3.2 Tourism Ecological Footprint: MRIO analysis using Tourism Expenditure

The Ecological Footprint of the overall tourism sector in the 6 Mediterranean countries involved in the DestiMED Plus project (i.e., Albania, Croatia, France, Greece, Italy and Spain) is here investigated building on the Ecological Footprint extended Multi Regional Input Output (EF-MRIO) model (see chapter 2, section 2.2). Under such model, MRIO tables from the Global Trade Analysis Project (GTAP) database[5] are used to translate land-based Ecological Footprint results into activity-based Ecological Footprint results (for more details see Galli et al., 2017 and Weinzettel et al., 2014).

The model deploys a top-down approach and a multi steps process based on national data to: 1) calculate the national level Ecological Footprint of Production (EF_P) for each country involved in the analysis (reference year 2014), 2) use national EF_P results as input to the EF-MRIO model to derive Ecological Footprint of final demand according to economic sector, and 3) apply tourism expenditure data to allocate Ecological

[5] Global Trade Analysis Project (GTAP 9 Data Base) consists of 57 sectors – 12 of which are agricultural – and includes 140 countries and regions (Narayanan and McDougall, 2015).

Footprints values to specific tourism types (i.e., domestic and inbound) and expenditure categories (i.e., Accommodation, Food & Drinks, Transport, Other) as described in Figure 3.2.

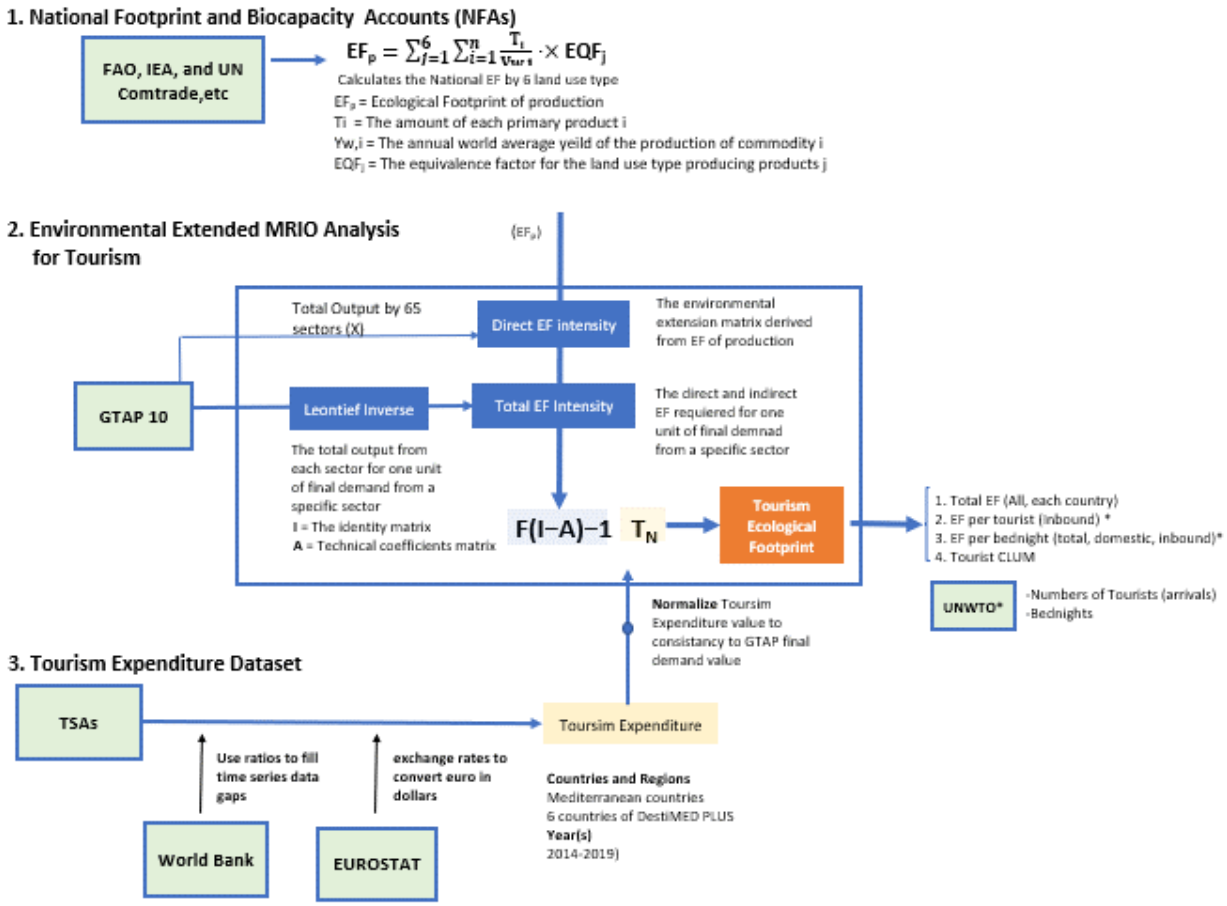

Figure 3.2 Flowchart of Tourism Ecological Footprint Calculation Methodology

Starting from the National Footprint Accounts for the countries involved in the project, and by means of the above-mentioned EF-MRIO model, national level sectoral Footprint results are first derived to reflect the overall demand on Footprint land types due to the 57 sectors considered by the GTAP model[6]. Total Ecological Footprint intensities, $\mathbf{F(I-A)^{-1}}$ (gha/million USD), are then calculated for the 57 sectors, and tourism expenditure $\mathbf{T_N}$, normalized using GTAP final demand value. The normalization is needed to adjust the intensities considering the different GDP per country. For this specific approach, instead of using GDP values, household expenditures from EUROSTAT and GTAP have been applied, since household expenditures are relatively closer to tourism activities than Government and Investment values (see Table 3.1).

By integrating tourists' expenditure data (from both domestic and inbound tourists) with the MRIO model, it is then possible to associate each tourism expenditure to the correspondent GTAP sector: Ecological Footprint Intensities (EF intensities gha/million USD) of tourism-related sectors (e.g., transport, restaurants, accommodation, etc) are multiplied by tourists' expenditures in such sectors, to assess the Ecological Footprint associated with any expenditure (and thus consumption) made by both resident visitors and non-

[6] For further details see: https://www.footprintnetwork.org/resources/mrio/ as well as https://www.sciencedirect.com/science/article/pii/S0264275119302306

resident visitors within the economy of reference. This analysis sheds lights on how much of the national Ecological Footprint is due to tourists for each of the 6 countries, in the 2014-2019 period.

Table 3.1. Values used for normalizing Footprint intensity values.

	H (GTAP)	H. Expenditure	Normalization rate
Albania	8,062	10,627	0.759
Croatia	28,756	34,245	0.840
France	1,403,730	1,491,794	0.941
Greece	155,241	159,358	0.974
Italy	1,224,504	1,298,159	0.943
Portugal	134,750	147,394	0.914
Slovenia	23,907	27,020	0.885
Spain	773,070	799,207	0.967

An hybridization of this top-down approach is then implemented in the assessment of inbound tourism transportation: for this assessment, in fact, per capita results of the international travel analysis (values per capita per trip) (see sub-section 3.5) are used instead of the expenditures, to reflect the inbound tourism flow of each specific country under investigation. The following elements are being considered: 1) the mode of transportation used (train/boat/plane), 2) each destination's top-five arrival markets, and 3) the number of arrivals from each of the 5 top arrival markets. The total Ecological Footprint of travelling to destination is obtained by multiplying the per capita figures by the number of visitors to the destination.

The daily Ecological Footprint per tourist is estimated applying the same approach as for the total Ecological Footprint, but running the analysis for the sole overnight tourists, thus excluding the contribution of daily excursionists (see section 3.3. for more details). Per capita daily values are obtained by dividing the Footprint of all tourists visiting a country (excluding daily excursionists) in a year by the number of bednights spend at destination. Per capita values from the international travel assessment are divided by the average length of stay in the destination to estimate the transport component of the individual inbound tourist.

For each assessed country the following set of results is show (see also Figure 3.1):

1. Total Ecological Footprint of Tourists in a year, and its main drivers
2. Ecological Footprint per bednight (total, domestic, inbound)
3. Comparison between the Ecological Footprint per bednight of a regular tourist vs. that of a tourist of the DestiMED PLUS pilot areas' packages.

3.3 Tourism data source for DestiMED PLUS countries

Tourism data sources are multiple and differentiated as a wide range of databases, looking at different aspects (e.g., expenditures, number of establishments, number arrivals/departures, etc) exists due to the "transboundary" nature of the sector. Moreover, data collection for tourism statistics among countries is often not harmonized, leading to data gaps and preventing easy comparison among countries and years. This issue is even more marked when looking at more granular statistics, such as statistics at regional/local level or distinguishing between tourism types (inbound, domestic and outbound) and visitors (tourists vs. same-day visitors).

As such, by putting at its center the country of reference, the analysis conducted in this study is limited at assessing inbound and domestic tourism at national level.

Considering the approach described in the section 3.2, input data for the analysis is as follows:

- Domestic and inbound expenditures by class of visitors and by products
    - Inbound tourism expenditure by products and classes of visitors: tourism expenditure of non-resident tourists and same-day excursionists by tourism products.
    - Domestic tourism expenditure by products, classes of visitors and types of trips: domestic tourism expenditure of resident tourists and same-day excursionists on domestic tourism trips by tourism products.
- Number of arrivals
- Number of domestic and inbound bednights
- Household expenditures

Expenditures of resident tourists and non-residents tourists are necessary to calculate daily per capita Ecological Footprint values, while expenditures of both tourists and same-day excursionists together (i.e., visitors – see section 3.1) are applied to capture the total Ecological Footprint due to the overall tourism inflow (see Figure 3.1).

The different tourism products/services are then clustered in four main categories of expenses: *Transport*, *Food&Drinks*, *Accommodation* and *Other*, the latter mainly including all the products that do not fit within one of the first three categories (e.g., culture, sport, shopping, etc.). Searching for expenditures data, several datasets were been taken into consideration, including the World Bank[7], TSAs[8], EUROSTAT[9] and UNWTO[10] (see Annex 3 for details on how each dataset has been used and how the different datasets have been integrated):

- **World Bank** dataset presents the most complete time series for all the concerned countries, but it provides only total tourism expenditure values. Thus, it does neither have the break down by category/product nor by type of visitors (tourists/same day visitor). Furthermore, within the domestic expenditure it is not possible to distinguish between the expenditure related to domestic trips and the one related to outbound trips.
- **UNWTO dataset** presents a simple breakdown, diving expenditures between expenditures for travel and passenger transports. Most of the countries are represented, except for Spain, which presents data gaps. Domestic expenditure is also not represented.
- **EUROSTAT dataset** presents a full breakdown in categories for most of the countries of the analysis, exception made for Albania, but it misses data on inbound tourism.

