

# Statistical Framework for Measuring Sustainable Tourism

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Consultation Draft

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Draft prepared for initial round of consultation  
with the UNWTO Committee on Tourism  
Statistics and TSA and the Working Group of  
Experts on Measuring Sustainable Tourism

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February 2018

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## Foreword

The Statistical Framework for Measuring Sustainable Tourism (SF-MST) is an organizing structure for integrating statistics on the economic, environmental and social dimensions of sustainable tourism. It is planned that a final and complete SF-MST will be submitted for consideration by the United Nations Statistical Commission in March 2020 following an active process of research, discussion and consultation across multiple experts, sectors and stakeholders in the coming two years.

This draft of the SF-MST has been prepared for an initial round of consultation with the members of the UNWTO Committee on Tourism Statistics and TSA and the Working Group of Experts on Measuring Sustainable Tourism. It is the first draft to be the subject of broad consultation and feedback.

The SF-MST responds directly to the increasing demands for information that takes in account the various aspects of sustainable development and is relevant at different scales of analysis from local to global levels. These demands are most highlighted in the need for measures of progress towards the internationally agreed Sustainable Development Goals (SDGs) as part of the 2030 Development Agenda.

Tourism is widely understood to be a catalyst for sustainable development, an understanding encapsulated in the recognition of 2017 as being the International Year of Sustainable Tourism for Development. The measurement of sustainable tourism is one key means by which policy development and monitoring can work to support this potential.

UNWTO is the UN agency with the responsibility to carry forward work on the measurement of tourism. With the motivation to improve tourism statistics in the area of sustainability, in 2015 UNWTO commenced, jointly with the UN Statistics Division, the MST project. A Working Group of Experts has been formed to provide the technical direction required to advance the SF-MST. This group will operate under the auspices of the UNWTO Committee on Tourism Statistics and TSA and in concert with the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA).

This Draft reflects a synthesis of available material on the measurement of sustainable tourism from the perspective of official statistics. It builds on materials prepared for and discussed at the first meeting of the Working Group of Experts in October 2016<sup>1</sup> and discussion at the January 2017 UNWTO Committee of Tourism Statistics and TSA<sup>2</sup> on a draft outline for the SF-MST. This Draft also incorporates small extensions to the Preliminary draft presented to the 6<sup>th</sup> International Conference on Tourism Statistics, Manila, Philippines in June 2017<sup>3</sup>.

The SF-MST is a somewhat different document compared to many other statistical frameworks because it has a scope which involves connections with many other statistical domains across economic, environmental and social statistics. As a result, the general ambition is to seek to build on and integrate the wide range of existing statistical standards in relevant areas. For this reason, the structure and content of the SF-MST varies to some degree from other statistical standards.

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<sup>1</sup> [http://statistics.unwto.org/wg\\_meeting](http://statistics.unwto.org/wg_meeting)

<sup>2</sup> <http://statistics.unwto.org/committeestsat17thmeeting>

<sup>3</sup> <http://statistics.unwto.org/mstconference>

Chapter 1 provides an explanation of the rationale for the development of a statistical framework for measuring sustainable tourism, an overview of the SF-MST and a short discussion on implementation and potential applications. It is intended to provide a general entry point for compilers since there will be a wide variety of experts involved in the development of the SF-MST, many who are not official statisticians. Chapter 1 should provide a common understanding and reference point for the implementation and application of the framework.

Chapters 2, 3 and 4 describe the relevant concepts, definitions, measurement boundaries and related issues for the economic, environmental and social dimensions of sustainable tourism. Much more progress has been made since 2015 on the development of the framework in the economic and environmental dimensions and this is reflected in the balance of material drafted in the chapters. Research to advance measurement of the social dimension of sustainable tourism is ongoing and the current text represents an initial summary of the planned approach to the inclusion of the social dimensions in the SF-MST.

Chapter 5 describes a distinctive but fundamental feature of the SF-MST, the need for statistics at multiple spatial scales – from destination and local levels to national and global levels. The discussion of spatial scale provides the entry point for a discussion on measuring sustainability since location provides the common basis for the joint assessment of economic, environmental and social factors.

All of the material in this Draft should be considered a work in progress and requiring much further discussion among experts and stakeholders. Nonetheless, it is clear from engagement in the MST project to this point, that the broad framing and approach reflected in the SF-MST has substantive support from the statistical community and the broader tourism community. The work has received strong endorsement from the United Nations Statistical Commission at its most recent session in March 2017<sup>4</sup> and it has been endorsed by the UN Committee on Tourism Statistics and TSA. Most significantly, the development of the SF-MST is the key focus of the Manila Call to Action, a joint declaration of Ministers, Chief Statisticians and other conference participants, issued at the 6<sup>th</sup> International Conference on Tourism Statistics in June 2017 and reinforced as a key area of work at the 2017 UNWTO General Assembly in September 2017.

Beyond the development of this statistical framework, the MST project will aim to develop relevant compilation guidance, including for example guidance on the compilation of TSA, and similar materials to support compilers. An early example of this is the completion of a draft Technical Note on Linking System of Environmental-Economic Accounting (SEEA) and TSA as presented to the 6<sup>th</sup> International Conference on Tourism Statistics in Manila, June 2017. As well, the MST project is supporting pilot studies in a number of countries and will work towards the development of training courses, capacity building and implementation programs.

Overall, the intent to progress towards sustainable development outcomes, as embodied in the SDGs, requires evaluation of information that reflect changes over time and differences across locations. This requirement is a strong argument in favour of establishing comparable statistics as envisioned in the development of this statistical framework. It is hoped that the provision of this Draft SF-MST will further stimulate interest in the potential of this area of statistical development.

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<sup>4</sup> See UNWTO report <https://unstats.un.org/unsd/statcom/48th-session/documents/2017-17-TourismStats-E.pdf> and the Report of the Commission (see page 49) <https://unstats.un.org/unsd/statcom/48th-session/documents/Report-on-the-48th-session-of-the-statistical-commission-E.pdf>.

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## List of abbreviations and acronyms

ILO	International Labour Organization
IRTS 2008	International Recommendations for Tourism Statistics 2008
MST	Measuring Sustainable Tourism
SDGs	Sustainable Development Goals
SEEA	System of Environmental-Economic Accounting
SEEA EEA	System of Environmental-Economic Accounting Experimental Ecosystem Accounting
SF-MST	Statistical Framework for Measuring Sustainable Tourism
SNA	System of National Accounts
TSA	Tourism Satellite Account
TSA: RMF 2008	Tourism Satellite Account: Recommended Methodological Framework 2008
UN	United Nations
UNCEEA	United Nations Committee of Experts on Environmental-Economic Accounting
UNSC	United Nations Statistical Commission
UNSD	United Nations Statistics Division
UNWTO	World Tourism Organization
WGE-MST	Working Group of Experts on Measuring Sustainable Tourism

# 1 Introduction

## 1.1 What is sustainable tourism?

Sustainable tourism has been a topic of discussion in tourism circles since the early 1990s. The long-standing work of UNWTO in sustainable tourism is reflected in a range of contributions to policy and measurement. Using a focus on tourism destinations, the UNWTO has articulated that sustainable tourism should:

- i. make optimal use of environmental resources and conserve natural resources and biodiversity
- ii. respect the socio-cultural authenticity of host communities
- iii. ensure viable, long-term economic operations, including stable employment and contributions to reducing poverty<sup>5</sup>.

