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Defining spatial areas for Measuring the Sustainability of Tourism at a subnational level

Discussion Paper

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1- From local to global: making the connection between national and subnational level

Tourism has different kinds of impact on the environment, at different spatial scale. Then, the need for knowledge might be different from a spatial scale to another. Meanwhile, local data can also provide an overview to the country and help it to manage its territory and its destinations at a global level. Thus, local data are required to identify locally weaknesses and hotspots of tourist destinations of a country and are crucial in order to assess the sustainability of tourism. So, making connection between national and sub-national level are complementary and can provide mutual contributions in the measurement and the management of the sustainability of tourism.

Subnational data for the local knowledge and management of tourism

"You cannot manage what you cannot measure"

Tourism is characterised by its **seasonal concentration**. Considering temporal variables when examining impacts of tourism is very important given that seasonality can be very different throughout a country. A country with stable tourism flows throughout the year may contain several destinations suffering from intense seasonality. It these cases, national averages of tourism volumes do not allow to identify "local destination" patterns.

Tourism is also characterised by its **spatial concentration**. Particularly, most of the sustainability issues related to tourism development are located in certain spots (small areas) of a country. Therefore, data generated from the local level are required to manage destinations and to analyse local impacts and pressures on the environment and society, including resident population.

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In order to analyse tourism concentrations and their impacts, local data are required to understand and manage the **carrying capacity of destinations** which involve the population flow's threshold not to be exceeded for a destination without risking jeopardizing its territory (natural resources, cultural heritage, etc.). Indeed, **overtourism**, due to spatial and seasonal concentration of the activity, affects the environment of local destinations (overcrowded beaches, etc.) which then affects the economic development of tourism itself in these territories. It involves a lot of environmental pressures: risks of water shortage due to a high increase of water consumption, wastewater treatments methods not adapted to the load variations (leading to discharges of polluted water into the environment), increased waste generation leading to difficulties in collecting and processing, overexploitation of natural resources…
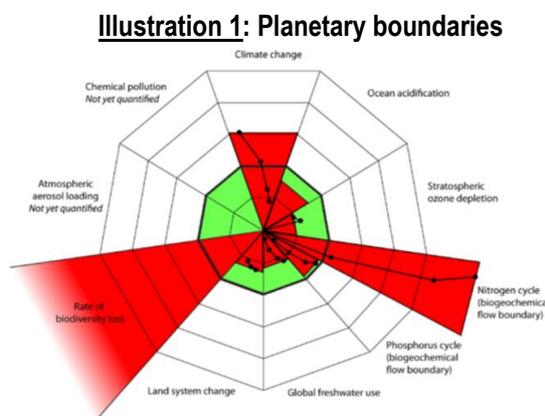
Then, certain **relevant issues** of SF-MST can be better addressed relevantly in the local context: air pollution, natural resources pollutions (water, soils, and sea), noise and disturbance, congestion, landscape quality, labour conditions, local communities' wellbeing. Moreover, pressure on biodiversity also requires to be analysed at a local level even if it also should be a global and national policy issue. Recently, Unesco has also warned about the risk of deterioration of some world heritage sites due to the climate change.

National data for an overview of the sustainability of tourism at a global scale

National data and measurement help to lead international programs and strategies in favour of the sustainability of tourism. Moreover, tourism sector has been involved in **SDGs** and **2030 agenda.** This sector has been specifically included as targets in Goals 8, 12 and 14 on inclusive and sustainable economic growth, sustainable consumption and production (SCP) and the sustainable use of oceans and marine resources, respectively, but should be taken into account through all SDGs.

At a national level, data are needed to give an overview of the contribution of tourism to the environmental change. For example, increase of travels' distance or frequency and GHG emissions linked due to transport is a global issue that requires to be analysed in an international context.

In 2009, nine **planetary boundaries** within which humanity could operate safely have been identified and quantified for seven of them [Rockström and al., 2009; revision by Steffen and al., 2015] (figure 1). Transgressing one or more planetary boundaries may be deleterious or even catastrophic due to the risk of crossing thresholds that will trigger abrupt environmental change within continental to planetary scale systems. In 2015, scientists estimated that four on nine of these limits have already been exceeded (climate change, biodiversity loss, nitrogen and phosphorus cycles, land-system change) at the global scale. The concept of the planeraty boundaries has recently been applied in the 7th Union Environment Action Program to 2020 - *"Living well, within the limits of our planet"* [decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013].

Illustration 1: Planetary boundaries

Source: Rockström, Stockolm Resilience Centre et al. 2009

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National data on tourism are therefore required to measure the **global contribution** of human activities on the environmental degradation and global pollution and to planetary boundaries.