[7]Domestic Tourism Spending - TCdata360 (worldbank.org): https://tcdata360.worldbank.org/indicators/h0daf6e39?country=ALB&indicator=24655&countries=BRA&viz=line_chart&years=2006,2021 ; International tourism, number of departures - TCdata360 (worldbank.org): https://tcdata360.worldbank.org/indicators/ST.INT.DPRT?country=BRA&indicator=1842&viz=line_chart&years=1995,2018

[8] TSA Greece: http://www.mintour.gov.gr/userfiles/de145b9b-fc1f-4650-91eb-b6315a192e52/Activity_1_1_1.zip TSA Spain: http://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736169169&menu=ultiDatos&idp=1254735576863 ; TSA Croatia: https://www.dzs.hr/Hrv_Eng/publication/2018/12-04-01_01_2018.htm; TSA Italy: https://www.istat.it/it/archivio/207454; TSA Portugal: https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_cnacionais2010&contexto=cs&selTab=tab3&perfil=220674570&INST=2206173 55&xlang=en; TSA Slovenia: https://www.stat.si/StatWeb/en/News/Index/7848

[9] Statistics | Eurostat (europa.eu): https://ec.europa.eu/eurostat/databrowser/view/TOUR_DEM_EXEXP__custom_889416/default/table?lang=en

[10] https://www.unwto.org/unwto-tourism-dashboard

- **Tourism Satellite Accounts (TSAs)** for each one of the countries of the analysis presents data both on inbound and domestic expenditures, the latter distinguishing between the expenditure due to domestic trips and the expenditure due to outbound trips. Furthermore, it also presents a detailed breakdown by categories/products. Overall, all countries are represented, except for Albania, and the time series is not complete for most of the selected countries.

The TSAs dataset was thus chosen as main reference dataset for tourism expenditure because:

- it presents all the breakdown needed for the analysis, visitor vs. tourist (overnight) expenditures, detailed categories/products breakdown and inbound vs domestic expenditures (the latter, with the further distinction between domestic and outbound trips)
- constitutes the effort of UNWTO and the United Nations Statistics Division to strengthen countries in the methodological and operational foundations of tourism statistics in an integrated manner, including enhancement of the coherence of tourism statistics with other official statistics.

As TSAs dataset does not include data on tourism arrivals or bednights, arrivals and bednights data was taken from the UNWTO dataset, as it is the most complete dataset, both in terms of countries representation and time series. Finally, household expenditures data were taken from EUROSTAT, as well as exchange rates.

3.4 Assumptions and limitations of the TSA dataset

The TSA dataset presents data gaps both in countries representation and in the time series, following the list of the main limitations and assumptions needed to fill the data gaps:

- Albania's TSA is missing completely, thus Croatia's data was used instead. In order to provide a better representation of Albania's tourism expenditure, Croatia's data is adjusted using Albania/Croatia total expenditure ratio from the World Bank dataset.
- All TSAs miss some years' data, thus to fill the data gaps, conversion ratios year by year from the total expenditure data of the World Bank were used to complete the TSAs time series for each country.
- Spain's TSA does not differentiate between tourists and visitors' expenditure and, within the domestic expenditure, it also includes the "expenditures for trips abroad done in the economy of reference" (i.e., the residents' expenditures at the destination in preparation for the outbound trips). Thus, domestic expenditure is overestimated, as it includes a share of the outbound expenditure and the tourists' expenditures include daily excursionists' expenditures as well. To minimize the overestimate, both domestic and inbound expenditures were adjusted using the ratio from UNWTO arrivals distinguishing between overnight tourists and daily-excursionists.
- France's TSA only has data from year 2013, which even if it is outside this analysis' time series, it is used to ensure consistency. To determine the following years, as for the other countries, the ratios from the World Bank's totals were applied. As for Spain, also France's TSA does not distinguish between visitors and tourists and it includes the expenditures form outbound trips. Thus, as for Spain, results are overestimated and to contain the overestimation, the ratio from UNWTO arrivals distinguishing between overnight tourists and daily-excursionists was used to calibrate the expenditures, both domestic and inbound.
- UNWTO source does not have data for Albania's number of bednights, thus data was extracted from the Albanian National Statistical Institute (INSTAT[11]).

[11] http://www.instat.gov.al/en/home.aspx

3.5 Ecological Footprint of International travel

To complement the Ecological Footprint of the DestiMED PLUS packages conducted within the project – which only include the environmental impact at destination – and be able to compare those values with the Footprint values of regular overnight tourists calculated in this report, an assessment of the Ecological Footprint associated with the international travel needed to reach each pilot action is conducted, as travel to destinations is known to be a primary drivers of the global carbon emissions (Lenzen et al., 2018).

Given a pool of selected source countries of the tourists targeted for enjoying the ecotourism products (see Table 3.2), the analysis focuses on two modes of public transportation: by air and by ground, through a combination of train and ferry transfers, while ground travel by private vehicles (e.g., cars) is not considered. In running the analysis, visiting a PA at destination is assumed to be the sole reason for traveling thus allocating the whole travel Footprint to that destination.

In the case of air travel, the ICAO Carbon Emissions Calculator (ICAO, 2018) is adopted as a tool to estimate the emissions of carbon attributed to each passenger. ICAO calculator allows passengers to estimate the emissions attributed to their air travel by inputting information about the flight (i.e., departure and arrival airports, including stopovers), yielding results in terms of CO_2 emission per passenger for the whole round trip. For the analysis related to tourists purchasing DestiMED PLUS ecotourism packages, the ICAO calculator is used to assess international travel considering 30 European capitals and 8 non-European cities (see Table 3.2) as potential places of origin, considering the nearest international airport of arrival to each of the 9 PAs. Once the CO_2 emissions values per passenger are obtained from the ICAO calculator, the average forest carbon sequestration value of 0.73 t C ha^{-1} (Mancini et al., 2016) is used to convert CO_2 emission in Footprint terms.

To calculate the Ecological Footprint of travel by ground, the distance between the 30 European country of origin and each pilot area is calculated using Google maps. To allow comparability with the air travel analysis, international airports at destinations are kept as the arrival point. For each route, it is calculated the distance travelled by two means of transport, trains and ferries, and the relative percentage share within each trip. A literature review of several studies is conducted to identify the CO_2 emission factor per passenger per kilometre for both trains and ferries (Mancini et al. 2022). Transport occupancy, fuel types, and age of vehicles are the main parameters affecting the calculation of emission factors, which are calculated out of the selected sources and results to be 0.036 kg pkm^{-1} for trains and 0.36 kg pkm^{-1} for ferries. To calculate the amount of CO_2 emissions per passenger per each round trip, these factors are multiplied by the distance between capitals and international airports at DestiMED PLUS destinations, considering the share of distance travelled by train vs. ferry. Finally, using the average forest carbon sequestration value of 0.73 t C ha^{-1} (Mancini et al., 2016), the equivalent Footprint is obtained.

Table 3.2: countries of origin accounted for the international travel assessment via flight and via train.

Countries of Origin	EU	Extra EU
Via flight	Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Croatia, Denmark,	UK, USA (New York and San Francisco), Canada (Montréal), Canada (Vancouver),

	Estonia, Finland, France, Germany, Greece, Ireland, Italy, Iceland, Latvia, Lithuania, Luxembourg, Norway, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Hungary	Australia (Sydney), Australia (Perth), China (Beijing)
Via train and/or ferries		

4 Results

4.1 Ecological Footprint Results at destination level

This section shows tourism's Ecological Footprint results for the destinations countries involved in the DestiMED PLUS project. First, the total Ecological Footprint of the tourism inflow at national level is shown for each destination country, distinguishing between inbound and domestic tourists, and showing their main Footprint drivers. Then, for each country, per capita daily (i.e., bednight) Ecological Footprint values are presented, for both domestic and inbound tourists. Finally, the per capita values of the regular tourists are compared with the values of ecotourists from DestiMED PLUS' packages, and results are presented.

4.1.1 Total tourism Ecological Footprint at national level

This section shows total Ecological Footprint of tourism results for all the 6 countries involved in DestiMED PLUS project, during the 2014-2019 period. Total Ecological Footprint results shed lights on the overall amount of resources and ecological services needed to support overall tourism activities in that specific country and year.

Over the considered period, the overall Footprint of the tourism sector in the 6 considered countries increased by 8%, from 107 million gha in 2014 to 115 million gha in 2019, with the highest Footprint increased found in Albania (+26%) and Greece (+23%). Looking at the absolute values, however, results shows the highest impact of tourism to be due primarily to the tourism inflow in France, Spain, and Italy, although results for the first two countries are likely overestimated as partially accounting for the impact of outbound tourism, as explained in section 3.4 (see Fig. 4.1).

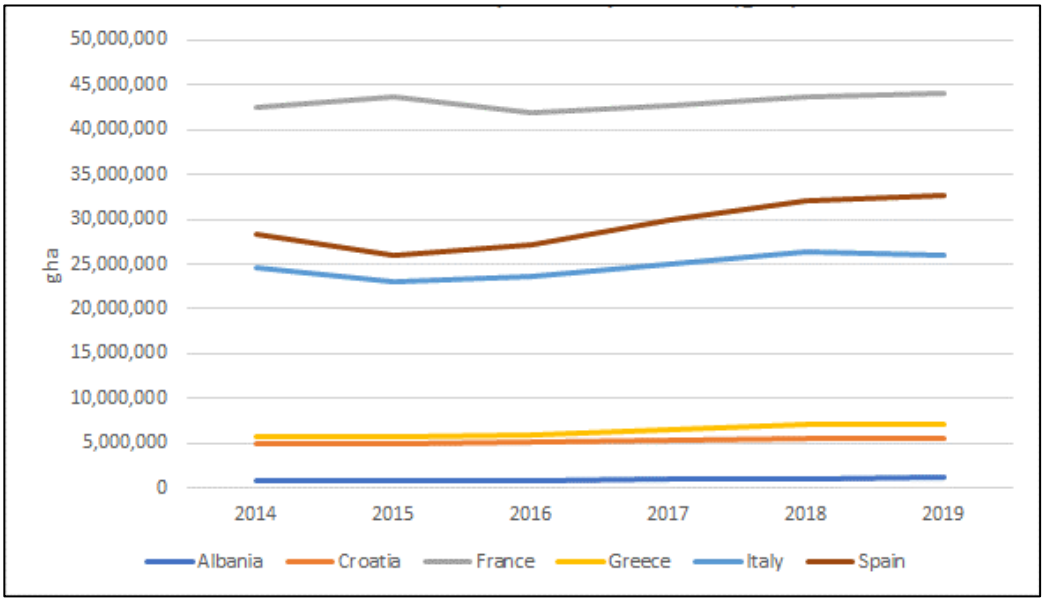

Figure 4.1 Tourism Ecological Footprint trend by country from year 2014 to year 2019, total values in global hectares

Comparing the Ecological Footprint of tourism with the country's Ecological Footprint[12] then allows understanding the contribution of tourists vs. residents in contributing to the country's pressure on natural resources. In 2014, tourism accounted for about 16% of the overall national Footprint in the 6 DestiMED PLUS countries, ranging from about 9.6% in Italy (4.3% due to domestic tourism and 5.4% to inbound) to about 32% in Croatia (2% domestic and 30% inbound) (see Figure 4.2A). Tourists' contribution to the national Ecological Footprint increased (+2%) in the following years, contributing to approximately 18% of the national

[12] National Footprints data from NFA Ed. 2022 (data available until year 2018)

EF in 2018. Albania has seen the highest increase (approximately +5% between 2014 and 2018), primarily due to an increase in inbound tourism pressure (ranging from 12% in 2012 to 17% in 2018). Conversely, Spain's tourism contribution to the National EF slightly decreased (-0.7% between 2014 and 2018) (see Figure 4.2B). Figure 4 also shows that the Footprint associated with the inflow of Inbound tourists is higher than that associated with domestic tourism in all six nations analyzed.

