

DestiMED Project

Ecotourism Footprint Calculator

User Manual

WP3/Act. 3.4: Monitoring system to assess the level of sustainability of tourism activities, structures and services and to support the improvement plan design

Developed by:



Global Footprint Network®
Advancing the Science of Sustainability

With support from:



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DestiMED Project Partners:



(lead partner)



1. Background

The Ecotourism Footprint Calculator is one of the final deliverables of the DestiMED project funded by the EU InterreMED Program (2016-2019). The project involved 13 Protected Areas (PAs) in 6 Mediterranean countries (Albania, Croatia, France, Greece, Italy, Spain) to create ecotourism experiences grounded on tangible sustainability criteria and standards. As pilot cases, 13 ecotourism products (one in each PA) were designed by Local Ecotourism Clusters (LECs) created as part of the project and consisting of local tourism actors and service providers; these products were then tested for their economic, social and cultural sustainability – through a quality assessment – as well as their impact on the use of natural resources (i.e., their environmental sustainability). This latter evaluation was performed by Global Footprint Network through a novel application of Ecological Footprint Accounting, which has been specifically customized to keep track of the resource consumption of ecotourism products¹. Based on such customized methodology, this Ecotourism Footprint Calculator was developed by [FreeRange](#), under the supervision of [Global Footprint Network](#), IUCN, and WWF Adria. The development of a freely accessible calculator aims to equip all Protected Areas in the Mediterranean region interested in promoting and developing ecotourism with a tool for monitoring the sustainability of their tourist offer.

2. Overall description of the calculator

The Ecotourism Footprint Calculator developed by the DestiMED project is an online tool aiming to assess the impact of ecotourism products and activities offered to tourists on natural ecosystems.

This calculator offers the possibility for users to create a password-protected personal account that will allow users to:

- Save progresses and have access to their personal dashboard
- Visualize and download results
- Explore solutions to reduce the Footprint of their package(s)
- Share results with the MEET Network and receive support from this Protected Areas community to develop high-quality and low-impact ecotourism experiences

Skipping the login phase and taking the quiz anonymously is also possible, for those wishing to do so.

Target users of the Calculator are Protected Area managers and Inbound Tourist Operators (ITOs) interested in creating a sustainable ecotourism experience and committed to learning about, and acting upon, tourists' Ecological Footprints. Because this Calculator is a specialized tool intended to provide a detailed assessment of the impact from tourism's packages, its use requires an upfront intense data collection. To ease this process, the following sections of this manual guide users through the calculator functioning and use, with a closing annex listing all the necessary input data.

3. Specific sections

Aside from the log-in page, the Ecotourism Footprint Calculator is composed of one introductory section and four main sections corresponding to major macro-categories of tourism services offered within an ecotourism package (see also Figure 1):

¹ See the detailed methodology in Mancini, M., Evans, M., Iha, K., Danelutti, C., & Galli, A. (2018). Assessing the Ecological Footprint of ecotourism packages: A methodological proposition. *Resources*, 7(2), 38. Available at: <https://www.mdpi.com/2079-9276/7/2/38>

0. **Introductory section:** this section collects general information on the Protected Area where the ecotourism product is conceived, as well as details of the specific product being calculated (name of the package, length and number of participants).
1. **Accommodation category:** this section inquires about all the hosting facilities involved in the package that are used to accommodate tourists. For each hosting facility, questions deal with general information on the type of hosting facility and its characteristics, energy consumption (including electricity, heating and cooling system, hot water production, and water consumption), and the goods and services provided. All questions are mandatory and most require detailed research in collaboration with the hotel's manager for acquiring the precise data needed. If multiple accommodations are used throughout the package, this section must be compiled for each of them.
2. **Food & Drinks category:** this section inquires about the meals envisioned in the ecotourism package, including breakfast, lunch, dinner, and other types of food-related activities (i.e. food/wine tasting, tea/coffee breaks, snacks, etc). Per each meal that is offered day by day, questions inquire into the origin, mode of production, and quantity of all food items served to the entire group of tourists. Also, some questions deal with the type of stove used, food preparation time, and number of workers needed. Each question is mandatory. Collecting accurate data requires collaborating with the persons involved in the meal preparation.
3. **Mobility & Transfer category:** this section inquires about different types of transfers envisioned throughout the package for tourists to move from one place to another, as well as any kind of equipment or food delivery to the group of tourists. Per each single transfer done in each day, questions regard the mode of transportation, duration, and characteristics of any motor vehicle used. Each question is mandatory and requires careful data collection with the service provider hired for each transfer.
4. **Activities & Service category:** this section inquires about all the services and activities envisioned in the ecotourism product (i.e. excursions, visits, PA-related activities, birdwatching, kayaking, snorkeling/scuba diving, hiking etc.). For each activity, questions investigate its type, duration, number of needed workers/guides, and specifics of vehicles used. Each question is mandatory and requires a careful data collection with the service provider in charge of each activity.