The UNWTO definition of sustainable tourism is presented in Box 1 below. The definition makes clear that sustainable tourism is a multi-faceted concept and, depending on one's perspective, different aspects and areas of focus will be relevant.

### Box 1: Defining sustainable tourism

#### UNWTO definition:

Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability.

Thus, sustainable tourism should:

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

Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary.

Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them.

Source: UNEP/UNWTO 2005, Making Tourism More Sustainable: A Guide for Policy Makers, Box 1.1

<sup>5</sup> UNEP/UNWTO (2005) Making Tourism More Sustainable: A Guide for Policy Makers, Box 1.1



The ongoing interest in sustainable tourism has been driven by two key factors. First, there was the energizing influence of the 1987 Brundtland Commission report “Our Common Future” and the subsequent 1992 Rio Summit on sustainable development. While the ideas around sustainable development had been under discussion for some time prior, this work and the high-profile engagement, placed sustainable development clearly on the political “map”.

The second key factor has been the tremendous growth in tourism activity in the past 20-30 years. This growth has established three lines of interest in the sustainable tourism space:

- i. the reality that in contributing a larger share of economic activity in most countries, tourism activity is contributing more to the use of environmental resources and its impact on the natural environment is increasingly significant
- ii. the idea that tourism activity might provide a path by which lower income countries and region might improve their standard of living
- iii. the recognition of the dependence of tourism activity on its environmental and social contexts and the need to keep these underpinning supports in good condition.

The interest in sustainable tourism culminated in 2017 being declared the United Nations International Year of Sustainable Tourism for Development (IY2017). This was especially timely given the increasing momentum towards sustainable development following the adoption of the United Nations 2030 Development Agenda and the associated Sustainable Development Goals (SDGs). In broad terms, these milestone achievements highlighted the need to integrate advances for people, planet, prosperity, peace and partnerships.

Tourism has the potential to contribute, directly or indirectly, to all of the 17 goals. In particular, targets relating to sustainable tourism are explicitly referenced in SDG 8 on inclusive and sustainable economic growth, SDG 12 on sustainable consumption and production and SDG 14 on sustainable use of oceans and marine resources. An important objective in the development of the SF-MST is the design and implementation of indicators to measure progress towards these targets and goals.

Within this broader SDG context, IY2017 aimed to foster a change in policies, business practices and consumer behavior for a more sustainable tourism sector. It explored and highlighted tourism’s role in five key areas:

- i. Inclusive and sustainable economic growth
- ii. Social inclusiveness, employment and poverty reduction
- iii. Resource efficiency, environmental protection and climate change
- iv. Cultural values, diversity and heritage
- v. Mutual understanding, peace and security

And had four lines of action: advocacy and awareness raising, knowledge creation and dissemination, policy making and capacity building and education.

SF-MST is an output that draws strength from the catalyzing effect of the IY2017 in building the recognition of the role of sustainable tourism. It is intended that SF-MST provides a long-term embodiment of the IY2017 themes.

## 1.2 A statistical approach to measuring sustainable tourism

### 1.2.1 Measuring sustainability

Most commonly, the development of statistics commences from a well-established and broadly agreed concept that can be the focus for the development of rigorous definitions, classifications and measurement methods. Examples include population growth, unemployment and visitor numbers. For the measurement of sustainability, beyond the general agreement that it should encompass three primary dimensions – economic, environment and social – there is no widely accepted conception of sustainability that can be used to underpin a measurement framework. In response to this gap three broad approaches have been developed to supporting assessments of sustainability and associated concepts such as capacity and resilience.

Indicator sets: The first approach involves the selection of indicators to form sustainable development indicator sets. A most significant recent example is the set of SDG indicators but there is a myriad of sustainability indicator sets for countries, sub-national regions, destinations and sectors. While the selection of indicators is commonly participatory, and will usually encompass the three key dimensions of sustainability – economic, environment and society - indicator sets do not describe the interlinkages between the dimensions.

Indicators sets can raise the profile of sustainable development and support the setting of expectations and policy targets with respect to individual aspects of sustainable development, but they do not provide any particular statement with respect to overall sustainability. Consequently, the task of assessing sustainability in any given context requires the user to develop their own model of how data from each of the dimensions might be connected.

Composite/weighted indexes: The second approach is to combine a selection of indicators into a composite or weighted index of some type, generally through the initial identification of specific themes relevant to the sustainability context of interest. A well-known example is the UNDP Human Development Index which combines data on life expectancy, education and per capita income<sup>6</sup>. While this approach does provide an overall sense of direction through a single number, there is no definitive list of themes (and related indicators), the relative importance (or weighting) of each indicator is open to question, and commonly these indexes tend to smooth out the effects of internal variations present in the component indicators.

Wealth accounting: The third approach is to apply economic theory about the relationship between income and wealth to demonstrate that the sustainability of income, defined broadly to encompass all types of benefits received by people, requires the maintenance of total wealth, where wealth includes all types of capital - produced, natural, human and social capital. This approach is generally referred to as wealth accounting and has been the subject of increasing interest, for example in the IHDP-UNU work on Inclusive Wealth Accounting<sup>7</sup>. Wealth accounting provides a theoretical approach to the integration of data across multiple dimensions to provide insights into sustainability. An extension to wealth accounting (which is relatively static in its consideration of sustainability), is to apply systems dynamics and hence take into consideration the feedback loops between the various stocks and flows within a given system over time.

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<sup>6</sup> <http://hdr.undp.org/en/content/human-development-index-hdi>

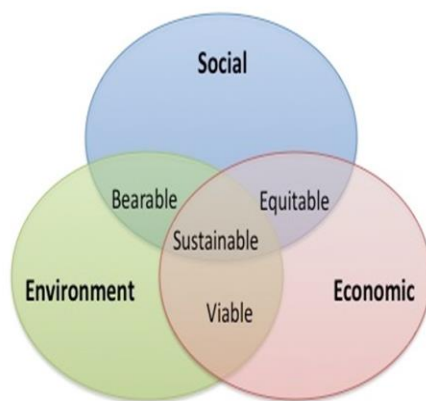
<sup>7</sup> [http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR\\_SDM\\_2014.pdf](http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDM_2014.pdf)

For SF-MST, the approach to measuring sustainability is to recognize the potential inherent in wealth accounting and systems dynamics based approaches and to provide a statistical framework that supports a systems perspective. While there are conceptual challenges, accounting-based approaches reflect a willingness to engage with the complexity inherent in the description and measurement of sustainable development. Hence, they provide a pathway through which the development of statistics can also engage with this complexity and hence best support the real challenges faced by decision makers.

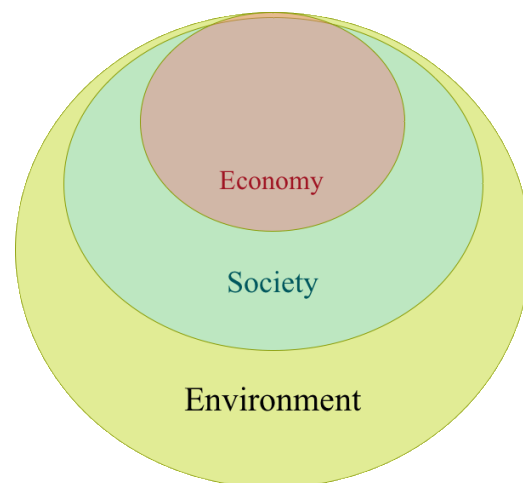
In practice, both wealth accounting and system dynamics have limitations. Wealth accounting requires the measurement of monetary values, in the form of shadow prices, for all income and capital and is limited to an economic perspective on sustainability. System dynamics approaches can be directly tailored to individual contexts but are difficult to standardize in a way that supports ongoing measurement and comparison.