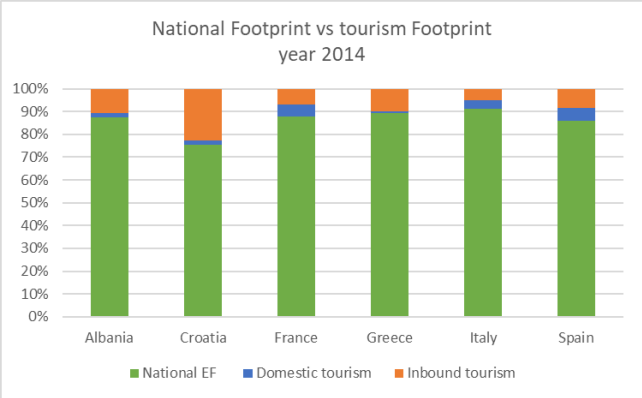

Figure 4.2A Contribution of Tourism EF to the National Footprint of the 6 DestiMED PLUS pilot countries (year 2014).

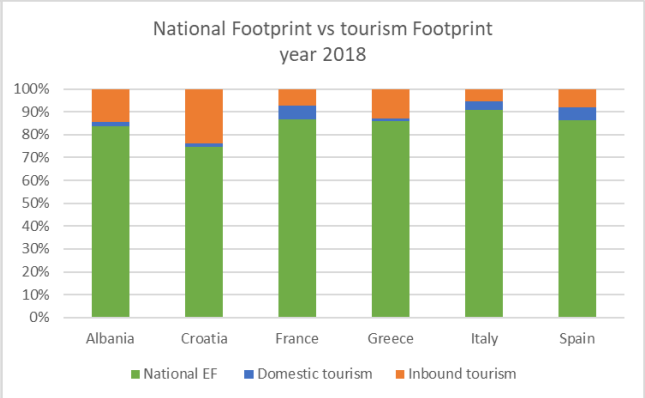

Figure 4.2B Contribution of Tourism EF to the National Footprint of the 6 DestiMED PLUS pilot countries (year 2018).

The most relevant Footprint driver in each country was found to be Transport, which includes both the transport to reach the destination and the travel within the destination, and represents on average 60% of the Ecological Footprint of tourism. The second driver of the Ecological Footprint is "Other", including the pressure given by leisure activities (i.e., culture and sport) and organization activities (i.e., tour operator management, tourist guides, etc), representing on average 23% of the Ecological Footprint. This category is the second driver in all countries under analysis except for Greece, in which Accommodation (15% of the total) was found to be the second EF driver. Accommodation and Food & Drinks then follow as the third and fourth Footprint drivers (accounting for 9% and 8% of the Ecological Footprint, respectively) (see Figure 4.3).

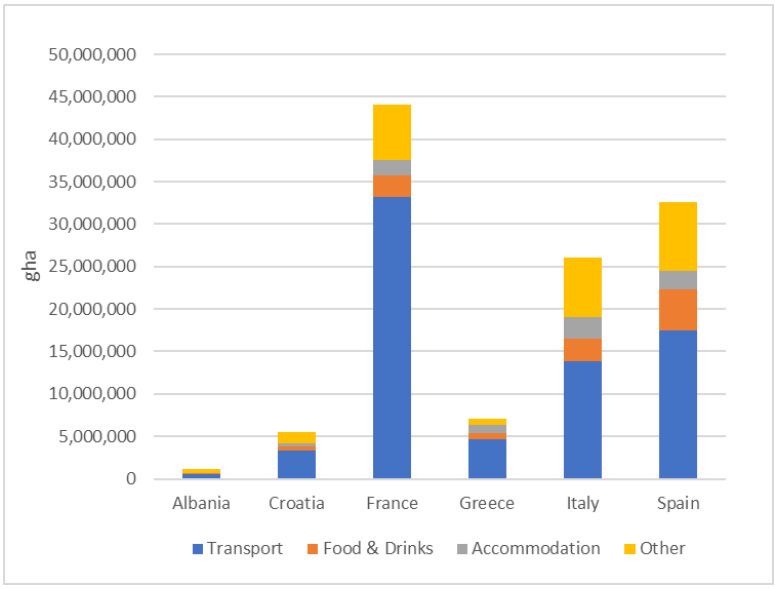

Figure 4.3 Tourism Ecological Footprint by destination country in year 2019, by expenditure category (values in global hectares)

4.1.2 Ecological Footprint per tourist bednight

Ecological Footprint results per bednight highlight the pressure on natural resources exerted by an average overnight tourist (either domestic or inbound) per each single day of stay at destination, and provide the values to be benchmarked against DestiMED PLUS project results (see section 4.3).

According to the analysis, the trend of the Ecological Footprint per tourist bednight by destination country keeps almost constant for almost all countries over the considered time period, exception made for Albania and Spain: the Ecological Footprint of an average tourist visiting Albania decreased from about 0.103 gha tourist^{-1} day^{-1} in 2014 to 0.05 gha tourist^{-1} day^{-1} in 2019, while that of an average tourist vising Spain decreased in year 2015-2016 and 2017 (about 0.047-0.051 gha tourist^{-1} day^{-1}), to then increase again in the 2018-2019 period (up to 0.06 gha tourist^{-1} day^{-1}) (see Figure 4.4)

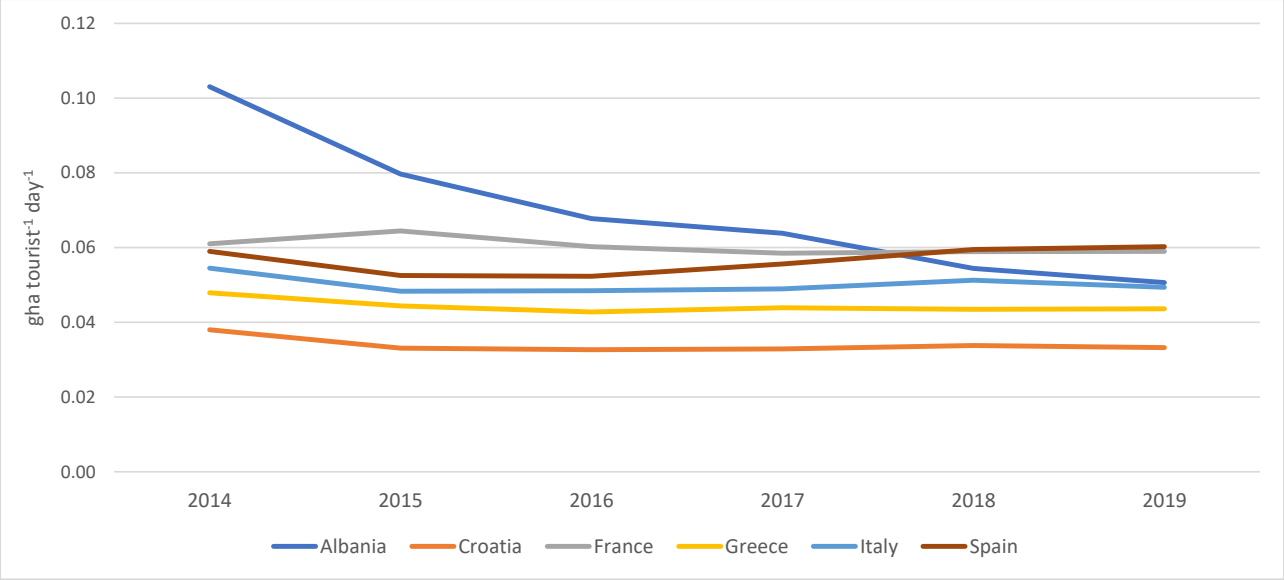

Figure 4.4 Ecological Footprint per overnight tourist per day, trend by destination country and year (global hectares per tourist per day)

In 2019, the average tourist visiting Spain was found to have the highest daily Ecological Footprint (0.060 gha tourist^{-1} day^{-1}), followed close by the average tourist visiting France (0.059 gha tourist^{-1} day^{-1}) and Albania (0.051 gha tourist^{-1} day^{-1}). On the other hand, the average tourist visiting Croatia was found to have the lowest Ecological Footprint at 0.033 gha tourist^{-1} day^{-1}. Transport was found to be the main Footprint driver (on average about 54% of the total EF) for a tourist visiting Albania, France, Greece, Italy and Spain, while the expenditure category "Other" – which includes the Footprint related to cultural and sport activities and trip management – was found to be the main Footprint driver for tourists visiting Croatia (about 40% of the total EF). Other was also the second Footprint driver of an average overnight tourist visiting Albania, France, Italy and Spain, while the second Footprint driver in Greece was Accommodation (see Figure 4.5A).

