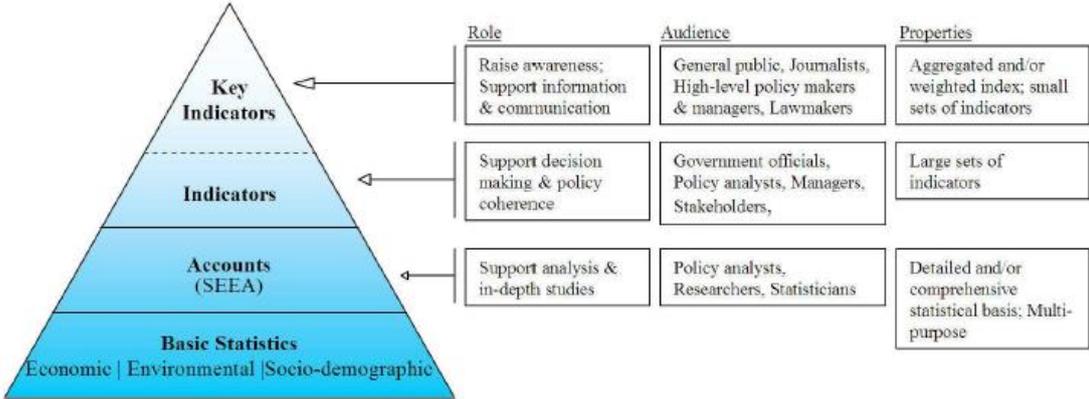# Annex 36. Tourism and the Environmental Dimension: General Background

1. Indicators are used to synthesize, simplify and communicate information. Given that environment statistics are usually too numerous and detailed to satisfy the needs of policy makers and the general public, they often require further processing and interpretation, resulting in environmental indicators. Environmental indicators have the purpose of defining objectives, assessing present and future direction with respect to goals and values, evaluating specific programmes, demonstrating progress, measuring changes in a specific condition or situation over time, determining impact of programmes and conveying messages. UN policy frameworks such as the Millennium Development Goals (MDGs) or the new post-2015 Sustainable Development Goals (SDGs) indicator frameworks are typically used for the identification and structuring of indicators. (SEEA Experimental Ecosystem Accounting, 1.33).

2. Accounting frameworks, such as the SEEA, reorganize the relevant economic and environmental statistics according to stocks and flows within and between the environment and the economy based on national accounting principles, thus linking environment statistics with the System of National Accounts (SNA) and facilitating the analysis of relationships between the economy and the environment. (SEEA Experimental Ecosystem Accounting, 1.36).

3. The relationships between different types of information in the context of the SEEA are shown in Figure 1. The figure highlights that basic statistics and data are organized using accounting frameworks and that indicators can be sourced from accounts. While it is the case that indicators can be sourced directly from basic statistics, the filter of an accounting framework lends significantly to the coherence of the indicators (SEEA Applications and Extensions 2.9).

Figure 3 Information Pyramid. Source: EC, OECD, UN & WB (2014) SEEA Applications and Extensions, para 2.9.

4. There are two issues of great relevance regarding tourism and the environmental dimension of sustainability that should be highlighted in this overview section:
    -   Spatial analysis
    -   Combining physical and monetary data

A.1. Spatial analysis

5. One of the most challenging issues regarding the use of national data of the SEEA accounting framework is the ventilation of data on the different territorial entities related with such information: the term "spatial analysis" is used in the SEEA documents to refer to such issue.

6. The occurrence and impacts of environmental phenomena are distributed through space without regard for political-administrative boundaries. The most meaningful spatial units for environment statistics are natural units, such as ecosystems, landscape or land cover units; or management and planning units based on the natural units, such as protected areas, coastal areas or river basin districts.

7. Economic and social statistics are traditionally aggregated according to administrative units. This difference can complicate the collection and analysis of environment statistics. There is however a trend towards producing more geo-referenced data, which would overcome some of the spatial complications of analysis.

    Environmental indicators have some characteristics being the geospatial information one of great relevance for the INRouTe project as mentioned in different parts of this document (see particularly Section 5/D.2) *Analytical territorial units for sub-regional measurement and analysis*). The following paragraphs highlight different topics to better understand why the setting up of geocoded data bases is crucial for measuring and analyzing subnational tourism activity; they also allow to understand how the measurement of tourism at subnational levels can provide useful inputs for a better design of national policy initiatives.