Thus, the approach taken in SF-MST is to recognize that individual contexts, such as a single tourism destination, may be usefully characterized in terms of “nested systems” – i.e. where the economic system is embedded within a social context which in turn sits within an environmental system. This “economy-in-society-in nature” perspective (ref#) is shown in Figure 1b in contrast the more traditional conception of the relationship between the three dimensions in Figure 1a where the economy, the environment and society are distinct systems, even if slightly overlapping. Using a systems framing as the starting point to consider the measurement of sustainability supports inclusion of all three primary dimensions of sustainability and provides the opportunity to explicitly consider the connections between different spatial scales.

**Figure 1a: Traditional view of systems**



**Figure 1b: Nested view of systems**



### 1.2.2 A history of measuring tourism

UNWTO, as the specialized agency responsible for the promotion of responsible, sustainable and universally accessible tourism, is committed to ensure that tourism plays a key role in progress towards sustainable development. Using a focus on tourism destinations, UNWTO has articulated a definition of sustainable tourism (UNWTO & UNEP, 2005), provided a guide to the set of relevant policy themes (UNWTO & UNEP, 2005) and described a comprehensive

range of indicators that may be used in measuring progress towards sustainable tourism at destination level (UNWTO, 2004).

UNWTO also has a mandate for the collection and dissemination of tourism statistics and the associated statistical standards. The work dates back as far 1937 and the first definition of an “international tourist”, and extends through the following 80 years with provisional guidelines on tourism statistics released in 1978; initial developments on tourism economic accounts in the 1980s and 1990s; the 1993 Recommendations on Tourism Statistics in 1993; and the 2001 Tourism Satellite Account: Recommended Methodological Framework. The most recent advances are reflected in the International Recommendations for Tourism Statistics (IRTS) (UNWTO, et al, 2008) and the Tourism Satellite Account: Recommended Methodological Framework (TSA:RMF) (UNWTO & UN, 2008).

With respect to the measurement of sustainable tourism, the main contribution of the UNWTO has been the ongoing work to develop relevant sets of indicators that respond to policy needs, most notably the 2004 UNWTO Guidebook for Indicators of Sustainable Development for Tourism Destinations. Building on earlier work, the Guidebook for Indicators identified a very large number of indicators (over 700) across 13 issues.

Notwithstanding the importance of identifying indicators for sustainable tourism, what is clear is that there is a significant gap from a statistical perspective in defining standards for a framework that integrates economic, environmental and social statistics at relevant spatial levels (including local, national and global) that are required for assessment of sustainable tourism. This gap was recognised in both the IRTS and the TSA:RMF. With the aim of closing this statistical gap, in 2015 the UNWTO launched the Towards a Statistical Framework for Measuring Sustainable Tourism (MST) initiative (<http://cf.cdn.unwto.org/sites/all/files/docpdf/brochurees.pdf>).

The development of the SF-MST represents the next generation of measurement for tourism. Thus, the MST project can be seen as a logical extension of initial work on tourism statistics that builds on, and does not replace, the existing standards for tourism statistics. Indeed, through each generation of statistical development for tourism, the measurement boundaries have progressively broadened as the understanding of the scope and impact of tourism activity has continued to broaden. The scope of the MST to capture a full range of economic, environmental and social aspects of tourism is thus not starting from a zero base but will stand on the shoulders of past measurement work.

A feature in the development of tourism statistics has been the role of international conferences in providing launching platforms for each stage of development.<sup>8</sup> The developments in measuring sustainable tourism are no exception, with the profile of work being significantly raised at the 6<sup>th</sup> International Conference on Tourism Statistics held in Manila in June 2017. A key outcome from the conference was the Manila Call to Action, a joint declaration of Ministers, Chief Statisticians and other conference participants (see Annex 1). Among a range of actions, the Manila Call to Action explicit requests the development of the SF-MST, a call that had been endorsed at the United Nations Statistical Commission meeting in March 2017 and that was reinforced as a key area of work at the UNWTO General Assembly in September 2017.

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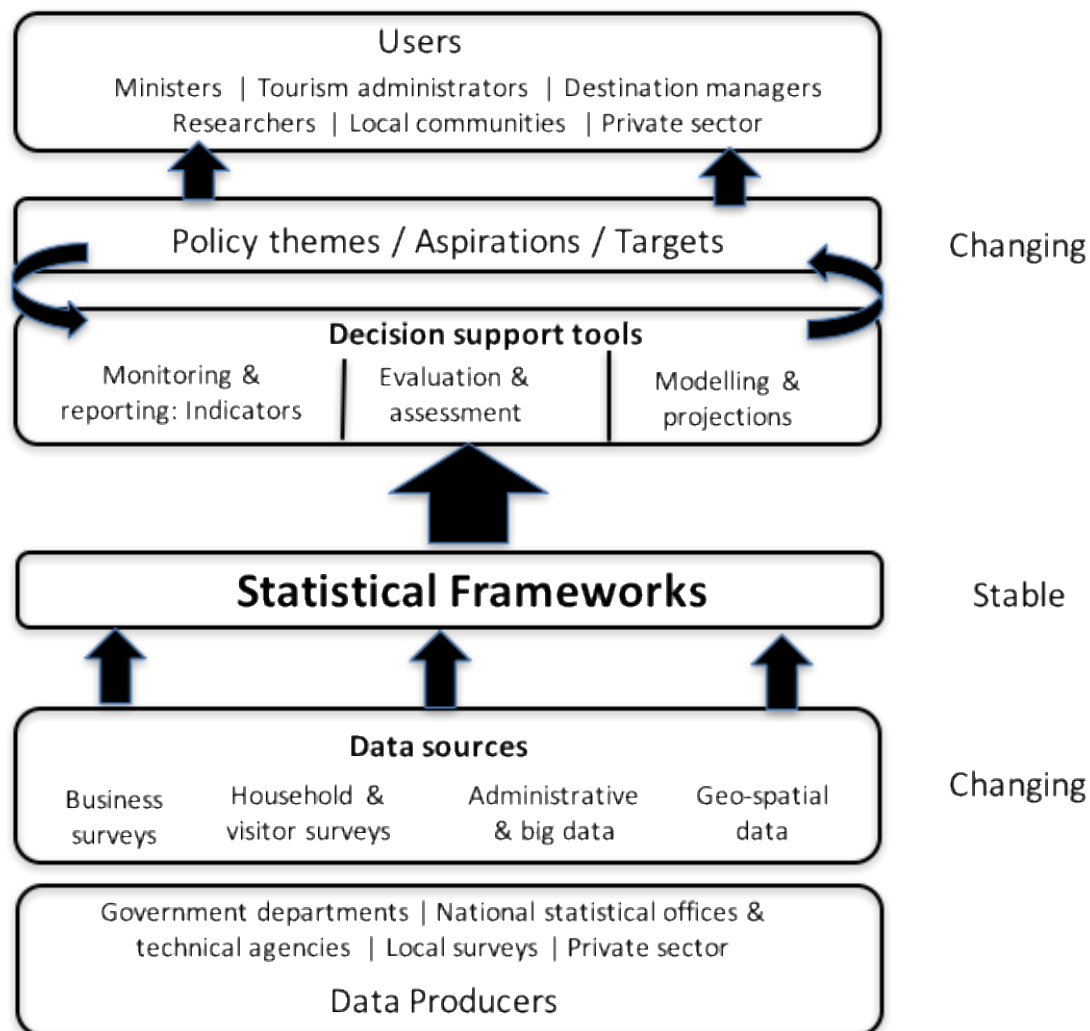
<sup>8</sup> IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of tourism statistics.