Figure 1 shows the four categories of main activities envisioned in an ecotourism package and the main parameters and data needed to assess the Ecological Footprint for each of the four categories.

<p style="text-align: center;">Accommodation</p> <ul style="list-style-type: none"> -General information and characteristic (i.e. type of accommodation, opening season etc) -Number of workers -Total number of bed-nights -Building surface -Energy consumptions, including: <ul style="list-style-type: none"> oElectricity oHeating system oWater heating -Consumption/production of alternative source of energy (solar, PVs, LPG, geothermic, etc) -Good and services provided (i.e. laundry, replacement of linen, etc) 	<p style="text-align: center;">Food & Drinks</p> <ul style="list-style-type: none"> -Origin of ingredients: <ul style="list-style-type: none"> oOn-farm oLocal (up to 60km) oNational oInternational -Mode of production of ingredients: <ul style="list-style-type: none"> oOrganic oNon-organic -Quantity of ingredients (expressed for the entire group) -Cooking time and type of stove -Number of workers
<p style="text-align: center;">Mobility & Transfers</p> <ul style="list-style-type: none"> -Duration of the route -Distance covered -Type of transportation (motor vehicle or different) <ul style="list-style-type: none"> oFuel type oFuel efficiency -Number of workers 	<p style="text-align: center;">Activities & Services</p> <ul style="list-style-type: none"> -Duration of the activity -Distance covered -Means of transportation used <ul style="list-style-type: none"> -For any motor vehicle used: <ul style="list-style-type: none"> oFuel type oFuel efficiency -Number of workers

Figure 1: Main categories envisioned in an ecotourism package and related parameters require to properly assess the Ecological Footprint

4. Main instructions for using the Calculator

Collecting data to accurately answer each question in the Calculator takes effort and time. The detailed steps and recommendations provided here below are designed to help you properly fill each section:

1. It is recommended to appoint one specific person from the PA (or ITO) staff to act as the “surveyor”. This person should be responsible for collecting data from the involved service providers and the one to have access to the Calculator to familiarize with and work on it.
2. It is recommended to create an account and log into the system to save each completed section, results, and to easily add as many packages as envisioned by your Protected Area. Also, creating an account allows you to get in touch with experts from the MEET Network, to receive more details about the results, and to gain support in the creation of the ecotourism experience.
3. The Calculator is relatively self-explanatory but it takes time to complete with a high level of accuracy (about 4 hours for first-time users.) For this reason, it is highly suggested to read through these guidelines and download the preview questionnaires that guide data collection for all sections of the Calculator (see below.) These questionnaires can be used for data collection prior to using the Calculator.
4. For best results, the surveyor is suggested to liaise with each service provider involved in the package (all the hotels, restaurants, providers of transport and guides/providers for each activity) and pay at least one in-person visit to them to ensure data is collected as precisely as possible and that all the questions are completed (it should be a data collection on field). It is likely that service providers will need more time to check internally among managers, workers and/or technicians for gathering precise information and the exact data requested.
5. Remember that data will have to be collected for each service provided in the package day after day. If the surveyor is going to use the downloaded questionnaires, they will have to save (or print) one copy per service involved (i.e. if 3 accommodations are used, then 3 questionnaires are

needed; if 7 meals in total are offered throughout the package, then 7 questionnaires on food are needed; if 5 transfers are done throughout the package, then 5 questionnaires are needed; if 4 activities are envisioned in the package, then there are 4 questionnaires).