8. Geographically referenced information that includes digital maps, satellite and aerial imagery, and other sources of data that are linked to a location or a map feature, all structured in databases, will also add significantly to the quantity and quality of information that is organized within the context of environment statistics. GIS can be viewed as an integrating technology that helps to capture, manage, analyze, distribute and use a wide range of data with a spatial or locational component (SEEA Experimental Ecosystem Accounting, 1.38).

9. Geospatial information presents the location and characteristics of different attributes of the atmosphere, surface and sub-surface. It is used to describe, display and analyze data that have discernible spatial aspects, such as land use, water resources and natural disasters. Geospatial information allows for the visual display of different statistics in a map-based layout, which can make it easier for users to work with and understand the data. The ability to overlay multiple data sets using software, for instance on population, environmental quality, and environmental health, allows for a deeper analysis of the relationship among these phenomena.

10. The complexity of current environmental issues (e.g., climate change, biodiversity loss, health, natural disaster frequency and intensity, population growth, food and water shortages, etc.) increasingly calls for the integration of geospatial information, statistics and sectorial data for more effective and efficient monitoring of progress in the environmental pillar of sustainable development. Geographic Information Systems (GIS) can help establish the links between different types and layers of data by providing powerful tools for storage and analysis of spatial data and by integrating databases from different sectors in the same format and structure.

11. Geospatial information adds significant value and utility to environment statistics. Ideally, geographic aspects of data should always be collected, represented and analyzed at the most detailed scale possible, dependent on national capacities and priorities. Geospatial information enables better analysis of environmental issues as environmental, social and economic statistics can be aggregated or disaggregated according to a wide range of scales and zones meeting diverse analytical and policy demands, such as: natural units (e.g., watersheds, ecosystems, etc.); administrative units (e.g., municipalities, districts, counties, regions, etc.); management units (e.g., protected areas, river basin districts, etc.); planning units (e.g., coastal zones, urban areas, etc.); legal property units (e.g., cadastral units, etc.); and analytical units (e.g., land cover units, socio-ecological landscape units, eco-complexes, geo-systems, eco-zones, etc.).

12. Learning from and studying the subnational level significantly contributes to comprehend the complexity of domestic tourism at a national scale (thus, there would be feedback subnational/national). Similarly, the analysis of the links between tourism and sub-regional territorial entities (both administrative or analytical units) can be of an enormous use for subnational levels (thus for the national level).

     This would be the case of using geo-referenced databases within the tourism domain (both by public and private key stakeholders) as explained in Chapter 6/ C Adapting the R-TIS to Sub-regional Extensions.

A.2. Combining physical and monetary data

13. This issue is well known in the case of tourism: not only tourism statistics development has been mainly about physical data and indicators but also the TSA: RMF2008 recommends to identify a selected number of physical type of data for the purpose of allowing for consistency analysis between both type of data in particular topics (TSA table 10 refers to such a set of data).

14. In environment accounting the measurement of physical flows refers to three types: the flows from the environment to the economy, flows within the economy and flows from the economy to the environment (SEEA_CF 2.14)

15. Physical flows are recorded in physical supply and use tables. These tables are extensions of the monetary supply and use tables used for the recording of flows of products in monetary terms in the SNA.

16. The presentation of information in a consistent format, which combines integrated physical and monetary data, is one of the strongest features of the SEEA Central Framework. This feature enables the provision of a wide range of information on specific themes (e.g., water, energy and air emissions), the comparison of related information across different themes, and the derivation of indicators that use both physical and monetary data.

17. Given the integrated accounting structures of physical and monetary accounts, it is logical to use these structures and the common underlying accounting rules and principles to present physical and monetary information at the same time. Such integrated formats have sometimes been referred to as "hybrid" presentations or accounts because they contain data in different measurement units. However, although the measurement units are different, the data sets are presented in accordance with common classifications and definitions; hence, these formats are referred to as combined physical and monetary presentations.