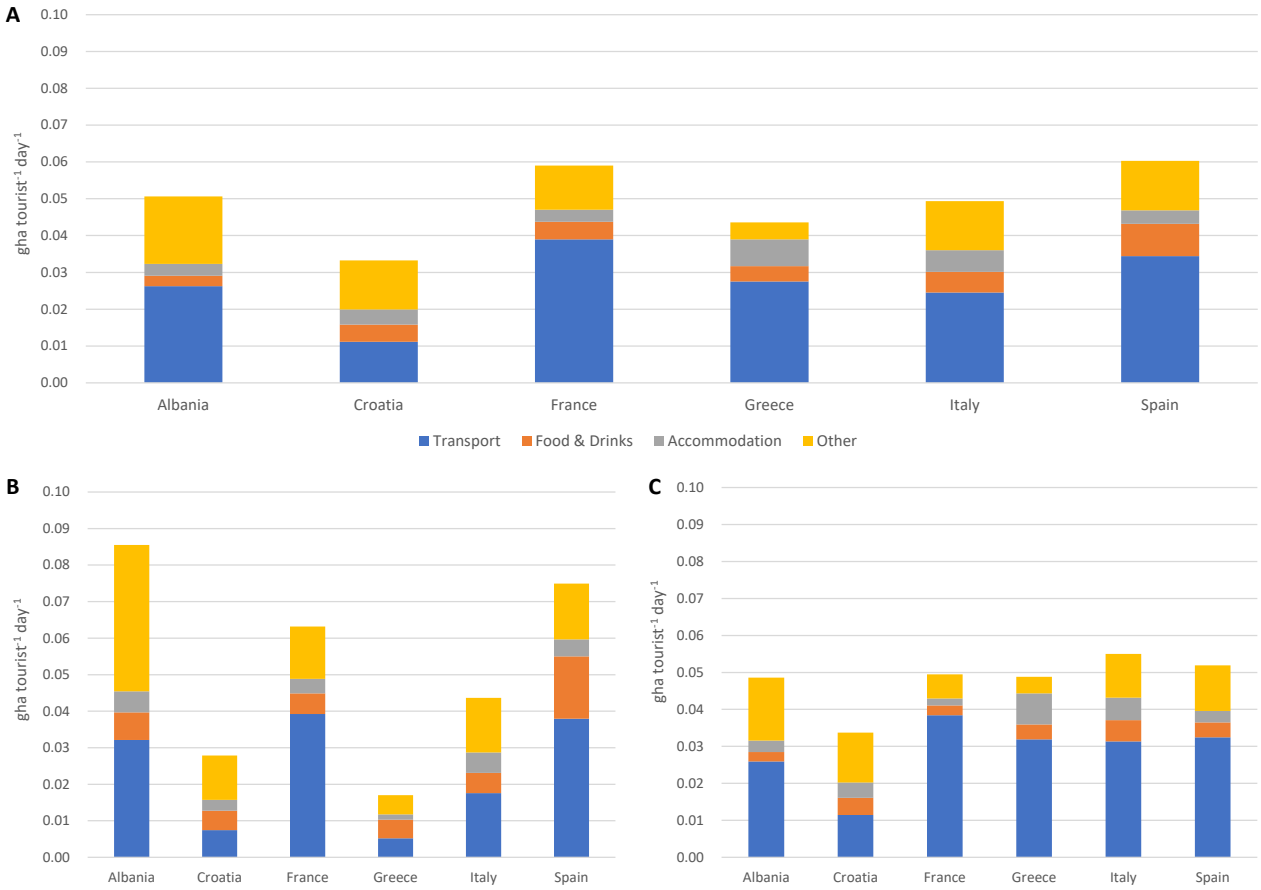

Figure 4.5 Daily Ecological Footprint of an average overnight tourist (A), either of domestic (B) or inbound (C) origin, broken down by destination country and expenditure category, in 2019.

When looking at the tourists types (i.e., domestic vs. inbound tourists), 2019 results show that the average overnight domestic tourist presents a lower Ecological Footprint than the average overnight inbound tourist in Croatia, Greece and Italy; conversely, domestic tourists have a higher Ecological Footprint than inbound tourists in Albania, France and Spain (see Figure 4.5B and 4.5C), although results for France and Spain are likely partially overestimated as they also account for the Footprint due to outbound tourists (see section 3.4).

In 2019 the highest Footprint values for domestic tourists were found in Albania (0.086 gha tourist^{-1} day^{-1}), Spain (0.075 gha tourist^{-1} day^{-1}) and France (0.063 gha tourist^{-1} day^{-1}), while the lowest Footprint was found in Greece (0.017 gha tourist^{-1} day^{-1}), and Croatia (0.028 gha tourist^{-1} day^{-1}). On the same year, the higher inbound tourists Footprint values were found in Italy (0.055 gha tourist^{-1} day^{-1}), and Spain (0.052 gha tourist^{-1} day^{-1}) while the lowest was found in Croatia (0.034 gha tourist^{-1} day^{-1}) (see Figure 4.5B and 4.5C).

4.2 Results of International travel

To ease visualization of international travel results, the Ecological Footprint of travel is aggregated in three macro-categories: 1) air travel Footprint per tourist coming from European countries, 2) ground travel Footprint per tourist coming from European countries (train and ferry) and 3) air travel Footprint per tourist coming from non-European countries. For each of the 9 pilot actions involved in DestiMED PLUS, the analysis include:

1. The average travel Footprint results in the three categories from all the considered countries of origin.
2. An average travel Footprint (using the averages of the three macro-categories) calculated across all DestiMED PLUS pilot actions and assessed against the average Ecological Footprint of a DestiMED PLUS package[13].

Results show that, on average, the Ecological Footprint of a tourist travelling from Europe to DestiMED PLUS pilot actions – either by air or ground travel – is 0.11 gha tourist^{-1}, 43% higher than the per capita Ecological Footprint of the average entire stay at destination for an ecotourist (0.077 gha tourist^{-1}). More precisely, the Ecological Footprint of a tourist travelling by ground from Europe to a pilot area amounts to 0.094 gha, 22% higher than the Footprint of staying at destination (0.077 gha tourist^{-1}) and about 25% lower than a tourist travelling by airplane (0.126 gha).

This trend changes when ground travel includes a high percentage of distance travelled by ferry. For instance, travelling to the protected area of Northern Karpathos and Saria in the region of South Aegean in Greece from within Europe requires the highest share of travel by ferry (21% of the overall ground travel) thus demanding a travel Footprint of 0.183 gha tourist^{-1}; travelling by plane to the same destination would result in a 25% lower Footprint (0.146 gha tourist^{-1}) (see Figure 4.6).

Finally, a tourist travelling by flight from Europe to a DestiMED PLUS pilot destination has an average travel Footprint of 0.126 gha tourist^{-1}, 70% lower than the average travel Footprint of a tourist travelling from outside Europe to the same destination (0.415 gha tourist^{-1}).

[13] The 9 pilot actions of DestiMED PLUS are: Garrotxa Volcanic Zone Natural Park (Catalonia, Spain), Cres -Lošinj Marine Protected Area (Jadranska Hrvatska, Croatia), Porto Conte Regional Park (Sardinia, Italy), Divjake – Karavasta National Park (Albania South, Albania), Northern Karpathos –Saria Protected Area (South Aegean, Greece), West Asterousia Mountain Protected Area (Crete, Greece), Cabo de Gata National park (Andalucia, Spain), Natural reserve of the Mouths of Bonifacio (Corsica, France), Pontine Islands Marine Protected Area (Lazio, Italy).

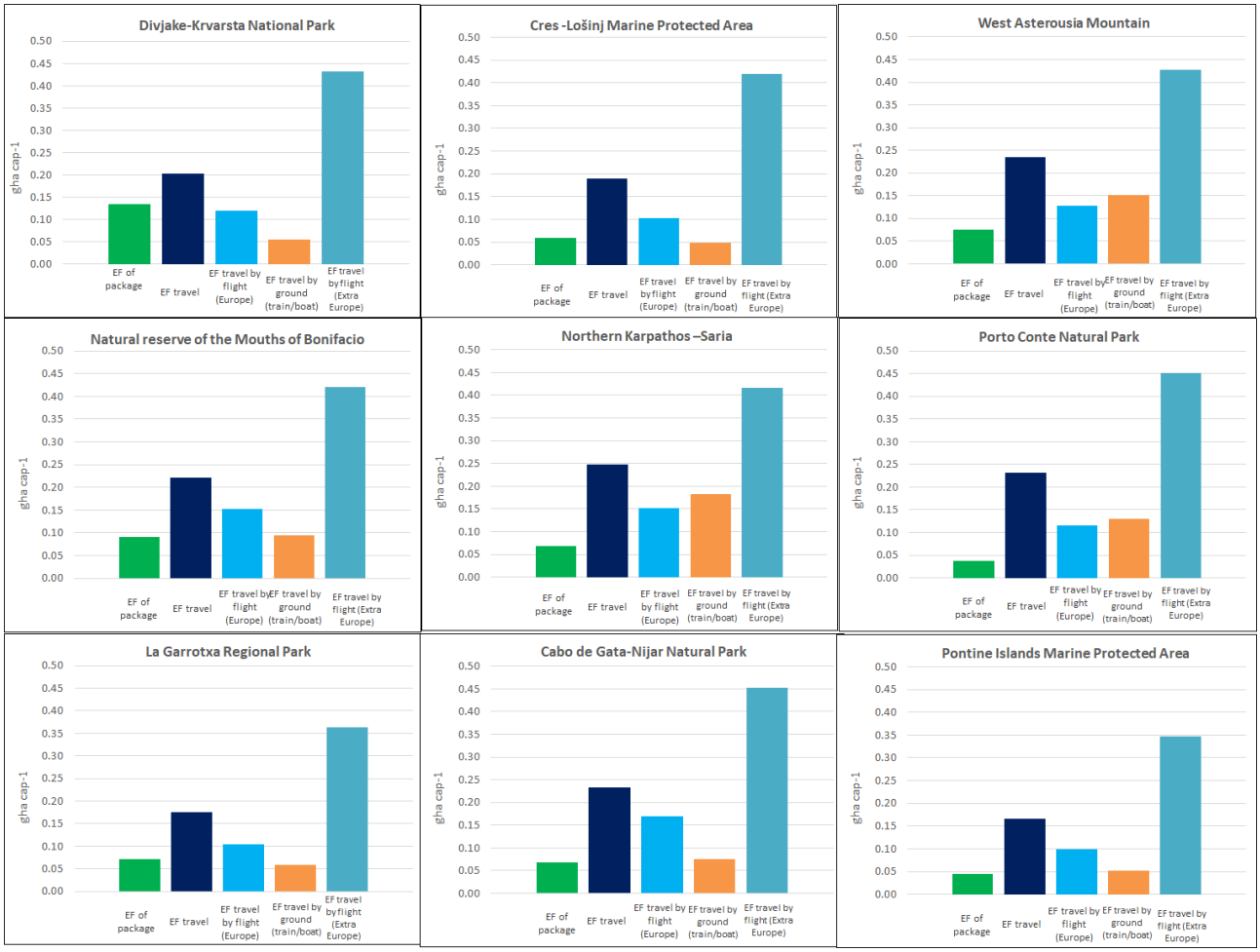

Figure 4.6 Package and international travel Footprint comparison, expressed in gha per tourist. The graphs compare each pilot action's package Footprint with the per capita air and ground travel Footprint from European and extra European countries of origin.