Transparency and support for the measurement of these aspects could be fostered at the UN scale. In this respect, the tourism sector should take special care in measuring activities as, for examples, transport (CO_2 emissions), use of protected environmental and cultural sites, maritime and coastal tourism use of land… For some of those issues the accounting approach is especially useful, and could be supported at the global and national scale, because its regulation might be decided at those specific scales.

Mutual inputs

The 12 pillars of sustainable tourism provided by UNDP/WTO in 2005 could be used as a **roadmap** and build a **bridge** between national and local level. In this aim, both subnational and national statistical data are required. Some sustainable tourism issues can be best approached from a national scale and that may be reported to international organizations (water consumption, energy consumption, CO2 emissions, production of waste, etc.). But at the same time, some sustainable tourism issues are specific of the local (congestion issues, heritage conservation, wellbeing of residents, etc.).

Illustration 2: the 12 pillars of sustainable tourism
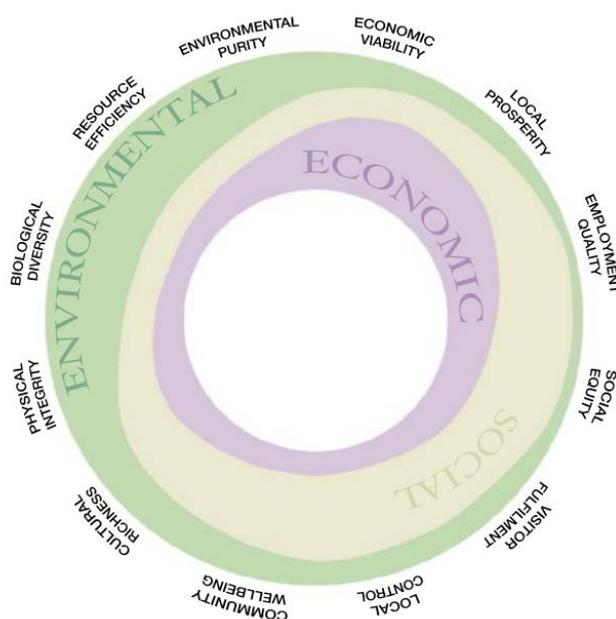
Source: Unep/WTO, 2005 Making tourism more sustainable

Local data or indicators may enhance the information provided by national data or indicators not only because they are more detailed or for comparison purposes, but also because of the different focus. Measuring local sustainability supposes focusing on different aspects with respect to national sustainability. At a local scale there are several strategic sustainability indicators that cannot be aggregated or hidden behind a national average. This is the case of the quality of bathing water, the clearness of beaches, the level of noise, damages to the landscape, depletion of local water resources, impacts to local culture, oil spills, sanitary conditions, wellbeing of local population, natural hazards, etc.

There may also be an additive connection between the local and the national scale **aggregating local data**: comparison between non tourism places and tourism places could be done with a reference value provided by the national average, etc.

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- In the case of most European Regions, having full competencies in tourism, statistical data or indicators must be able to help answering questions like: compared to other industries or the whole economy, how resource intense is tourism? Is my economy too dependent on tourism? How is seasonality affecting the quality of jobs? Etc.
- For local destinations the questions to be answered could be: is tourism affecting any valuable ecosystem? How does tourism impact land use? Etc.

In short, SF-MST aims to address in parallel the issue of the contribution of tourism to national, subnational and local sustainability. The addition of the national results for all the countries in the world should proxy the sustainability of global tourism. In addition, SF-MST should provide guidelines and methodologies for analysing and managing the impacts in every tourism destinations.

2. Identifying and delineating sub-national level tourism areas

At a local level, there is a real **complexity to clearly delineate the spatial limits of destinations** for two main reasons: there are both a **variety of destinations' profile and many possible types of areas**.

Identifying destinations profiles

Geographical characteristics of a region have an impact on environmental management. In this view, some indicators related to sustainability may be relevant only in certain destinations. For example, contagious diseases such as malaria may be of great interests for tourism in certain parts of the world and a negligible issue in other places. Then, tourism areas at a subnational level can be highlighted by type of destinations' characteristics *(table 1)*. Delimiting tourism areas can be easier in some forms of coastal tourism (resort destinations), cultural tourism (world heritage cities) and nature tourism (protected areas) than in other important typologies of destinations where tourism supply and demand is less concentrated or integrated within other human activities (rural tourism, large cities, etc.)