18. Combining physical and monetary data is governed at its core by the logic of recording physical flows in a manner compatible with economic transactions as presented in the System of National Account framework. This linkage ensures a consistent comparison of environmental burdens with economic benefits, or environmental benefits with economic costs. It can be examined not only at the national level but also at disaggregated levels, for example, in relation to regions of the economy, or specific industries, or for the purpose of examining the flows associated with the extraction of a particular natural resource or the emissions of a particular material.

19. In combined presentations, it is legitimate to include only a limited set of variables, depending on the most urgent environmental concerns to be taken into consideration, and it is not necessary to construct an exhaustive physical supply and use table in order to be able to present combinations of physical and monetary data.

20. A combined physical and monetary presentation thus represents an analytical framework for showing which parts of the economy are most relevant to specific indicators and how changes in the economic structure influence the evolution of indicators over time.

21. It might be of interest to finalize these references to combining physical and monetary data both in TSA and SEEA_CF, reproducing Table 10 Non-monetary indicators in TSA: RMF 2008

Table 18 Non Monetary Indicators. Source: Table 10 TSA 2008 UNWTO

a. Number of trips and overnights by forms of tourism and classes of visitors

	Inbound tourism			Domestic tourism			Outbound tourism		
	Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors	Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors	Tourists (overnight visitors)	Excursionists (same-day visitors)	Visitors
Number of trips									
Number of overnights		x			x			x	

b. Inbound tourism: Number of arrivals and overnights by modes of transport

	Number of arrivals	Number of overnights

1.Air
   1.1 Scheduled flights
   1.2 Unscheduled flight
   1.3 Private aircraft
   1.4 Other modes of air transport
2. Waterway
   2.1 Passenger line and ferry
   2.2 Cruise ship
   2.3 Yacht
   2.4 Other modes of water transport
3. Land
   3.1 Railway
   3.2 Motor coach or bus and other public road
       transportation
   (i) taxis, limousines and rental private motor vehicle
       with driver
   (ii) Rental of man or animal drawn vehicle
   3.4 Owned private vehicle (with capacity up to 8 pers)
   3.5 Vehicle rental wtihout operator (up to 8 pers.)
   3.6 Other modes of land transport (horse back
       bicycle, motorcycles, etc.
   3.7 On foot		

TOTAL		

(*) In the case of inbound tourism, the variable would be "arrivals"

c. Number of establishments and capacity by types of accommodation

	Accommodation for visitors in ISIC 55			Real estate activities in ISIC 68	
	Short-term accommodation activities	Camping grounds, recreational vehicle parks and trailer parks	Other accommodation	Real estate activities with own or leased property	Real estate activities on a fee or contract basis
Number of establishments					
Capacity (rooms)					
Capacity (beds)					
Capacity utilization (rooms)					
Capacity utilization (beds)					

d. Number of establishments in tourism industries classified according to average number of jobs

	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	>1000	TOTAL

Tourism industries
 	
1 – Accommodation for visitors
   1.a – accommodation services for visitors except in 1-b
   1.b – accommodation services associated with all types of
       vacation home ownership
2 – Food and beverage serving industry
3 – Railways passenger transport
4 – Road passenger transport
5 – Water passenger transport
6 – Air passenger transport
7 – Transport equipment rental
8 – Travel agencies and other reservation services industry
9 – Cultural industry
10 – Sports and recreational industry
11 – Retail trade of country-specific tourism characteristic goods
12 – Country specific tourism industries										

TOTAL										

22.   As expressed in IRTS 2008:
-        "Table 10 presents a few quantitative indicators that are related to the previous tables and are important for the interpretation of the monetary information presented. The indicators include number of trips by forms of tourism, classes of visitors and duration of the stay; physical indicators regarding types of accommodation; modes of transport used by non-resident visitors traveling to the economic territory of the country of reference; and number and size of the establishments belonging to tourism industries" (para. 4.76).
-        "The SNA 2008 states explicitly that physical indicators are an important component of satellite accounts and therefore they should not be viewed as secondary items of the TSA (SNA 1993, paras. 21.5 and 21.113). However, further work will be required to improve the link between the provisional list of non-monetary indicators and the monetary tables. The data contained in this table will assist in the use non-monetary indicators as a key element in tourism analysis" (para. 4.77).