4.3 Ecological Footprint of a regular tourist compared with the Ecological Footprint of DestiMED PLUS' ecotourists

In this section the Ecological Footprint of a tourist bednight is compared with the Ecological Footprint of an ecotourist enjoying a DestiMED PLUS package. For this, results of the Ecological Footprint per tourist bednight for each analyzed country (reported in section 4.1) are benchmarked against the results of the Ecological Footprint per tourist per day from each of the 9 DestiMED PLUS's packages.

For each package, the **Ecological Footprint per tourist per day** measures the Footprint impact caused by each single tourist during one full day, and thus allows for comparisons across PAs as well as with the EF of a tourist bednight. This measure is used for understanding the general trends and identifying best cases and practices. However, because this metric excludes the Ecological Footprint of travel to the destination, for comparison with the EF of a tourist bednight, the results of the international travel assessment were added to the package's Ecological Footprint. Since the DestiMED PLUS project focuses on local European markets, the average of ground and flight travel from solely within Europe, excluding the contribution of intercontinental flight travel (see section 4.2), was considered.

For each of the 9 DestiMED PLUS pilot areas, the results of the Ecological Footprint per tourist per day are benchmarked against:

- The Ecological Footprint of the tourist in the country of origin[14] and the Ecological Footprint of the regional resident[15], to assess whether the ecotourist pressure on the natural resources is higher or lower during the ecotourism trip.
- The Ecological Footprint of the tourist bednight in that destination, both domestic and inbound. In this scenario, the travel to reach the destination is added to the EF of the DestiMED PLUS package.

According to 2019 results, the Ecological Footprint at destination (i.e., excluding the international travel) of a tourist enjoying a DestiMED PLUS package is about 8% lower than the Ecological Footprint the ecotourist would have at its home country (i.e., EF of an average European resident)[16]. It applies for all DestiMED PLUS case studies, with the exception of Divjake – Karavasta National Park (Albania), where the ecotourist's Ecological Footprint is 73% higher than the Footprint of an average European citizen when at home.

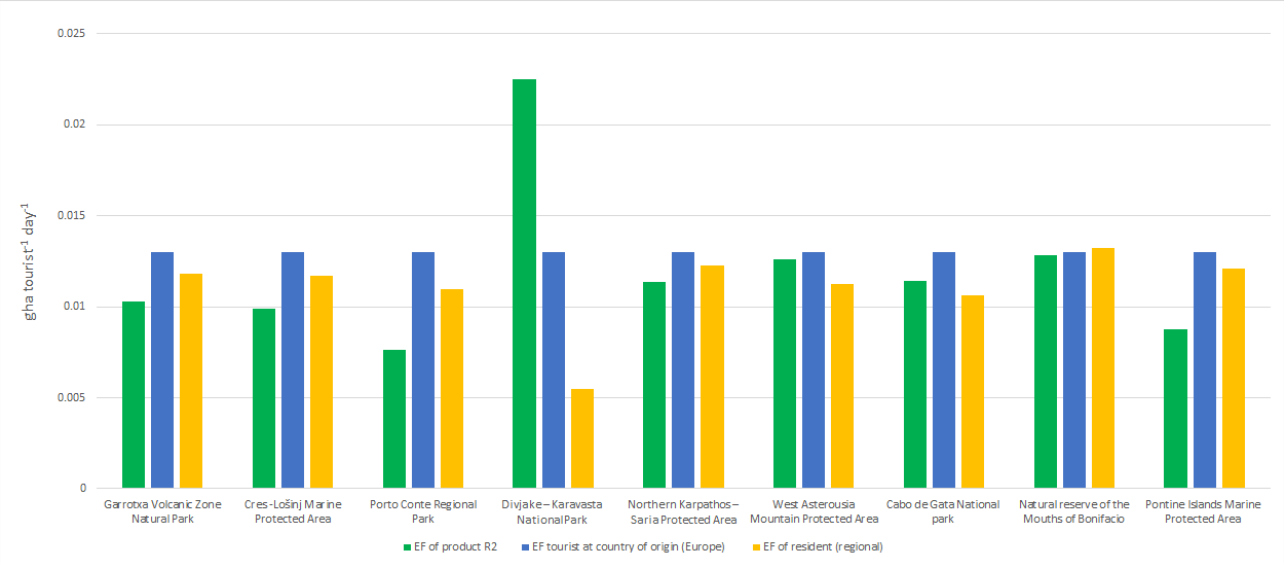

Figure 4.7 Ecological Footprint of DestiMED PLUS ecotourists at destination (values in gha per capita per day) compared with the average Ecological Footprint of a tourist at home (i.e., Europe considered as country of origin), as well as with the Ecological Footprint of an average destination's residents (at regional level).

When compared to the Ecological Footprint of the regional resident, the Ecological Footprint of the ecotourist at destination is lower than the Ecological Footprint of a resident in Catalonia (Spain), Jadranska Hrvatska, (Croatia), Sardinia (Italy), South Aegean (Greece), Corsica (France) and Lazio (Italy) - ranging from -30% lower in Porto Conte Regional Park case study (Sardinia, Italya) to -33% lower in the Natural Reserve of the Mounths of Bonifacio case study (Corsica, France). For the pilot areas of Divjake - Karavasta National Park (Albania), West Asterousia Mountain Protected Area (Greece), and Cabo de Gata National Park (Spain), the results reveal that the ecotourist has a higher Ecological Footprint than the average regional inhabitant (see Figure 4.7).

[14] Data from National Footprint Accounts 2019 (Global Footprint Network) https://data.footprintnetwork.org/#/

[15] Data from del. 3.3.3. assessment – Barioni D., Katsunori I., Mancini M.S., Zokai G., Galli A. (2021). The Ecological Footprint balance of DestiMED Plus destinations: analysis of the sustainability baseline for ecotourism packages. Del. 3.3.3. Technical report.

[16] 2017 data from National Footprint Accounts 2019 (Global Footprint Network) https://data.footprintnetwork.org/#/

When comparing the Ecological Footprint per tourist per day of the DestiMED PLUS pilots packages with the Ecological Footprint of a regular tourist in each of the 6 DestiMED PLUS destinations, results show that in 2019 DestiMED PLUS ecotourists had a lower pressure on the earth resources and ecosystem services, even if international travel is factored in and added to the Ecological Footprint at destination.

On average, a DestiMED PLUS' ecotourist has an Ecological Footprint nearly 37% lower than a regular overnight tourist visiting the same destination; more precisely, its Footprint is about 36% lower than an inbound tourist and 12% lower than a domestic tourist. This average picture hides some differences among the various destinations, which are reported in Figure 4.8.

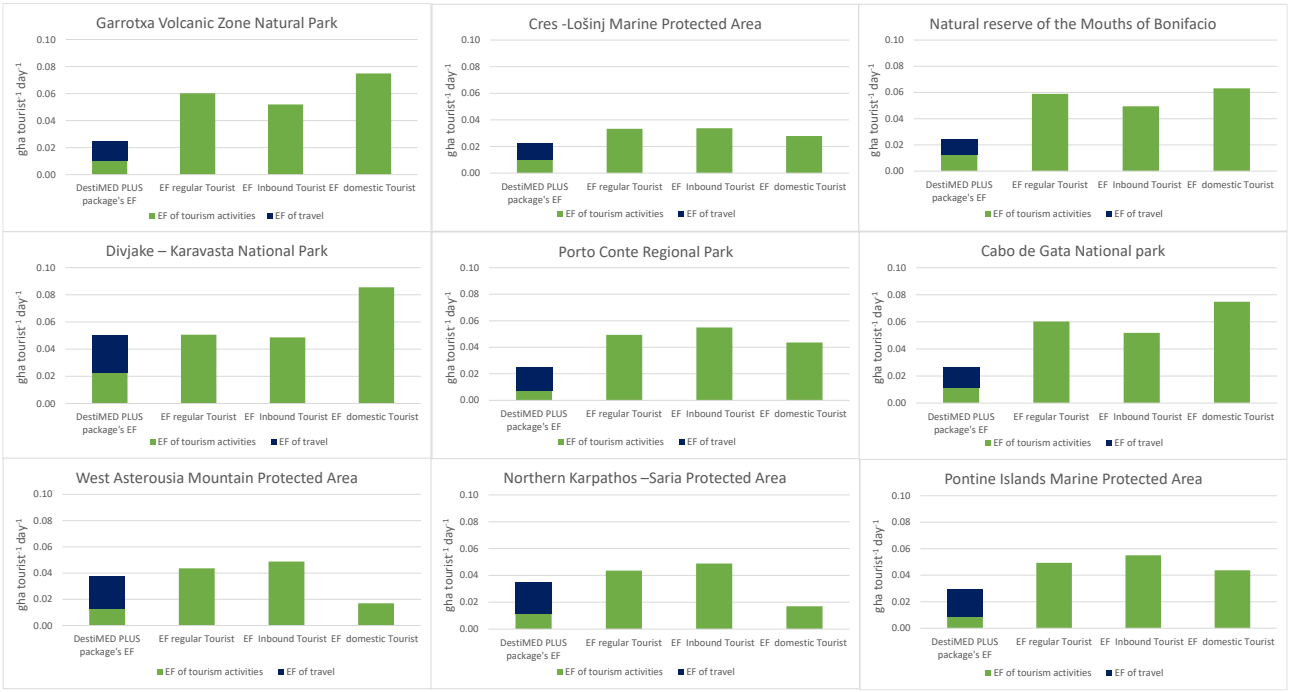

Figure 4.8 Comparison between the Ecological Footprint of the DestiMED PLUS pilots packages and the Ecological Footprint of a regular tourist (both domestic and inbound) in each of the 6 DestiMED PLUS destinations (all values expressed in gha per capita per day).

Only for the case study of Divjake – Karavasta National Park (Albania), the Ecological Footprint of the DestiMED PLUS' ecotourist show an Ecological Footprint higher than that of the inbound tourist in the country (about 3% higher). Moreover, in both Greek cases studies, Northern Karpathos –Saria Protected Area and West Asterousia Mountain Protected Area, when the international travel is considered and added to the Ecological Footprint at destination, the ecotourist was found to have a Footprint higher than the domestic tourist (about 104% and 118% higher, respectively) (see Figure 4.8).

5 Discussions & Conclusions

The findings of this report shed light on the extent to which tourists contribute – together with national residents – to a country's demand for renewable resources and ecosystem services (i.e., its Ecological Footprint). In the 6 countries in which the DestiMED PLUS pilot areas are located – namely Albania, Croatia, France, Greece, Italy and Spain – tourists contribute on average to 18% of the National Ecological Footprint, with values ranging from as low as 10% in Italy to almost 34% in Croatia in 2018.