### 1.2.3 The role of statistical frameworks

A statistical framework is an organizing structure for data and statistics that provides a common understanding of concepts, definitions and related terminology. A framework is independent from the sources from which data might be collected and from the methods used to compile the statistics. By way of example, data to measure the same statistical definition of employment may be collected via household surveys, administrative sources or population census. In this context, the SF-MST is a platform for integrating data and statistics from different sources about the various dimensions of sustainable tourism.

The role of statistical frameworks is depicted in Figure 2 where multiple data sources, for example covering economic, social and environmental data sets, are brought together through statistical frameworks to provide an integrated set of information, that can support (i) monitoring and reporting (and associated indicators), (ii) evaluation and assessment and (iii) modelling and projections. Each of these activities are important parts of the policy and decision-making process.

**Figure 2: Using statistical frameworks to link data and policy**



Over time, the importance of statistical frameworks becomes more apparent since while the concepts and definitions can be kept relatively stable, it is likely that (i) data sources will change over time – witness for example the emergence of big data and spatially rich data sets – and (ii) there will be ongoing changes in policy themes, aspirations and targets.

Maintaining a stable statistical framework at the heart of measurement ensures that data and policy can be meaningfully linked and effective comparisons can be made on an ongoing basis, notwithstanding the ongoing changes in data sources and policy needs.

The challenge in the development of the SF-MST is that while statistical frameworks have been developed in the different dimensions included in sustainable tourism, i.e. in economic, environment and social dimensions, there is no necessary alignment between the statistics in these different dimensions. Overcoming this fragmentation is the key objective in SF-MST.

Ultimately, data should be collected and analyzed on a consistent basis over time and across different destinations and countries. Implementation of a statistical approach involves developing standard definitions and concepts, non-overlapping measurement boundaries and clear means of comparing and integrating different components.

As for all statistical frameworks, the SF-MST is designed to be implemented on an ongoing basis to provide a consistent and coherent picture of sustainable tourism over time. The assessment of sustainability requires consideration of both past and expected changes in each of the dimensions and, in this situation, one-off studies do not provide a sufficient base for ongoing decision making. A time series of data can help directly in framing assessments of sustainability.

The concepts of the SF-MST can be applied to all temporal frequencies, e.g. from monthly and quarterly to annual and less regular collections. Sub-annual information may be of particular interest in the analysis of sustainable tourism at sub-national levels where peaks in tourism demand may place specific pressures on local communities, ecosystems and infrastructure. In these cases, the use of annual averages in decision making may mask significant concerns. Decisions about the appropriate frequency of data collection and reporting should be based on the relevant policy and analytical questions and the available resources.

#### **1.2.4 The benefits of a statistical approach**

Past practice reveals that it is possible to develop an information base for sustainable tourism by allowing each destination and country to form its own definitions and associated measurement components. However, when the information challenge is tackled individually, the potential for comparison, sharing experience and embedding ongoing measurement advances is substantially reduced.

The SF-MST thus aims to provide a single reference point for extending the current range of tourism statistics to cover the three dimensions of sustainable tourism – economic, environmental, social –at relevant spatial scales, including at global, national and subnational levels.

The development of a statistical framework would secure the following benefits:

- A common language for discussing sustainable tourism within the tourism sector and with other key policy areas such as planning, industry, infrastructure, environment, social affairs, finance and central banks;
- The ability to compare the performance of the tourism sector and the impacts of different policies on a consistent basis with other sectors and in different destinations and countries;
- The basis for improving co-ordination in data collection and organization, improving the effectiveness of training and capacity building, and improving

institutional arrangements for the governance and management of statistics on sustainable tourism;

- The foundation for a single, coherent and complete picture of the state of sustainable tourism and its trends.

The importance of developing a common language to support comparison cannot be overstated. It may appear that integration of information for a single group of decision makers is sufficient, for example for local/destination managers, or for national tourism administrators. However, it is clear that decisions by different groups are inter-connected. For example, local and national policy choices affect each other. Given this reality, there may be considerable barriers to progress if different stakeholders have information based on varying definitions and measurement boundaries. A statistical approach as recommended in the MST project works to overcome these information barriers and support more engaged and inclusive decision making.

## 1.3 Overview of the SF-MST

### 1.3.1 Introduction

The SF-MST sits at the intersection between data sources and the use of data for reporting and analysis (see Figure 2). Within individual dimensions and statistical areas, such as the economic dimension, the role of statistical frameworks, like the System of National Accounts (SNA), in translating multiple sources into a coherent single picture is usually invisible. This is good because it ensures that the focus of attention is where it should be: on the resulting data and its use in analysis and decision-making. The long-term ambition for SF-MST is therefore that the definitions and structure that it provides becomes an invisible platform for the integration of all relevant information in the assessment of sustainable tourism.

The link between the layers of information is shown in Figure 3. Data from different **data sources** and encompassing economic, environmental and social dimensions, are integrated using the **standard definitions, classifications and measurement boundaries** of the SF-MST to compile a series of **base accounts and tables**. Base accounts conform to standard accounting principles and focus on accounting for (i) particular types of capital (asset accounts); (ii) sets of flows (supply and use tables) or the allocation of flows to economic units (sequence of accounts). Base tables provide information on individual themes according to standard classifications and measurement boundaries.

The information in base accounts and tables can then be summarized in **combined presentations**. Combined presentations are summary tables showing selected variables from base accounts to cater to specific policy interests or which may be used for the derivation of indicators. Combined presentations may be configured in many different ways since they do not have to conform to standard accounting structures.

In a final stage information from combined presentations can be used to provide **decision support tools** through monitoring and reporting (including via indicator sets), evaluation and assessment and modelling and projections. As the information required in any application becomes more detailed, it may be relevant to access information directly from underlying base accounts and tables, this is particular true for modelling and projection type of work. An introduction to decision support tools reflecting the application of the SF-MST is provided in section 1.4.

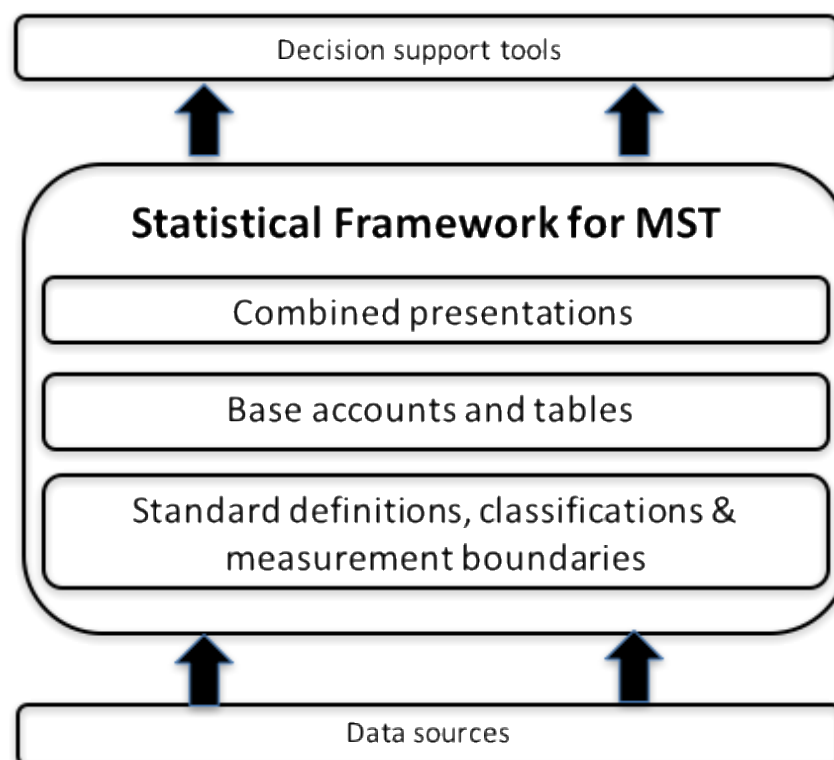
The scope of the SF-MST itself is the description of

- standard definitions, classifications and measurement boundaries

- base accounts and tables
- combined presentations.