6. Once all data have been collected from service providers, the surveyor can access the Calculator and fill in its sections from the comfort of their office.
7. Alternatively, the surveyor can bring a laptop/tablet to the in-person meetings with service providers and use the Calculator onsite. This method is equally valid since the Calculator is designed to save progresses (if you are logged in your account). Just beware of IT issues (i.e. internet connection, battery, etc.) that may cause users to lose portions of their work.

5. Results provided by the Calculator

For each ecotourism package entered in the Calculator, Ecological Footprint results will be provided and visualized in multiple ways, providing different types of information as summarized below:

- **Ecological Footprint of the whole ecotourism package (expressed in gha per package):** this result measures the overall Footprint impact of the entire ecotourism package, given the specific number of tourists and the specific duration. It provides the total resource demand of the package and is useful to understand the overall impact of that package. Since there are significant variations among packages in the number of tourists, duration, type of facilities, and meals served, as well as activities and mobility, this result should not be used for comparison among packages;
- **Ecological Footprint per tourist per day (expressed in gha per tourist per day):** this result measures the average [?] daily Footprint impact of each tourist. It allows for comparisons across different packages, shedding light on general trends, best cases and practices across the packages. However, this measure does not provide an assessment of the overall impact caused by each full package.

The results are then analyzed by activities or land types in order to understand Footprint impacts from various viewpoints:

- **Ecological Footprint by category section:** this breakdown looks at how the total Footprint spans across the various services offered in the package. Four main service categories are considered: Accommodation (i.e. hosting facilities where the tourists stay), Food & Drinks (all meals offered to tourists), Activities & Services (i.e. tours, excursions, recreational and other type of activities) and Mobility & Transfers (i.e. transportation used to move tourists from one place to another). These results are useful for PAs to understand how much each activity of the package contributes (in percentage) to the package's total Footprint. They help the PA managers identify where they can eventually intervene to lower the Footprint impact of their offer.
- **Ecological Footprint by land type:** this breakdown looks at the land types upon which Footprint pressures are placed, considering the six bioproductive land types of the Ecological Footprint methodology (cropland, grazing land, fishing ground, forest land for wood products, built-up land and forest land for carbon uptake). It helps to identify how much natural resources are needed to support the package offer and it provides insight on the ecosystems that are under highest pressure due to tourists' activities. These results inform PAs about which ecosystems are most impacted by the packages they have designed and implemented.

More detailed results may be obtained by contacting DestiMED experts, such as:

- **Accommodation:** breakdown by land type; Ecological Footprint of each facility used; share of the main components of the Ecological Footprint value
- **Food & Drinks:** breakdown by days and meals; total share of Ecological Footprint value by meal and by food provision (macro-categories of food); overview of the origin of all items and quantities
- **Mobility & Transfer:** overview of the types of vehicles used, type of fuel and fuel efficiency; scenario of Ecological Footprint reduction with alternative modes of transportation
- **Activity & Service:** breakdown by land types and main factors contributing to the Ecological Footprint value

Entering into the MEET process also gives the possibility to receive package-specific recommendations and support in amending the package to reduce its Ecological Footprint while maintaining a high level of quality for a sustainable ecotourism experience.

6. Preview questionnaires of the calculator

Introduction section

The following questions deal with the general information on the Protected Area you are answering for, as well as the description of the ecotourism package under analysis.

Protected Area Information

- **Protected Area Name**

- **Country**
Calculator will let you choose the country from a drop-down menu
- **How far is the Protected Area's distance from the national capital**
Road distance in km

Package Details

- **Package name**

- **Duration of the package**
Number of days:
Number of nights:
- **Number of participants**

Accommodation section

This category includes parameters related to each hosting facility involved in the ecotourism product to host the tourists. Per each hosting facility included in the ecotourism product, please answer the following questions.

- **Accommodation name**

- **Is the accommodation used for the entire stay?**

- Yes
- No
 - If NO, which night(s) will guests use these accommodations?
 - Night 1
 - Night 2
 - Night 3
 - ...