From a destination point of view, this situation creates a vicious circle as the presence of tourism in the region is likely to worsen the pressure on ecosystems and increase the consumption of resources; in turn, the overconsumption of natural resources and deterioration of the natural capital compromise the local tourism offer. Realizing this fact requires the development of tourism monitoring and planning strategies that prioritize sustainability and resource security, as well as the development of ecotourism and sustainable tourism alternatives. It is thus of increasing importance considering the sector's predicted rebound and growth after the pandemic.

In 2019, France, Spain, and Italy had the highest overall Ecological Footprint of Tourism at 44,104,221 gha, 32,649,175 gha, and 26,072,805 gha, respectively indicating a greater strain on natural resources caused by tourism in the destination and, thus, representing the locations most in need of intervention.

Looking at the Footprint drivers at national level, Transportation (on average about 60% of the Total tourism EF), Other - i.e., the pressure given by leisure activities such as culture and sport and organization activities as tour operator management, tourist guides - (about 23%), Food & Drinks (about 9%) and Accommodation (on average about 8% - second driver for Greece with a 15% of the Total Tourism EF) are found to be the main components of the Ecological Footprint in the 6 countries analyzed. In other words, failing to properly manage these four sectors might lead to an exacerbation of the Footprint values due to increasing tourism inflows, thus worsening an already delicate situation. Conversely, a dedicated effort to manage these categories (through a sustainable implementation of tourism) could help improve the present situation, lowering the pressure caused by these components on the regional territory and the local natural resources. Ecotourism might offer a way to contribute to natural conservation objectives, while also constituting a valid alternative to mass tourism in the region.

The Ecological Footprint results per bednight reflect the strain on natural resources exerted by an average tourist (either domestic or inbound) on a single day during its stay at the destination, and provide values that can be compared to the DestiMED PLUS project results. The highest Ecological Footprint per bednight is found in Spain (0.060 gha tourist^{-1} day^{-1}), France (0.059 gha tourist^{-1} day^{-1}), and in Albania (0.051 gha tourist^{-1} day^{-1}). On the other hand, an average tourist visiting Croatia has the lowest Ecological Footprint (0.033 gha tourist^{-1} day^{-1}). Based on the 2014-2019 time series, the Ecological Footprint of all countries keeps a constant trend, with the exception of Albania, where it decreases from 0.103 gha tourist^{-1} day^{-1} in 2014 to 0.05 gha tourist^{-1} day^{-1} in 2019, due to an increase in the average length of stay (i.e., from 1.8 bednights in 2014 to 3.12 bednights in 2019). Croatia has the longest average length of stay at destination, 4.7 bednights in 2019, while France and Spain have the shortest (in 2019, 2.6 bednights and 2.7 bednights, respectively). These findings support a connection between the Ecological Footprint of Tourism and the length of stay at the destination, as staying longer helps mitigating the impact of transportation, which accounts on average for about 54% of the Ecological Footprint per bednight.

According to 2019 results, an average domestic tourist presents a lower Ecological Footprint per bednight than an average inbound tourist in 3 out of 6 DestiMED PLUS countries, but it presents a higher Ecological Footprint per bednight than an inbound tourist in Albania, France and Spain. This highlights both the

importance of measures to regulate inbound tourism, and the necessity to educate and sensitize the local population about tourism sustainability challenges. In aggregated terms, in fact, domestic tourists have an average Ecological Footprint 59% lower than that of inbound tourists, according to 2019 data. Indeed, the proximity to the destination reduces the Ecological Footprint owing to Transportation, which has been shown to be the primary EF driver of Tourism.

However, reflecting on the DestiMED PLUS ecotourism package's Footprint values shows that traveling to a DestiMED PLUS pilot destination can cause a Footprint on the planet's ecosystems higher than that of vacationing in such destination. Promoting trains, cars, or boats as the main mean of transport (within Europe) to reach a DestiMED PLUS pilot area can thus help reduce the average Ecological Footprint of a tourist by approximately 25% compared to travelling via airplanes. Yet our analysis has shown that there are exception to this general rule, especially when ground travel requires long travel segments to be made via ferry: reaching the Protected Area of Northern Karpathos and Saria (South Aegean, Greece) via ground travel, for instance, results in a travel Footprint of 0.183 gha tourist^{-1}, which is 25% higher than the Footprint (0.146 gha tourist^{-1}) of travelling to this same location by plane (from Europe). Moreover, when looking at global tourism flows, a tourist flying from Europe to a DestiMED PLUS pilot destination was found to have a travel Footprint of 0.126 gha tourist^{-1}, which is 70% lower than the travel Footprint of a tourist flying from outside Europe to the same destination (0.415 gha tourist^{-1}). These results support the DestiMED PLUS project's strategy to target proximity markets rather than international ones.

Next, we found the Ecological Footprint at destination (excluding international travel) of a DestiMED PLUS package ecotourist to be on average 8% lower than the Ecological Footprint that same person would have in its home country. With few exceptions (Divjake - Karavasta National Park in Albania, West Asterousia Mountain Protected Area in Greece, and Cabo de Gata National Park in Spain), the Ecological Footprint of DestiMED PLUS ecotourists at destination was also found to be lower than that of the DestiMED destinations' residents, indicating a particular environmentally-friendly lifestyle determined by the DestiMED ecotourism packages.

Finally, the findings of the present study show that a DestiMED PLUS package ecotourist has lower pressure on the local resources than the Ecological Footprint of a regular tourist in each of DestiMED PLUS pilot areas. On average, a DestiMED PLUS package ecotourist has a Footprint approximately 37% lower than a regular tourist visiting the same destination, with values ranging from -1% in Albania (Divjake – Karavasta National Park) to -59% (Garrotxa Volcanic Zone Natural Park).

These results show that reshaping the tourist offer in these regions has the potentiality to contribute reducing anthropogenic pressures on resources and ecosystem services thanks to an increased awareness in local stakeholders and service providers, and the spreading of environmentally friendly best practices across the territory. As seen with the service providers involved in the DestiMED PLUS project, involving local tourism stakeholders in the development and monitoring of sustainable tourism alternatives can constitute a way to increase their environmental awareness and influence their daily practices, thus triggering positive cascade effects throughout territories. This overall results, however, hides a few local exceptions: in the Divjake – Karavasta National Park (Albania), the Ecological Footprint of the DestiMED PLUS ecotourist is slightly higher (+3%) than the Ecological Footprint of the inbound tourist in the country. Meanwhile, in both Greek parks, Northern Karpathos –Saria Protected Area and West Asterousia Mountain Protected Area, DestiMED PLUS ecotourists have a Footprint higher than the domestic tourist (104% and 118%, respectively).

To close, sustainability has become a priority for destinations, as the protection and conservation of natural assets is critical for income, employment, and future generations. As the tourism industry recovers from COVID-19, a need is felt for alternative tourism to be planned and managed considering the destination's

resource limitations, as well as the environmental impacts of tourism activities, to ensure that it does not follow the same unsustainable path as mass tourism.

The approach presented here is under continuous refinement; further research on a standardized approach to tourism's Ecological Footprint Accounting would easily increase its scalability to multiple forms of tourism helping reduce their ecological impact and guide the whole sector towards fulfilment of the UN Agenda 2030 and its associated SDGs.

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7 Annexes

7.1 Annex 1 – Ecological Footprint calculation methodology

The Ecological Footprint, in its most basic form, is calculated using the following equation:

$$\mathbf{EF} = \frac{\mathbf{P}}{\mathbf{Y}} \qquad \textbf{Equation 1}$$

Where P is the annual demand of a product and Y is the annual yield of the same product (Lin et al., 2018, Borucke et al, 2013). Yield is expressed in global hectares (see Box 2.1). In practice, global hectares are estimated with the help of two factors: the yield factors (YFs), which compare national average yield per hectare to world average yield in the same land category; and the equivalence factors (EQFs), which capture the relative productivity among the various land and sea area types.

Taking into account these factors, the formula of the Ecological Footprint becomes:

$$\mathbf{EF} = \left(\frac{\mathbf{P}}{\mathbf{Y_N}}\right) \times \mathbf{YF} \times \mathbf{EQF} \qquad \textbf{Equation 2}$$

Where P is the amount of a product harvested or waste emitted, Y_N is the national average yield for P, and YF and EQF are the respective yield factors and equivalence factors for the country and land use type in question. The yield factor is the ratio of national-to-world-average yields, which is calculated directly from FAO data as the annual availability of usable products and varies by country and year. Equivalence factors – calculated by means of the FAO GAEZ (Global Agro-Ecological Zones) model – translate the supply of or demand for an area of a specific land use type (e.g., world-average cropland or grazing land) into units of world-average biologically productive area expressed in global hectares. These factors can vary by land use type and year.

The calculation of a country's biocapacity begins with the total amount of bioproductive land and sea available in that country. "Bioproductive" refers to areas of land and water that support significant photosynthetic activity and accumulation of biomass. Barren areas of low or dispersed productivity are ignored. This is not to say that places such as the Sahara Desert, Antarctica, or the alpine environments of various countries do not support life; simply that their production is too widespread to be directly harvestable and is negligible in quantity.

Biocapacity is an aggregate measure of the amount of area available, weighted by the productivity of that area. It represents the ability of a biosphere to produce crops, livestock (pasture), timber products (forest) and seafood; it also measures how much of this regenerative capacity is occupied by infrastructure (built-up land). In short, it measures the ability of the available terrestrial and aquatic areas to provide ecological services. A country's biocapacity for any land use type is calculated as:

$$\mathbf{BC} = \mathbf{A} \times \mathbf{YF} \times \mathbf{EQF} \qquad \textbf{Equation 3}$$

Where BC is the biocapacity, A is the available area of a given land use type, and YF and EQF are the yield factors and equivalence factors, respectively, for the land type in question in that country.

As explained in section 2.2, a nowcasting methodology is used to estimate Ecological Footprint and biocapacity for the most recent years and thus avoid gaps in between the year of publication of results and the year of the analysis. The nowcasting method used by Global Footprint Network applies an equally-weighted ensemble forecast for each land-type, consisting of non-seasonal exponential smoothing (ETS) and

an auto-regressive integrated moving average (ARIMA) with GDP per capita (in fixed USD) as an external regressor.

For the non-carbon Footprint components, we apply the ensemble model to per capita Ecological Footprint of consumption (EF). For the carbon component of the Ecological Footprint, we model production and trade separately because reported CO_2 production data is generally available for more recent data years compared to trade datasets. In the case where CO_2 emissions data exists as the only dataset available for a certain year, the carbon Footprint of production is first scaled, according to the annual change in CO_2 production emissions, to the latest year of reported data before applying the ensemble model. For both carbon and non-carbon land-use component Ecological Footprint forecasts, associated confidence intervals are calculated from individual model forecasts and combining them with the root of a weighted sum of squares. The weights in this calculation are the square of the maximum likelihood estimates associated with each model[17].