Table 1: example of destinations' delineation and related environmental issues

Type of destination (examples)	Specific environmental issues (examples)
Coastline and small islands destinations	Beaches erosion Sea pollution, sea waste and micro-plastic waste Waste storage Biodiversity disturbance Pollution from cruise ships Natural risks (marine flooding…) Waste collect and treatment
Mountain destinations	Wildlife loss and disturbance Natural risks (soil erosion, landslides…) Nature sports infrastructures Waste storage Landscape preservation Watercourses pollution Waste collect and treatment
Urban destinations	Air pollution Traffic jam Noise and disturbance Waste collect and treatment
…	…

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Tourism intensity is another criterion that allows delineating sub-national tourism areas. Measurement efforts could be concentrated in places with the highest impacts and concentration of tourism supply and demand, even if these places may account for a small share of the territory of the country. These areas may concentrate a large share of tourism sustainability issues. The managing authority should have means and ways of identifying this concentration, which is an intrinsic characteristic of tourism activity: concentration in time and space. Indicators as tourism intensity rate (number of tourist beds per inhabitant) or tourism density (number of tourist beds per km²) could be used to identify these destinations. However, some sustainability issues related with tourism affect what can be called the "area of influence of tourism" for example, the local wellbeing should be measured in the surroundings of the local destinations within a range of kilometres where tourism employees have their homes and local communities are settled. For these reasons, some of the environmental aspects of tourism in local destinations will be related to a more extended area than the local destination itself.

Tourism destination model is another relevant criterion. Some areas are completely oriented to tourism, other areas developed around the old town, other areas developed around some attractions, etc. Provided some conditions of feasibility, relevance and confidentiality, subjectivity issues to define functional areas can be used. Tourism models also include also the variables of how tourism destinations are managed and governed (e.g. centralized, resort—led models like in the US vs more scattered, decentralized destination structures like in the EU).

Spatial boundaries

Then, there is a challenge for the identification and delineation of **small tourism destinations**. In any case, if there is no concentration of tourism supply and demand in certain areas of the city or of the countryside, there is no identifiable "local tourism destination".

Administrative boundaries (regions, group of municipalities, municipalities…) can be a practical way of identifying and delimiting "local tourism destinations". Municipality's level could be useful not only in order to manage tourism sector or activities, but also to analyse the environmental management of services (e.g. waste, wastewater).

However, **some local tourism destinations are lower in scale** than the municipality and may nest with other local tourism destinations to form bigger tourism areas.

Then, **some destinations' delineation does not correspond with administrative boundaries** (Natural Parks belonging to different municipalities, ski resorts…)

Regarding these particularities, a flexible and dynamic definition of tourism areas is required so it can be adapted to changing spatial patterns.

3- Defining spatial scales

Spatial scales could be aggregated in **three main categories[2]** *(see table 2)*:
- The macro scale (international or global);
- A meso scale (national, regional or territorial areas);
- The micro level (local, municipal, geolocated areas)

These groups would be a reading grid useful to adapt each environmental or social issue to the adapted scale. However, there are also issues common to each spatial scale.

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[2] Hall, Gossling and Scott (2015)

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Table 2: example of spatial scales framework

Group	Spatial scale (examples)	Environmental, social and economic issues (examples)
Macro scale	International data Supra-national data	Transport Tourist flows Pollutant emissions Loss of biodiversity GHG emissions
Meso scale	National data Regional data *(e.g. NUTS 2, coastline destinations, mountain destinations, urban tourism, etc.)*	GHG emissions Domestic travels Water pollution Soil sealing Waste Loss of biodiversity
Micro scale	Municipal data Local data *(e.g. geolocated data)*	Overtourism Noise and disturbance Natural resources contamination Overexploitation of natural resources Waste Use conflicts Community well-being Threat on biodiversity Natural risks

Another possible approach, based on NECSTouR, MITOMED+ and Andalusia's experience, could be to select **five spatial scales** with, in addition, regional scale and distinction between municipality with or without competences.

4- Key issues to consider in the development of sub-national level data sets for MST

Collecting data at subnational level might raise several challenges and issues.

There are some issues related to the **spatial characteristics of areas**, previously mentioned:
- Potential large number of areas
- Identifying the limits of small areas
- Disparities of spatial area from a country to another

Data's availability may also be an issue due to the particularity of sub-national level:
- Feasibility issue of data collection and problems of statistical significance of information obtained through samples.
- Data confidentiality issues may arise.
- Administrative data are not always available at a local level. Then, in addition or to complete the needs, possibilities and challenges of using big data or open data sources should be considered, taking into account budgetary considerations.
- Some indicators that are needed at the local scale have a qualitative nature (local wellbeing, cultural richness, etc.). The way of obtaining comparable information between local destinations is conducting surveys, implying additional costs.

To be usable and to see temporal and spatial patterns at the destination level, data must be of good **quality**, which implies methodological issues.