The SF-MST provides the basis for the discussion and definition of indicators of sustainable tourism, including in the context of the United Nations' Sustainable Development Goals (SDGs).

**Figure 3: The SF-MST in context**



While the development of the SF-MST is a new area of work, it builds upon much existing material that describes the relevant elements noted above. In relation to core statistical infrastructure, there is existing guidance on the development of statistics pertaining to the different domains (e.g. for business registers, 2015 UNECE Guidelines on Statistical Business Registers). In relation to statistical definitions there are many internationally agreed standards. Of most relevance for sustainable tourism are the 2008 International Recommendations on Tourism Statistics (IRTS), the 2013 Framework for the Development of Environment Statistics (FDES) and the various standards relating to the measurement of labour statistics. In relation to accounting frameworks the key publications are the System of National Accounts 2008 (SNA), the TSA:RMF and the System of Environmental-Economic Accounting 2012 (SEEA).

An important aspect of the SF-MST is the development of data at a sub-national or destination level. In concept, all of the statistical standards and guidelines just described, including the national accounts, can be applied at all levels of spatial detail, in the same way as statistical standards are equally applicable for very large and very small countries. In most cases, the challenges of spatial scale are not conceptual but rather whether it is feasible and relevant to collect information at sub-national levels. At the same time, there are a range of measurement considerations and given, the importance of spatial detail to the assessment of tourism, Chapter 6 is devoted to a discussion of the relevant issues.



### 1.3.2 Coverage of SF-MST

SF-MST covers the three primary sustainability dimensions – economic, environmental and social. A balance across all three dimensions must be considered in the assessment of sustainability. Other concepts related to sustainability such as resilience, diversity and equality are considered in the context of these three primary dimensions.

The following short descriptions are intended to provide a general sense of the coverage. In reality there are commonly linkages and overlaps between the dimensions such that specific themes may be considered part of more than one dimension. For example, employment is relevant in both economic and social dimensions. From a framework perspective, it is sufficient to ensure that all relevant themes are captured in a mutually exclusive way. How the statistics for individual themes are subsequently organized and applied in decision making tools is not limited by the design of the framework.

The **economic dimension** covers the production and consumption associated with tourism activity in terms of associated goods and services. This will commonly be reflected in measures such as visitor consumption and the output of tourism industries. The economic dimension also includes description of the characteristics of tourism industries and the production processes of tourism industries. It thus captures investments in produced capital (hotels, transport infrastructure, etc.); employment in tourism and human capital (including skills and experience); and information on the size, industry class and ownership of tourism establishments. A detailed description of the economic dimension of the framework is contained in Chapter 2.

The **environmental dimension** concerns the environmental assets, often referred to as natural capital, that support tourism activity (including land, beaches and coastal areas, national parks, rivers, etc.) through the provision of ecosystem services. As well, the environmental dimension incorporates measurement of the flows of natural inputs to tourism production processes such as flows of water and energy and the flows of residuals that are generated from tourism production and consumption including GHG emissions, solid waste, wastewater and other pollutants. A detailed description of the environmental dimension of the framework is contained in Chapter 3.

The **social dimension** covers a range of social aspects related to tourism activity. It includes the local, traditional and indigenous cultural aspects that can support tourism activity or may be impacted by tourism. It also includes the outcomes of tourism production processes in terms of the provision of decent work and occupational health and safety (and hence links to employment); the contribution to individual and community health and well-being; performance in relation to gender equality, income equality and other aspects of equality; and the development of social capital reflected in the strength of community networks and institutional arrangements. A detailed description of the social dimension of the framework is contained in Chapter 4. <<This summary to be confirmed pending further development of the chapter.>>

### 1.3.3 Applying an accounting approach

As introduced above, the conceptual framing of sustainability that underpins the SF-MST emerges from the literature on wealth accounting. The basic logic is that sustainability can be inferred where the overall capital base, measured in terms of total wealth, does not decline over time (see, for example, Hamilton and Hartwick (2014)).

To incorporate the theory of wealth accounting into a statistical framework focused on sustainability is to encompass measurement of a broad set of capitals – produced, natural, human and social capital - and the related flows of incomes and benefits. While this seems a very large task, in fact a wide range of statistical guidance is available.

The logical starting point for the implementation of an accounting based approach is a focus on produced capital as defined within the framework of the United Nations' System of National Accounts (SNA). The SNA 2008 (EC et al, 2009) is the most recent version of this international standard and provides the basis for the measurement of economic activity and economic wealth. Compilation of SNA consistent datasets is standard practice in all countries and consequently the majority of economic statistics available within a country will be collected in such a way as to be consistent with, or at least closely aligned to, the relevant definitions and measurement boundaries. By using the SNA as a starting point, the SF-MST ensures that measurement of the economic dimension of sustainable tourism can be directly aligned with measures of the economic performance of other sectors, of the economy as a whole and in reference to various components of economic activity (e.g. production, investment, consumption).

The application of the SNA principles to tourism is encapsulated in the international standard for TSA - the TSA: Recommended Methodological Framework (TSA:RMF) (UN, 2008). This document describes in detail the accounting framework for describing tourism's role in economic activity using a set of 10 interlinked tables and accounts. The TSA:RMF is underpinned by the International Recommendations for Tourism Statistics (IRTS) which provides the international standard for the definition of visitors, tourism consumption and other tourism statistics.

With respect to natural capital, the System of Environmental-Economic Accounting (SEEA) 2012 is the international standard for the measurement of the environment and its relationship to the economy. It has four key elements: accounting for environmental flows, accounting for natural resources, accounting for environmental transactions and accounting for ecosystem assets and services. The first three elements are described in the SEEA 2012 Central Framework and the fourth element is described in the SEEA 2012 Experimental Ecosystem Accounting.

The SEEA, like the TSA:RMF, is a national accounting based framework that applies the accounting principles of the SNA. The SF-MST takes advantage of this common origin of the SEEA and the TSA:RMF which allows the environmental dimension of sustainable tourism to be coherently integrated with the economic dimension. The integration of the SEEA and the TSA:RMF has been a key foundation for the SF-MST.

The human capital component is captured in the SF-MST in two ways. First, using information on the composition of tourism employment building on existing statistical work in this area by UNWTO and ILO. Second, the SF-MST will demonstrate the potential for the measurement of human capital in tourism following accounting based approaches that have been developed over the past 30 years (e.g. Jorgenson and Fraumeni, 1989) and being further advanced in a number countries and the OECD.

Accounting-based approaches for the measurement of the social dimension are not well developed at this stage. To the extent possible, the SF-MST takes advantage of research and practice concerning cultural satellite accounts that are under development as applications of SNA principles. In other areas of the social dimension, measurement focuses on relevant data and indicators that are based to the extent possible on other statistical guidance and standards. An example is the ILO research on decent work.