[17] For internal quality check, nowcasted values from previous NFAs editions have been compared with actual values from the latest NFA edition, finding nowcasted values to be well aligned with calculated values for all the Footprint components except fishing grounds. Additional research is ongoing on this topic.

7.2 Annex 2 – Yield Factors and data sources

7.2.1 Yield Factor of Cropland, Forest land and Grazing land

The YFs for Cropland, Forest land and Grazing land of all the regions assessed in this project (together indicated as $YF_{Sub\text{-}national}$ in equation 4 below) have been calculated by scaling YF data from the NFA 2018 edition for year 2016 (nowcasted value) for each nation involved in the project. Net Primary Productivity (NPP) specific for each year was used for calculating average productivity of each land type. NPP is the net amount of energy a plant accumulates during a certain period of time. NPP can also be understood as the amount of mass a plant gains (or how much it grows) over specific period of time. NPP is calculated by subtracting the plant's respiration (the total amount of energy/mass lost by the plant as it breathes) from the gross primary productivity (the total amount of energy/mass taken in by the plant) (Foley et al., 1996; Kucharik et al., 2000).

$$\mathbf{YF_{Sub-national}} = \frac{\mathbf{Mean\ NPP\ Region}}{\mathbf{Mean\ NPP\ Nation}} \times \mathbf{YF_{Nation}} \qquad \textbf{Equation 4}$$

The annual NPP data with global spatial extent and spatial resolution of 500 m is from Terra MODIS (Moderate Resolution Imaging Spectroradiometer) dataset. The raster NPP data of each year has been overlaid separately with CORINE land cover (2012) for calculating average NPP of each land type.

7.2.2 Yield Factor of Built-up land or Infrastructure

The built-up or Infrastructure yield is set equal to cropland yield: according to Global Footprint Network's National Accounts Methodology (Borucke et al., 2013), built-up land is assumed to be the same as that for cropland because urban areas have typically been built on or near the most productive agricultural lands.

7.2.3 Yield Factor for Inland water and Marine area

Consistent with the NFA standards, Inland water and all other areas classified as inland water, were given a yield factor of 1.00 [wha nha^{-1}]. Marine Area YF is given respectively each country's YF value.

7.2.4 Area

For each land type - except for Marine Area – area size was calculated using the 2019 CORINE land-cover dataset. The Marine Area was the only land type for which the area was calculated through the costal line length of each region and scaled with the total marine area of each related nation from the NFA.

7.2.5 Equivalence Factors

Equivalence Factor (EQF) is a scaling factor for converting actual areas in hectares for each land type to their global hectares' equivalence. To have consistent and comparable measures, EQF is applied both to Footprint and biocapacity. For this report, all EQF values were set equal to national data (more local data would allow us to adjust the EQFs to the local conditions).

7.3 Annex 3 – Expenditure dataset mapping

				LEGEND	Complete from 2013 to 2017 included	Partial data	No data	structure comments	Selected datasets for the analysis	
COUNTRIES					DestiMED Plus					
	DATASETS	Type of tourism expenditure	Label	Unit	Albania	Croatia	France	Greece	Italy	Spain
World Bank_dataset 1										
1	Internal Travel and Tourism consumption	Internal expenditure	TOTAL	US$ in bn_nominal and real prices values						
2	Domestic Tourism Spending	Domestic expenditure	TOTAL	US$ in bn_nominal and real prices values						
3	Visitor Exports (Foreign spending)	Inbound expenditure	TOTAL	US$ in bn_nominal and real prices values						
4	Outbound Travel & Tourism Expenditure	Outbound expenditure	TOTAL	US$ in bn_nominal and real prices values						
World Bank_dataset 2										
3	International tourism, receipts (current US$)	Inbound expenditure	TOTAL	US$ current						
3.1	International tourism, receipts for passenger transport items (current US$)	Inbound expenditure	PASSENGERS TRANSPORT	US$ current					data for 2015-16-17	
3.2	International tourism, receipts for travel items (current US$)	Inbound expenditure	TRAVEL ITEMS	US$ current						
4	International tourism, expenditures (current US$)	Outbound expenditure	TOTAL	US$ current						
4.1	International tourism, expenditures for passenger transport items (cur	Outbound expenditure	PASSENGERS TRANSPORT	US$ current					data for 2015-16-17	
4.2	International tourism, expenditures for travel items (current US$)	Outbound expenditure	TRAVEL ITEMS	US$ current						
UNWTO_OUTBOUND TOURISM Tourism expenditure in other countries										
	Tourism expenditure in other countries	Outbound expenditure	TOTAL	US$ Millions					data for 2015-16-17	
	Travel	Outbound expenditure	TRAVEL ITEMS	US$ Millions						
	Passengers transport	Outbound expenditure	PASSENGERS TRANSPORT	US$ Millions					data for 2015-16-17	
UNWTO_INBOUND TOURISM: Tourism expenditure in the country										
	Tourism expenditure in the country	Inbound expenditure	TOTAL	US$ Millions					data for 2015-16-17	
	Travel	Inbound expenditure	TRAVEL ITEMS	US$ Millions						
	Passenger transport	Inbound expenditure	PASSENGERS TRANSPORT	US$ Millions					data for 2015-16-17	
EUROSTAT_Expenditure by expenditure categories (from 2012 onwards) [TIN00194]										
1	All countries of the world	National expenditure	TOTAL	Thousand euro						
1.2	Expenditure on transport	National expenditure	PASSENGERS TRANSPORT	Thousand euro						
1.3	Expenditure on restaurants/cafés	National expenditure	RESTAURANTS	Thousand euro						
1.4	Expenditure on accommodation	National expenditure	ACCOMMONDATION	Thousand euro						
1.5	Expenditure on durables and valuable goods	National expenditure	DURABLES	Thousand euro						
1.6	Other expenditure	National expenditure	OTHERS	Thousand euro						
EUROSTAT_Expenditure by expenditure categories (from 2012 onwards) [TOUR_DEM_EXEXP$DEFAULTVIEW]										
2	Domestic	Domestic expenditure	TOTAL	Thousand euro						
2.1	Expenditure on transport	Domestic expenditure	PASSENGERS TRANSPORT	Thousand euro						
2.2	Expenditure on restaurants/cafés	Domestic expenditure	RESTAURANTS	Thousand euro						
2.3	Expenditure on accommodation	Domestic expenditure	ACCOMMONDATION	Thousand euro						
2.4	Expenditure on durables and valuable goods	Domestic expenditure	DURABLES	Thousand euro						
2.5	Other expenditures (data obtained by substraction)	Domestic expenditure	OTHERS	Thousand euro						
EUROSTAT_Expenditure by expenditure categories (from 2012 onwards) [tour_dem_exexp]										
3	Outbound	Outbound expenditure	TOTAL	Thousand euro						
	Expenditure on transport	Outbound expenditure	PASSENGERS TRANSPORT	Thousand euro						
	Expenditure on restaurants/cafés	Outbound expenditure	RESTAURANTS	Thousand euro						
	Expenditure on accommodation	Outbound expenditure	ACCOMMONDATION	Thousand euro						
	Expenditure on durables and valuable goods	Outbound expenditure	DURABLES	Thousand euro						
	Other expenditure	Outbound expenditure	OTHERS	Thousand euro						
TSA datasets										
Table 1	**INBOUND TOURISM EXPENDITURE, BY PRODUCTS AND CLASSES OF VISITORS**									
A.1	A.1 Tourism characteristc products	Inbound expenditure	ITEMS)	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
1	Accommodation services for visitors	Inbound expenditure	ACCOMMONDATION	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
1.1.	Hotel and other accommodation services for visitors other than 1.2.	Inbound expenditure	ACCOMMONDATION - SUB	Depending on the country ** see the meth	Data for 2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
1.2.	Accommodation services associated with all types of vacation home ownership	Inbound expenditure	ACCOMMODATION- SUB	Depending on the country ** see the meth	Data for 2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
2	Food-and beverage-serving services	Inbound expenditure	RESTAURANTS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
3	Railway passenger transport services	Inbound expenditure	TRAIN PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013- 2016-17-18-19	
4	Interurban road transport services of passengers	Inbound expenditure	ROAD PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
5	Water passenger transport services	Inbound expenditure	SEA PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
6	Air passenger transport services	Inbound expenditure	AIR PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
7	Rental services	Inbound expenditure	RENTAL SERVICES	Depending on the country ** see the method note in the data c	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19		
8	Travel agencies and other reservation services	Inbound expenditure	TRAVEL AGENCY	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
9	Cultural services	Inbound expenditure	CULTURAL SERVICES	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
10	Sport and recreational services	Inbound expenditure	SPORT AND RECREATIONAL	Depending on the country ** see the method note in the data cell				Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19
A.2	Other consumption products and services	Inbound expenditure	TOURISM PRODUCTS)	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017		
B	Non-specific products	Inbound expenditure	SPECIFIC PRODUCTS)	Depending on the country ** see the method note in the data cell			Data for 2015		Data for 2013-2016-17-18-19	
	TOTAL	Inbound expenditure	TOTAL	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
Table 2	**DOMESTIC TOURISM EXPENDITURE, BY PRODUCTS AND CLASSES OF VISITORS**									
A.1	A.1 Tourism characteristc products	Domestic expenditure	SUB TOTAL	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
1	Accommodation services for visitors	Domestic expenditure	ACCOMMONDATION	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
1.1.	Hotel and other accommodation services for visitors other than 1.2.	Domestic expenditure	ACCOMMONDATION - SUB	Depending on the country ** see the meth	Data for 2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
1.2.	Accommodation services associated with all types of vacation home ownership	Domestic expenditure	ACCOMMODATION- SUB	Depending on the country ** see the meth	Data for 2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
2	Food-and beverage-serving services	Domestic expenditure	RESTAURANTS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
3	Railway passenger transport services	Domestic expenditure	TRAIN PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013- 2016-17-18-19	
4	Interurban road transport services of passengers	Domestic expenditure	ROAD PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
5	Water passenger transport services	Domestic expenditure	SEA PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
6	Air passenger transport services	Domestic expenditure	AIR PASSENGERS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
7	Rental services	Domestic expenditure	RENTAL SERVICES			Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
8	Travel agencies and other reservation services	Domestic expenditure	TRAVEL AGENCY	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
9	Cultural services	Domestic expenditure	CULTURAL SERVICES	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2013-2016-17-18-19	
10	Sport and recreational services	Domestic expenditure	SPORT AND RECREATIONAL	Depending on the country ** see the method note in the data cell				Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19
A.2	Other consumption products and services	Domestic expenditure	OTHER PRODUCTS	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017		
B	Non-specific products	Domestic expenditure	SPECIFIC PRODUCTS)	Depending on the country ** see the method note in the data cell			Data for 2015		Data for 2013-2016-17-18-19	
	TOTAL	Domestic expenditure	TOTAL	Depending on the country ** see the meth	Data for 2013-2016	Data for 2013	Data for 2015	Data for 2013-2015-2017	Data for 2016-17-18-19	
Table 3	**OUTBOUND TOURISM EXPENDITURE, BY PRODUCTS AND CLASSES OF VISITORS**									
A.1	A.1 Tourism characteristc products	Outbound expenditure	SUB TOTAL	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
1	Accommodation services for visitors	Outbound expenditure	ACCOMMONDATION	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
1.1.	Hotel and other accommodation services for visitors other than 1.2.	Outbound expenditure	ACCOMMONDATION - SUB	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
1.2.	Accommodation services associated with all types of vacation home ownership	Outbound expenditure	ACCOMMODATION- SUB	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
2	Food-and beverage-serving services	Outbound expenditure	RESTAURANTS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
3	Railway passenger transport services	Outbound expenditure	TRAIN PASSENGERS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
4	Interurban road transport services of passengers	Outbound expenditure	ROAD PASSENGERS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
5	Water passenger transport services	Outbound expenditure	SEA PASSENGERS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
6	Air passenger transport services	Outbound expenditure	AIR PASSENGERS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
7	Rental services	Outbound expenditure	RENTAL SERVICES				Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
8	Travel agencies and other reservation services	Outbound expenditure	TRAVEL AGENCY	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
9	Cultural services	Outbound expenditure	CULTURAL SERVICES	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
10	Sport and recreational services	Outbound expenditure	SPORT AND RECREATIONAL	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	
A.2	Other consumption products and services	Outbound expenditure	OTHER PRODUCTS	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017		
B	Non-specific products	Outbound expenditure	SPECIFIC PRODUCTS)	Depending on the country ** see the method note in the data cell			Data for 2015		Data for 2016-17-18-19	
	TOTAL	Outbound expenditure	TOTAL	Depending on the country ** see the method note in the data cell			Data for 2015	Data for 2015-2017	Data for 2016-17-18-19	