- **Accommodation type:**

- Resort
- Hotel
- Agritourism/guest house
- Lodge
- Apartments renting/B&B
- Campsite (hosts stay in tents)
- Traditional housing
- Other: specify _____

- **Is this hosting facility open all year long or only in the holiday season:**

- All year
- Seasonal opening
 - If seasonal, please specify the months: from _____ to _____

- **Does the hosting facility have an environmental/sustainability certification (e.g. ECST, EMAS)**

- Yes
- No

- **Does the hosting facility provide energy and water saving tips or off-set programs (e.g. activities for compensating energy consumption such as payment for offsetting carbon emissions) to clients?**

- Yes, tips for both energy and water saving
- Yes, only water-related tips
- Yes, only energy-related tips
- Yes, other off-set programs
- No

- **Does the hosting facility have a customer feedback system in place?**

- Yes; feedback system includes environment- or sustainability-related aspects
- Yes but without environmental or sustainability aspects
- No

- **Number of employees in the hosting facility (at the time of the package):**

- **Number of floors in the building:**

- **Total number of tourists' bed-nights in the most recent full year:**

- Bed-nights in summer (June-August): _____
- Bed-nights in autumn (September-November): _____
- Bed-nights in winter (December – February): _____
- Bed-nights in spring (March-May): _____
- If seasonal data is not available, indicate the total number of bed-nights over the course of the year: _____

- **Total built-up surface of the hosting facility in m² (if the facility has multiple buildings, please provide the sum of all of them):**

Surface in m²

- _____ m²

- **Average size of the room (or tent) assigned to each tourist:**

Surface in m²

- _____ m²

- **Average number of occupants per room:**

- **Indicate the Energy Performance Certificate (EPC) rating of the hosting facility:**

- Class A+
- Class A
- Class B
- Class C
- Class D
- Class E
- Class F
- Class G
- N/A
- Other, specify: _____

- **Indicate the default air temperature the hotel set in rooms and common areas (where applicable):**

Winter opening:

Summer opening:

N/A

- <15 °C

- 15-18 °C

- 18-20 °C

- 20-22 °C

- 22-24 °C

- >24 °C

- <15 °C

- 15-18 °C

- 18-20 °C

- 20-22 °C

- 22-24 °C

- >24 °C

-

- Are customers allowed to set their own room temperature?

- Yes
- No

- Is the hosting facility connected to a national or local electricity grid?

- Yes, connected to the national grid
 - ***If connected to NATIONAL GRID: Please indicate the annual consumption of electricity of the hosting facility. Please look at the physical data (in kWh) you can find in the bills:***
Physical consumption in kWh/yr: _____

- Yes, connected to a local grid
 - ***If connected to LOCAL GRID: Please indicate the energy source of the local grid and the related annual consumption of the hosting facility. Please identify your system and write down the production in the appropriate measurement unit – kW, m³ or liters.***

Select	Mode of ELECTRICITY GENERATION	Annual production
<input type="checkbox"/>	Photovoltaic	kWh ...
<input type="checkbox"/>	Wind energy	kWh ...
<input type="checkbox"/>	Thermoelectric generator	kWh ...
<input type="checkbox"/>	Geothermal energy	kWh ...
<input type="checkbox"/>	Hydro generator	kWh ...
<input type="checkbox"/>	Fuel	LPG
<input type="checkbox"/>		Natural Gas
<input type="checkbox"/>		Diesel
<input type="checkbox"/>	Solar	kWh ...
<input type="checkbox"/>	Other, specify	

- No, self-sufficient
 - ***If connected to self-sufficient system: Please indicate the annual consumption of electricity of the hosting facility. Please look at the physical data (in kWh) you can find in the bills:***
Physical consumption in kWh/yr: _____

- Does the hosting facility have an electricity self-generation system installed?