More broadly, it is recognized that the application of an accounting approach to the social dimension could ultimately bring into consideration the measurement of social capital. Changes in the extent and quality of social capital over time (for example, in terms of the quality of community networks) could represent an important aspect in the measurement of sustainable tourism.

While the SF-MST encompasses the full range of types of capital and does so within a broad accounting rationale, the SF-MST does not reflect, nor does it aim to be, a fully integrated and consolidated “triple-bottom line” approach. Neither does it adopt underlying assumptions relating to weak or strong sustainability or adopt a requirement for the full monetization of all economic, environmental and social stocks and flows.

Rather, the intent is to use an accounting approach to place all relevant information in an appropriate context, distinguishing clearly between stocks and flows. Data organized in this way is then well suited to supporting assessments of sustainability that are comparable and consistent, including the development of indicators sets. The use of an accounting approach thus provides a way of consistently framing the discussion of sustainability, and related topics of capacity and resilience.

#### 1.3.4 Accounting for spatial scale

The conceptual framing for SF-MST recognizes the importance of reflecting the interactions between the economic, environmental and social dimensions at different spatial scales. Determining the appropriate spatial scale provides the entry point for discussions of sustainability. Further, while there will always be connections between all spatial scales, the SF-MST works from the premise that measurement at a sufficiently small spatial scale, for example by sub-national region or tourism destination, provides the most useful reference point for the integration of the economic, social and environmental dimensions.

This view is consistent with the concept of sustainable tourism (section 1.1) which is generally embodied at a detailed spatial level (e.g. in relation to host communities) since it is at this level that the economic, environmental and social dimensions interact in a given context and where assessment of the balance among these dimensions may be most tangible.

At the same time, interactions at a local level occur within a broader setting and issues of that gain more relevance at national and global scales, such as concerning financial markets, personal security and climate change, need also to be considered. Thus, from a statistical perspective, the SF-MST integrates measurement from local to national to global levels ensuring a consistency of definition and measurement boundaries.

Discussion of the topic of defining spatial areas immediately suffers from the choice of language and wording to describe the different scales of measurement and analysis that different stakeholders are considering. In summary, the following terms are applied in the SF-MST:

**Global** – referring to all countries and marine areas

**Supra-national areas** – referring to groupings of countries

**National**

**Regional** - referring to the level of administrative unit directly below the national level (corresponds to the NUTS 2 level in the EU territorial classification scheme)

**Municipal** or **city-region** - referring to the level of administrative units corresponding to localised but relatively large populations.

**Local** - referring to the areas or zones within a given municipality that exhibit particularly concentrations or clusters of commonly purposed or aligned activities and businesses. It is not expected that administrative units would be defined at this spatial level.

The term **tourism destination** might refer to any of these scales (except perhaps global). Thus, a destination might be a country, a region, a municipality or a location. In the discussion of sustainable tourism, the concept of a tourism destination appears to be most commonly associated with spatial areas defined at the local or municipal level and, when the term destination is used, it is this smaller conception of tourism area that is being applied.

The intent in the MST is to integrate economic, environmental and social data. For many of these data, the scales listed above would be relevant, in the sense that data should be able to be attributed to a location and hence also aggregable and meaningful at other, larger scales. However, for some types of data, for example relating to transportation activity or environmental condition, simple aggregation may not be appropriate and the relevant spatial boundaries for measurement and analysis will require further discussion.

A detailed description of the way in which spatial aspects are considered within the framework is contained in Chapter 6.

### 1.3.5 Base accounts and tables

There are two primary types of accounts used in the SF-MST – the supply and use tables (SUT) and the asset account. These base accounts bring together information on stocks, changes in stocks and flows for specific themes, for example visitor expenditure and water resources. The various SUT and asset accounts for economic, environmental and social dimensions are described in chapters 3, 4 and 5.

Supply and use tables may be compiled in both monetary and non-monetary terms and relate to balancing the flows of goods and services among different economic units, including households, and between the economy and the environment. They may also be structured so as to show flows between different spatial areas. SUT compiled in monetary terms contain the information required to estimate gross domestic product and related measures of economic activity.

Asset accounts may also be compiled in monetary and non-monetary terms. They are designed to show the opening and closing stocks of specific asset types (e.g. produced assets, environmental assets, human capital, social capital) and changes in the stocks of assets over an accounting period (e.g. one year). An aggregate of all asset types provides an estimate of the net wealth of a given territory.

Each base account stands alone in the sense of applying specific accounting identities such that there is a complete and balanced set of information in each account. At the same time, each account operates as part of an overall system of accounts in which linkages can be made among different accounts each focusing on a specific aspect. The SF-MST thus comprises a series of accounts and tables, each covering specific aspects of sustainable tourism, but defined in an aligned and coherent fashion.

In addition, there will be other complementary information required to support understanding sustainable tourism that will not fit directly into these accounting structures. Examples include information on employment, demographics of tourism establishments,

visitor movements and indicators in the social dimension. To ensure consistency and comparability of data, these other data are grouped and classified using the same classifications as used in the SUT and asset accounts. This will support the integration of data and enhanced data analysis. The relevant classifications are documented in chapters 3, 4 and 5.

Table 1 provides a summary of the different base accounts and tables. They are grouped according to their strength of association with the economic, environmental or social dimension noting that all base accounts and tables should be considered related to all dimensions to some degree – for example, employment in tourism is listed below under the economic dimension recognizing that employment information will also be relevant in the social dimension.

**Table 1: Coverage of SF-MST base accounts and tables (initial proposals only)**

Dimension	Base accounts	Base tables
Economic	Tourism activity SUT	Visitor movements
	Tourism infrastructure asset account	Tourism expenditure
		Employment in tourism
		Demographics of tourism establishments
Environmental	Water SUT	
	Energy SUT	
	GHG emissions SUT	
	Solid waste SUT	
	Land use asset account	
	Land cover asset account	
	Ecosystem condition account	
	Ecosystem services SUT	
Social		Social and community indicators (e.g. crime, health, congestion, perceptions of tourism)
		Visitor perception indicators
		Tourism governance indicators

The base accounts described in the SF-MST are based on the existing accounting standards the TSA:RMF and the SEEA and adopting relevant accounting principles from the SNA as appropriate. The relevant accounting principles concerning, for example, the definition of economic territory, time of recording, and monetary valuation, are not summarized here. Compilers are encouraged to read the relevant sections of the accounting standards just listed.

As well, relevant chapters of the SF-MST discuss those situations where the application of accounting principles may raise specific concerns or challenges. Particular issues concern (i) the definition of household units in relation to visitors, (ii) the definition of economic units in relation to tourism businesses and (ii) aligning concepts of economic territory with the requirements for the development of sub-national and local level statistics.

The base tables described in the SF-MST provide important information that can be incorporated within the broader accounting framing of sustainability that underlies the SF-MST approach. In the economic dimension, the tables are aligned with, or adaptations of, tables developed in the IRTS and TSA:RMF.

In the social dimension, these are indicative tables designed based on the developing information to support the measurement of the social dimension in the context of social

capital. Particular note has been taken of the types of information on the social dimension that has been described in the measurement of sustainable tourism, including in the area of governance.