OECD_dataset 3 (Euro Millions)										
1	**Internal tourism expenditure**	Internal expenditure	TOTAL	Euro millions		only 2016				
1.2	Consumption products	Internal expenditure	SUB-TOTAL	Euro millions		only 2016			only 2015	data for 2013-14-15
1.2.1.	Tourism characteristic products	Internal expenditure	TRAVEL ITEMS	Euro millions		only 2016			only 2015	data for 2013-14-15
1.2.1.1.	Accommodation services for visitors	Internal expenditure	ACCOMMONDATION	Euro millions		only 2016			only 2015	
1.2.1.2.	Food and beverage serving services	Internal expenditure	RESTAURANTS	Euro millions		only 2016			only 2015	
1.2.1.3.	Passenger transport services	Internal expenditure	PASSENGERS TRANSPORTS	Euro millions		only 2016			only 2015	
1.2.1.3.1.	Air passenger transport services	Internal expenditure	AIR PASSENGERS	Euro millions		only 2016			only 2015	
1.2.1.3.2.	Railways passenger transport services	Internal expenditure	TRAIN PASSENGERS	Euro millions		only 2016			only 2015	
1.2.1.3.3.	Road passenger transport services	Internal expenditure	ROAD PASSENGERS	Euro millions		only 2016			only 2015	
1.2.1.3.4.	Water passenger transport services	Internal expenditure	SEA PASSENGERS	Euro millions		only 2016			only 2015	
1.2.1.4	Passenger transport supporting services	Internal expenditure	TRANSFERS SUPPORTING SERVICES	Euro millions						
1.2.1.5.	Transport equipment rental services	Internal expenditure	RENTAL SERVICES	Euro millions					only 2015	
1.2.1.6.	Travel agencies and other reservation services	Internal expenditure	TRAVEL AGENCY	Euro millions		only 2016			only 2015	
1.2.1.7.	Cultural services	Internal expenditure	CULTURAL SERVICES	Euro millions		only 2016			only 2015	
1.2.1.8.	Sports and recreation services	Internal expenditure	SPORT AND RECREATIONAL	Euro millions					only 2015	
1.2.1.9.	Country-specific tourism characteristic goods	Internal expenditure	CHARACTERISTIC GOODS	Euro millions					only 2015	
1.2.1.10.	Country-specific tourism characteristic services	Internal expenditure	CHARACTERISTIC SERVICES	Euro millions		only 2016				
1.2.2.	Other consumption products	Internal expenditure	OTHER CONSUMPTION PRODUCTS	Euro millions		only 2016			only 2015	data for 2013-14-15
1.2.2.1.	Tourism connected products	Internal expenditure	TOURISM CONNECTED PRODUCTS	Euro millions						
1.2.2.2.	Non-tourism related consumption products	Internal expenditure	NON-TOURISM RELATED CONSUMPTION PRODUCTS	Euro millions						
1.3	Non-consumption products		NON-CONSUMPTION PRODUCTS	Euro millions						
2	**Domestic tourism expenditure**	Domestic expenditure	TOTAL	Euro millions		only 2016				
2.2	Consumption products	Domestic expenditure	SUB-TOTAL	Euro millions		only 2016			only 2015	data for 2013-14-15
2.2.1.	Tourism characteristic products	Domestic expenditure	TRAVEL ITEMS	Euro millions		only 2016			only 2015	data for 2013-14-15
2.2.1.1.	Accommodation services for visitors	Domestic expenditure	ACCOMMONDATION	Euro millions		only 2016			only 2015	
2.2.1.2.	Food and beverage serving services	Domestic expenditure	RESTAURANTS	Euro millions		only 2016			only 2015	
2.2.1.3.	Passenger transport services	Domestic expenditure	PASSENGERS TRANSPORTS	Euro millions		only 2016			only 2015	
2.2.1.3.1.	Air passenger transport services	Domestic expenditure	AIR PASSENGERS	Euro millions		only 2016			only 2015	
2.2.1.3.2.	Railways passenger transport services	Domestic expenditure	TRAIN PASSENGERS	Euro millions		only 2016			only 2015	
2.2.1.3.3.	Road passenger transport services	Domestic expenditure	ROAD PASSENGERS	Euro millions		only 2016			only 2015	
2.2.1.3.4.	Water passenger transport services	Domestic expenditure	SEA PASSENGERS	Euro millions		only 2016			only 2015	
2.2.1.4	Passenger transport supporting services	Domestic expenditure	TRANSFERS SUPPORTING SERVICES	Euro millions						
2.2.1.5.	Transport equipment rental services	Domestic expenditure	RENTAL SERVICES	Euro millions					only 2015	
2.2.1.6.	Travel agencies and other reservation services	Domestic expenditure	TRAVEL AGENCY	Euro millions		only 2016			only 2015	
2.2.1.7.	Cultural services	Domestic expenditure	CULTURAL SERVICES	Euro millions		only 2016			only 2015	
2.2.1.8.	Sports and recreation services	Domestic expenditure	SPORT AND RECREATIONAL	Euro millions					only 2015	
2.2.1.9.	Country-specific tourism characteristic goods	Domestic expenditure	CHARACTERISTIC GOODS	Euro millions					only 2015	
2.2.1.10.	Country-specific tourism characteristic services	Domestic expenditure	CHARACTERISTIC SERVICES	Euro millions		only 2016				
2.2.2.	Other consumption products	Domestic expenditure	OTHER CONSUMPTION PRODUCTS	Euro millions		only 2016			only 2015	data for 2013-14-15
2.2.2.1.	Tourism connected products	Domestic expenditure	TOURISM CONNECTED PRODUCTS	Euro millions						
2.2.2.2.	Non-tourism related consumption products	Domestic expenditure	NON-TOURISM RELATED CONSUMPTION PRODUCTS	Euro millions						
2.3	Non-consumption products	Domestic expenditure	NON-CONSUMPTION PRODUCTS	Euro millions						
3	**Inbound tourism expenditure**	Inbound expenditure	TOTAL	Euro millions		only 2016				
3.2	Consumption products	Inbound expenditure	SUB-TOTAL	Euro millions		only 2016			only 2015	data for 2013-14-15
3.2.1.	Tourism characteristic products	Inbound expenditure	TRAVEL ITEMS	Euro millions		only 2016			only 2015	data for 2013-14-15
3.2.1.1.	Accommodation services for visitors	Inbound expenditure	ACCOMMONDATION	Euro millions		only 2016			only 2015	
3.2.1.2.	Food and beverage serving services	Inbound expenditure	RESTAURANTS	Euro millions		only 2016			only 2015	
3.2.1.3.	Passenger transport services	Inbound expenditure	PASSENGERS TRANSPORTS	Euro millions		only 2016			only 2015	
3.2.1.3.1.	Air passenger transport services	Inbound expenditure	AIR PASSENGERS	Euro millions		only 2016			only 2015	
3.2.1.3.2.	Railways passenger transport services	Inbound expenditure	TRAIN PASSENGERS	Euro millions		only 2016			only 2015	
3.2.1.3.3.	Road passenger transport services	Inbound expenditure	ROAD PASSENGERS	Euro millions		only 2016			only 2015	
3.2.1.3.4.	Water passenger transport services	Inbound expenditure	SEA PASSENGERS	Euro millions		only 2016			only 2015	
3.2.1.4	Passenger transport supporting services	Inbound expenditure	TRANSFERS SUPPORTING SERVICES	Euro millions						
3.2.1.5.	Transport equipment rental services	Inbound expenditure	RENTAL SERVICES	Euro millions					only 2015	
3.2.1.6.	Travel agencies and other reservation services	Inbound expenditure	TRAVEL AGENCY	Euro millions		only 2016			only 2015	
3.2.1.7.	Cultural services	Inbound expenditure	CULTURAL SERVICES	Euro millions		only 2016			only 2015	
3.2.1.8.	Sports and recreation services	Inbound expenditure	SPORT AND RECREATIONAL	Euro millions					only 2015	
3.2.1.9.	Country-specific tourism characteristic goods	Inbound expenditure	CHARACTERISTIC GOODS	Euro millions					only 2015	
3.2.1.10.	Country-specific tourism characteristic services	Inbound expenditure	CHARACTERISTIC SERVICES	Euro millions		only 2016				
3.2.2.	Other consumption products	Inbound expenditure	OTHER CONSUMPTION PRODUCTS	Euro millions		only 2016			only 2015	data for 2013-14-15
3.2.2.1.	Tourism connected products	Inbound expenditure	TOURISM CONNECTED PRODUCTS	Euro millions						
3.2.2.2.	Non-tourism related consumption products	Inbound expenditure	NON-TOURISM RELATED CONSUMPTION PRODUCTS	Euro millions						
3.3	Non-consumption products	Inbound expenditure	NON-CONSUMPTION PRODUCTS	Euro millions						