- Yes
- No

- If yes, please indicate the energy source used in the self-generation system and the average amount annually produced (identify your system and write down the production in the appropriate measurement unit – kW, m³ or litres. Write "N/A" in the systems that you do not use)

Select	Mode of ELECTRICITY GENERATION	Annual production
<input type="checkbox"/>	Photovoltaic	kWh ...
<input type="checkbox"/>	Wind energy	kWh ...
<input type="checkbox"/>	Thermoelectric generator	kWh ...
<input type="checkbox"/>	Geothermal energy	kWh ...
<input type="checkbox"/>	Hydro generator	kWh ...
<input type="checkbox"/>	Fuel	LPG
<input type="checkbox"/>		Natural Gas
<input type="checkbox"/>		Diesel

<input type="checkbox"/>	Solar	kWh ...
<input type="checkbox"/>	Other, specify	

- **Please indicate what the electricity is used for (select all that apply):**
 - Appliances and lighting
 - Heating system
 - Hot water production
 - Air conditioning
 - Other, please specify: _____
- **Please indicate whether the hosting facility uses energy-saving light fixtures (e.g. compact fluorescent lamps):**
 - Yes
 - No
- **Is the facility provided with a HEATING SYSTEM separated from the electricity system?**
 - Yes
 - No
- **If yes, please indicate the energy source and its average annual consumption (identify your system and write down the consumption in the appropriate measurement unit – kW, m³ or litres. Write "N/A" in the systems that you do not use.**

Select	ENERGY SOURCE of heating system	Physical consumption
<input type="checkbox"/>	Natural Gas (methane)	m ³ ...
<input type="checkbox"/>	LPG (propane)	m ³ ...
<input type="checkbox"/>	Heating oil	l ...
<input type="checkbox"/>	Heat pump	COP ...
<input type="checkbox"/>	Photovoltaic	kWh ...
<input type="checkbox"/>	Solar energy	kWh ...
<input type="checkbox"/>	Biomass (Wood and Pellet)	m ³ ...

- **Is hot water production combined with the heating system?**
 - Yes
 - No
- **If NOT, please indicate the energy source and its average annual consumption (identify your system and write down the consumption in the appropriate measurement unit – kW, m³ or litres. Write "N/A" in the systems that you do not use).**

Select	ENERGY SOURCE of hot water production	Physical consumption
<input type="checkbox"/>	Natural Gas (methane)	m ³ ...
<input type="checkbox"/>	LPG (propane)	m ³ ...
<input type="checkbox"/>	Heating oil	l ...
<input type="checkbox"/>	Heat pump	COP ...
<input type="checkbox"/>	Solar energy	kWh ...
<input type="checkbox"/>	Biomass (Wood and Pellet)	m ³ ...

- **Indicate the average default temperature of the domestic hot water:**
 - <40 °C

- 40-45 °C
- 45-50 °C
- 50-55 °C
- 55-60 °C
- >60 °C
- N/A

- **Please indicate the facility's annual consumption of water from the aqueduct. Please look at the physical data (in m³) you can find in the periodic bills:**

m³/yr: _____

- **Does the hosting facility use water from a provision system other than the aqueduct?**

- Yes, specify _____
- No

- **If yes, please indicate the annual volume of water consumed:**

m³/yr: _____

- **Indicate whether the hosting facility uses high energy efficiency appliances (e.g. dishwasher, washing machines, dryer, vacuum cleaner, televisions, kitchen appliances etc.):**

- Yes, all of them
- Yes, half of them
- No

- **How often does the hosting facility replace linen in bedrooms?**

- Every day
- Every 2-3 days
- Every week
- Linen not provided

- **Does the hosting facility use re-useable or disposable tablecloths/placemats?**

- Re-usable tablecloths
- Disposable placemats
- N/A

Food & Drinks

This category includes parameters related to each meal that is envisioned in the ecotourism package, including breakfast, lunch, dinner and any other type of food-related activity (i.e. wine/food tasting, tea/coffee breaks, snacks, etc.). Per each meal envisioned in the package, the main parameters are:

- **Meal type:**
 - Breakfast
 - Lunch/light lunch
 - Dinner/light dinner
 - Wine/food tasting
 - Other (e.g. tea/coffee break; aperitive; snack), specify _____
- **Indicate the service provider and its name and location for this meal:**