### **1.3.6 Combined presentations**

The SF-MST incorporates combined presentations to support the communication of information on sustainable tourism and to underpin the derivation of indicators. Combined presentations provide a means to bring together a range of information from different sources. They thus present a summary of key measures and also provide a basis for the derivation of indicators. In this context, the underlying base accounts and tables provide the means to ensure that summary data and indicators are based on coherently and consistently compiled data for any given topic, for example, environmental flows of water or energy.

Many forms of combined presentations are possible depending on the focus of communication and the range of data available. The data items included in the combined presentations should be of relevance to policy makers and should be able to be used to calculate indicators, for example for reporting on progress on the SDGs. A consistent level of industry disaggregation has been applied in these combined presentations. In practice, this level of disaggregation should be varied to suit the decision-making context, noting that there should be consistent use of the underlying ISIC classes to support comparison and analysis.

The following examples of combined presentations are illustrative only. They should be used to introduce and demonstrate the potential applications of the SF-MST and serve as a basis for engagement with different users about their needs and with different data producers about the ways in which their data are being used.

**Table 2: Examples of combined presentations for sustainable tourism (illustrative examples only)**

**Table 2a: Combined presentation – Economic dimension for tourism industries**

ECONOMIC DIMENSION OF TOURISM INDUSTRIES			Tourism Industries												Total all industries	
			Accommodation for visitors		Food & beverage serving		Passenger transport		Travel agencies & reservation services		Other tourism industries		Total tourism ind.			
			Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total
UNIT																
1. Income and costs																
	Output	\$														
	Gross value added	\$														
	Compensation of employees (Labour costs)	\$														
	Intermediate consumption															
	Total															
	Water	\$														
	Energy	\$														
	Waste treatment	\$														
	Expenditure on tourism characteristic products	\$														
2. Business demographics																
	Total number of establishments	#														
	Small															
	Medium															
	Large															
	Locally owned															
	Foreign owned															
	Location - by tourism region															
	#1															
	#2															
	#3															
3. Employment																
	Employment in tourism															
	Total (jobs or employees)	#														
		Hours worked														
	Male															
	Female															
	Part time															
	Full time															
	Employees															
	Self-employed															
	Age / experience															
	Education/skill set															
4. Investment and infrastructure																
	Gross fixed capital formation															
	Buildings	\$														
	Equipment	\$														
	Other	\$														
	Capital stock															
	Buildings	\$														
	Equipment	\$														
	Other	\$														
	Available capacity (accommodation)	#	#rooms	#beds												
	Net financial position															

Table 2b: Combined presentation – Environmental dimension for tourism industries

ENVIRONMENTAL DIMENSION OF TOURISM INDUSTRIES			Tourism Industries												Total all industries	
			Accommodation for visitors		Food & beverage serving		Passenger transport		Travel agencies & reservation services		Other tourism industries		Total tourism industries			
			Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total
			UNIT													
1. Environmental flows																
	Net water use		m3													
	Own-account water abstr		m3													
	Wastewater generated		m3													
	Net energy use		j													
	Use of energy from renev		j													
	GHG emissions		tonnes													
	Solid waste generation		tonnes													
2. Environmental assets																
	Land															
		Land use	ha													
		Land value	\$													

Table 5c: Combined presentation – Demand perspective

DEMAND PERSPECTIVE			UNIT	Total	Same-day visitors	Overnight visitors	
						Total	by country of residence
<b>UNIT</b>							
Number of visitors							
	Total		#				
	by age		#				
Inbound arrivals							
	Total		#				
	by mode of transport		#				
Number of overnights							
	Total		#				
Tourism expenditure							
	Total		\$				
	Passenger transport		\$				
	Personal		\$				
	Business/professional		\$				
Visitor satisfaction			index				
Attendance at events, sites and cultural assets			#				
	by type of event, site, asset		#				



Table 2d: Combined presentation – Spatial perspective

SPATIAL PERSPECTIVE			Tourism region #1	Tourism region #2	Tourism region #3	Tourism region #4	Tourism region #5	Tourism region #6	Tourism region #...	Non-tourism regions	TOTAL AREA
UNIT											
<b>Land cover</b>											
	Forest		ha								
	Agricultural land		ha								
	Urban areas		ha								
	Surface water		ha								
	Beach / coastal areas		ha								
	Other areas		ha								
	Total		ha								
<b>Ecosystem condition</b>											
	Forest		index								
	Agricultural land		index								
	Urban		index								
	Surface water		index								
	Beach / coastal areas		index								
<b>Tourism establishments</b>											
	Accommodation		#								
	Food and beverage		#								
	Other tourism		#								
<b>Employment</b>											
	Accommodation		# jobs								
	Food and beverage		# jobs								
	Other tourism		# jobs								
<b>Number of visitors (inbound &amp; domestic)</b>											
	Same-day		#								
	Overnight		#								
	Country of residence		#								
<b>Resident population</b>			#								

It should be apparent that there are many potential indicators that might be formed from the information contained in the base accounts and tables of the SF-MST through combination with existing information on tourism industries. For example, analysis might be extended to consider environmental flows by size of tourism establishments. The intention in designing combined presentations is to provide a starting point for discussion between compilers of accounts and decision makers to ensure that the measurement and derivation of indicators is both feasible and relevant.

## 1.4 Implementation and application of the SF-MST

### 1.4.1 Implementation of the SF-MST

It is expected that in the implementation of the SF-MST, countries will adopt a flexible and modular approach. Such an approach means that not all countries will implement all parts of the SF-MST or will compile statistics to the same levels of detail. One way of considering the modules of the SF-MST is to consider the set of base accounts and tables listed in Table 2. Note that the compilation of statistics following the SF-MST is not mandatory.

The selection of which components of the SF-MST should be the focus of measurement should be driven from two perspectives. First, from the perspective of users of information where the question of relevance should be paramount. It is likely that, in any given tourism context, there will be particular topics of concern, for example on water use or employment, which mean initial implementation is focused on the sections of SF-MST that are most relevant to supporting decision making on those topics.

Second, from the perspective of data providers, the question of feasibility will be a fundamental question. Thus, initial implementation is likely to focus on those areas where data are most readily available and are of suitable quality.

The SF-MST is designed to be able to be implemented in a progressive and modular manner such that over time a more complete picture can be painted. Along the way, focus can be placed on compiling and disseminating those statistics that are considered most relevant and feasible. Indeed, one of the key benefits of developing the SF-MST with its broad scope is that it provides a platform for ongoing discussion between data users and data providers as to what aspects of sustainable tourism should be the areas of most focus.

Implementation of the SF-MST does not imply that every economic, environmental and social variable needs to be measured at all scales, from local to national level. Further, the choice of scale at which the SF-MST is applied might vary depending on the topic of interest and the way in which the data may be used in decision making.

The SF-MST is capable of organizing data that can be used in different sustainable tourism indicator sets, thus allowing for different stakeholder groups at different spatial scales to establish their own monitoring systems while ensuring the potential to compare and exchange experiences with others. Further, subject to data availability, the data organized using the SF-MST can support a wide range of analysis, for example extended economic analysis, and provide varying levels of detail to support different policy requirements.

#### **1.4.2 The role of national statistical offices in implementation**

The implementation of SF-MST will require co-ordination of a range of agencies including national tourism administrations, national statistical offices, technical agencies with environmental information, policy agencies, academia and researchers, and the private sector. Indeed, it is important to recognise that there will not be a single data provider. A key task of the leading organization/s will therefore be the co-ordination of the various participants and there are a range of possible institutional arrangements that might be used.