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6

- In order to be useful, data collection requires accessibility and alignment in the format
- Metadata should be available
- Georeferenced, regular and easily accessible data are also required considering the spatial and temporal variables
- Relevance of the role of official statistics, methodologies and definitions in order to have a rigorous and homogeneous system allowing a sound benchmarking.

There are some issues related to the **large number of stakeholders** that might be involved:
- The vision of sustainable development requires the integration of various types of information: environmental, demographic, cultural, geographic, economic and sectorial data, etc., which implies a clear involvement of the whole stakeholders.
- The real competencies in terms of tourism policy at each government or territorial level should be taken into account.
- Collaboration of producers and users of statistics is also very useful to identify needs and best practices in the measurement of specific topics, such as sustainability, accessibility, and residents' attitudes towards tourism… in order to provide statistically based indicators.

In addition, it is important to support the development of a theoretical reference **with the design of a feasible System of Indicators**. Indicators produce relative measures, and this facilitates benchmarking and comparability. In this purpose, sets of indicators adapted to issue areas could be elaborate in order to measure the sustainability of tourism in destinations, using both quantitative and qualitative indicators.

Several sets of indicators have been elaborated in the previous decades. A work to calculate them, basing on existing data (administrative data and open data sources) could be launched. If existing data are not available or not appropriate to calculate them, countries could agree on a common methodology to develop common proxies.
- Quantitative indicators for the national level should contain a set of indicators supported by expert consensus and based on existing lists of tourism indicators like WTO (2004), European Tourism Information System (ETIS), TOUERM (2017), etc.
- Quantitative indicators for the local level may contain some of the quantitative indicators collected at the national level, when applicable and relevant
- Qualitative issues could be addressed through surveys on the 12 pillars of sustainable tourism UNEP & WTO (2005).
- Quantitative and qualitative indicators should be adapted to each kind of destinations (for example water management may be less strategic in a Nordic country than in a desert country).

Table 3: example of system of Indicators for MST

	National and global **relevance**	Local relevance
Quantitative indicators	Expert consensus list based on the 12 pillars of UNEP/WTO (2005), WTO (2004), ETIS (European Tourism Information System), etc.	The same as for national scale (when applicable) plus indicators without an international recognition (but relevant for local stakeholders)
Perceptions of stakeholders	Important Performance analysis of the 12 Pillars of UNEP & WTO 2005	Importance performance Analysis of 12 Pillars of UNEP & WTO 2005

Source : Mendoza-Jiménez & Hernández-Martín (2017)

As different spatial areas imply different realities in terms of data needs and resources to obtain, different approaches could be considered to measuring sustainability, for example, between national level (linking TSA and SEEA) and subnational level (system of indicators). **The information provided by indicators should be adapted to the end users.**

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7

The 12 pillars of sustainable tourism presented in UNEP/WTO (2005) should be a guideline for measuring tourism sustainability. The SF-MST project could whether support or modify this list of issue areas, which require several indicators for each pillar, in order to have a starting point.

Table 4: Aims of the 12 pillars of tourism sustainability

Economic Viability	To ensure the viability and competitiveness of tourism destinations and enterprises, so that they are able to continue to prosper and deliver benefits in the long term
Local Prosperity	To maximize the contribution of tourism to the economic prosperity of the host destination, including the proportion of visitor spending that is retained locally
Employment Quality	To strengthen the number and quality of local jobs created and supported by tourism, including the level of pay, conditions of service and availability to all without discrimination by gender, race, disability or in other ways. Under or over qualification assessment. Level of tourism specific skills, even if it is non-formal education. Need for collaboration with education statistics.
Social Equity	To seek a widespread and fair distribution of economic and social benefits from tourism throughout the recipient community, including improving opportunities, income and services available to the poor
Visitor Fulfillment	To provide a safe, satisfying and fulfilling experience for visitors, available to all without discrimination by gender, race, disability or in other ways
Local Control	To engage and empower local communities in planning and decision making about the management and future development of tourism in their area, in consultation with other stakeholders
Community Wellbeing	To maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation. Residents´ attitudes towards tourism
Cultural Richness	To respect and enhance the historic heritage, authentic culture, traditions and distinctiveness of host communities
Physical Integrity	To maintain and enhance the quality of landscapes, both urban and rural, and avoid the physical and visual degradation of the environment
Biological Diversity	To support the conservation of natural areas, habitats and wildlife, and minimize damage to them
Resource Efficiency	To minimize the use of scarce and non-renewable resources in the development and operation of tourism facilities and services
Environmental Purity	To minimize the pollution of air, water and land and the generation of waste by tourism enterprises and visitors

Source: UNEP/WTO (2005)

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8

5- Annex

Composition of the sub-group "Defining spatial areas"
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