<input type="checkbox"/> Hotel: name _____	Location _____
<input type="checkbox"/> Restaurant: name _____	Location _____
<input type="checkbox"/> Agritourism: name _____	Location _____
<input type="checkbox"/> Food truck: name _____	Location _____
<input type="checkbox"/> Bar/café: name _____	Location _____
<input type="checkbox"/> Wine/food tasting facility: name _____	Location _____
<input type="checkbox"/> Other specify: name _____	Location _____
- **Indicate number of employees involved in meal preparation and serving:**
 - ____
- **Indicate the cooking time needed for preparing the entire meal (time on the stove or oven in minutes):**
 - Minutes: _____
- **Indicate the type of stove/oven used for preparing the meal (select all that apply):**
 - Gas stove or oven
 - Electric / induction stove or oven
 - Wood stove or firewood oven
 - Other, specify....
- **How are the food leftovers treated?**
 - 100% discarded
 - 75% discarded and 25% re-used
 - 50% discarded and 50% re-used
 - 25% discarded and 75% re-used
 - 100% re-used
- **If reused, please indicate how: _____**
- **Describe the menu in details (item by item):**

Mobility & Transfer

This category includes parameters related to different types of transfers envisioned throughout the package for tourists to move from one place to another, as well as any kind of equipment or food delivery to the group of tourists. For each of the transfers performed each day in the package, please answer the following questions:

- **Name of the transport service provider**

- **Describe the point of origin and point of destination for this route**

- From airport/station/port to the hotel
- From hotel to airport/station/port
- From hotel to restaurant
- From restaurant to hotel
- From hotel to activity
- From activity to hotel
- Moving of equipment for activity
- Other, specify

- **Indicate the number of employees involved in providing the transfer service:**

- **Indicate the distance (in km) covered in the route:**

km: _____

- **Please indicate the duration of the transfer (in minutes):**

Minutes: _____

- **Indicate the mode of transport:**

- By walk
- By bike
- By car/4x4 WD car/van/shuttle/minibus
- By public transport
- By horse/mule riding
- By ferry/speed boat
- Sailing boat/catamaran/boat/dinghy
- Other, please specify

- **For any motor vehicle used in the route, please indicate:**

Fuel type

- Gasoline
- Diesel
- Methane
- LPG
- Hybrid (petrol + electric)
- Hybrid (petrol + LPG/methane)
- Electric

Fuel efficiency (in **km/l** or km/kg for methane vehicles). **Note:** often the fuel efficiency is given in l/100 km. Please make sure to report this data in km/l:

- <5

- 5-10
- 10-15
- 15-20
- 20-25
- >25
- Do not know

- **Q. 12 Indicate the vehicle occupancy (maximum number of people allowed in the vehicle):**

Activity & Service

This category includes parameters related to the services and activities envisioned in the ecotourism product (i.e. excursions, visits, PA-related activities, birdwatching, kayaking, snorkeling/scuba diving, etc.). Per each activity envisioned in the ecotourism product, please answer the following questions:

- **Name of the activity**

- **Does the activity have any green/sustainable label or certification:**

- Yes
- No

- **Does the activity include any transfer of equipment (for instance bikes to be moved from their origin to the venue of the activity)?**

- Yes (then please fill a mobility survey also)
- No

- **Indicate the number of staff involved in providing the service/activity:**

- **Indicate the duration of the activity in hours:**

- **Indicate the distance covered during the activity (e.g. hiking or sailing)**

- m ...
- Km....
- Miles...
- Activity does not involve any move

- **The activity includes any motor vehicle:**

- Yes
- No (End survey)

If yes, please provide following information:

- **Type of motor vehicle:**

- Car / Jeep
- Motorboat
- Sailing boat
- Quad
- Waterscooter
- Waterbike
- Other specify ...

- **Type of fuel:**

- Gasoline
- Diesel
- Methane
- LPG

- Hybrid (petrol + electric)
- Hybrid (petrol + LPG/methane)
- Electric

- **Fuel efficiency (in km/l or km/kg for methane vehicles). Note: often the fuel efficiency is given in l/100 km. Please make sure to report this data in km/l:**

- <5
- 5-10
- 10-15
- 15-20
- 20-25
- >25
- Do not know