Given the statistical nature of the SF-MST, there will be an important role in implementation to be played by national statistical offices (NSO). The following areas of NSO expertise are noted:

1. As organisations that work with large and various datasets, NSO are well placed to contribute their expertise in the collection and organisation of data from a range of different sources.
2. A core part of the role of NSO is the establishment and maintenance of relevant definitions of concepts and classifications aligned with international standards. The SF-MST incorporates a range of such concepts and classifications and the ongoing involvement of NSO in this area of work will be valuable.
3. Beyond the organisation of information, NSO have capabilities to integrate data from various sources to build coherent pictures of relevant concepts. Most commonly, NSO focus on providing coherent pictures in relation to socio-economic information and this capability is increasingly extending to include environmental information. Given the multi-disciplinary nature of SF-MST, data integration is an important requirement.
4. NSO work within broad national and international data quality frameworks that enable the assessment and accreditation of various information sources and the associated methodologies in a consistent and complete manner.
5. NSO have a national coverage. The focus of the SF-MST is on the provision of information that supports integrated measurement at both national and sub-national scales. Creating national economic, social and environmental pictures is a

relatively unique role undertaken by NSO and incorporates an implicit understanding of scaling data. SF-MST implementation would benefit substantially from consideration of how standard statistical techniques used for official statistics may be applied at different scales, in particular in the context of geo-spatial statistics.

6. NSO can present an authoritative voice by virtue of the application of standard measurement approaches, data quality frameworks and their relatively unique role within government, including in many countries, leadership of the National Statistical System. Further, their legal mandate may often facilitate access to data sources that are unavailable to others.
7. A large number of NSO are involved in the compilation of national accounts and related outputs including TSA and SESA accounts. The application of national accounting expertise will be important in the implementation of the SF-MST particularly in the context of efforts to understand the most appropriate ways in which physical and monetary measures on the various aspects of sustainable tourism can be integrated with information from the standard national accounts.

All of these factors suggest that there is a role for NSO in the implementation of the SF-MST. In practice, the actual role that an individual NSO plays will vary from country to country and is likely to depend on the scope of its traditional activities. For example, some NSO have strong traditions in working with tourism, environmental and geo-spatial data, while others have a history of statistical development and research. NSO with these types of experience may be able to play leading roles in the implementation of SF-MST. Those NSO without this experience may still play an important role and government agencies leading tourism research, such as national tourism administrations, are encouraged to utilise the expertise of NSO to be extent possible.

#### 1.4.3 Application of the SF-MST

Most commonly, statistical frameworks generate two types of outputs to support policy and analysis:

- i. **indicators** of the state and trends in sustainable tourism
- ii. **models** that use statistically based data to estimate likely outcomes in the future or in alternative scenarios, e.g. under alternative taxation arrangements.

Indicators are particularly important in providing clear signals concerning the effects of current policy decisions and choices – for example through monitoring the growth in visitor numbers, the trends in visitor expenditure, the patterns of water use and the changes in tourism employment. Regular and reliable information on these types of indicators is best provided by a statistical framework since it ensures consistency in definition of indicators over time (including in the choice of measurement units), the coherence between different indicators and the ability to compare indicators among destinations, regions and countries. For example, if each destination defined tourism industries and employment in a different way, then there would be no means to be confident that trends monitored in one destination could be sensibly compared to trends in other destinations.

Information to support economic and social modeling is the second important output from statistical frameworks. Discussion of many policy questions cannot be supported simply through the use of indicators. Instead, data relating to a number of different areas must be brought together to underpin analysis. Examples include analyzing the relationship between tourism demand and employment, assessing visitor numbers and water use, and comparing

the location of tourism establishments and changes in condition of local waterways. In each of these cases, ensuring that the data from the different areas are compatibly defined helps ensures the relevance and accuracy of the analysis.

#### 1.4.4 Indicators: Sustainable tourism indicators for the SDGs

<< This section should be updated once discussion on the SDG indicators has advanced such that specific indicators can be described. We can then link these to relevant base accounts and tables and also design a combined presentation that has a focus on deriving SDG indicators.>>

The demand for high quality indicators to monitor progress has been most recently underlined by the adoption of the SDGs and the recognized importance of establishing clear and measurable indicators of progress towards these goals. Further, in establishing the SDGs, the UN General Assembly explicitly requested that the indicators developed for the measurement of progress towards the goals be statistically based (ref#). There is thus a clear role for the SF-MST and other statistical standards in the development and ongoing derivation of SDG indicators.

There are three SDG targets that relate directly to sustainable tourism, namely:

Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

Target 12.b: Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

Target 14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

The current proposals for indicators for these targets concern tourism GDP (TGDP) and tourism employment and jobs. Both of these areas of measurement are within scope of the SF-MST and the development of indicators is ongoing through the UNWTO Committee on Tourism Statistics and TSA.

At the same time, a focus on only these two areas of measurement will provide a partial picture of progress towards sustainable tourism and, more broadly, will not give a sense of the broader potential of sustainable tourism to contribute to the wider sustainable development agenda and the other SDGs. These broader connections are well summarized in the UNWTO release *Tourism and the Sustainable Development Goals* (<http://icr.unwto.org/publication/tourism-and-sustainable-development-goals>).

Work is ongoing to define a broader set of sustainable tourism indicators and alignment will be ensured between the definition of these indicators and the SF-MST.

#### 1.4.5 Indicators: Indicator initiatives at national and sub-national levels

The development of indicator sets for the measurement of sustainable tourism has been an active area of work for many years. Short summaries of a range of initiatives are presented below (Box 2) with a focus on indicator sets being developed by international agencies and within the private sector.

Country and regional level work on measuring sustainable tourism, sometimes led by academic researchers, has also been in evidence over the past 25 years. Documentation on some of these country experiences, as well as the work currently being carried out by in the pilot studies in the specific framework of MST, can be found on the MST website<sup>9</sup>.

Unfortunately, while there is generally considerable overlap between the indicator sets in terms of the types of themes that are covered, generally aligned with the guidance provided in the UNWTO 2004 reference on sustainable tourism indicators, there is little overlap in terms of the specific indicators chosen or the precise definitions underlying the indicators. This limits the potential for a joined-up conversation about progress towards sustainable tourism and comparison of policies and strategies that have been put in place in different countries, regions and locations.

There is, therefore, an opportunity for improved alignment by grounding measurement of selected themes in the definitions of the SF-MST. The SF-MST is not prescriptive in terms of the selection of themes or in the selection of relevant indicators but can support harmonized measurement of a wide range of indicators and hence underpin comparisons of performance on sustainable tourism.

**Box 2: Examples of Sustainable Tourism indicator sets**

**UNWTO's International Network of Sustainable Tourism Observatories (INSTO)** brings together tourism observatories from around the world. Tourism observatories have been established in many destinations with the aim to better understand, monitor and advise on policy towards more sustainable development of tourism. The design, implementation and analysis of indicators are a fundamental part of their work. INSTO proposes an institutional framework, nine issue areas considered to be of highest relevant to observatories, and an economic data sheet for reporting. It encourages the systematic application of monitoring, evaluation and information management techniques, as key tools for the formulation and implementation of sustainable tourism policies, strategies, plans and management processes.

**Eurostat** released a comprehensive review of the measurement of sustainable tourism in 2006.<sup>10</sup> The review proposed 20 indicators, primarily from economic and environmental domains, and a further set of possible social/cultural indicators, all set within the Driving force-Pressure-State-Impact-Response (DPSIR) indicator framework<sup>11</sup>. The indicator set was intended to be applied at regional/sub-national level.

**OECD** work in measurement was reflected in a workshop in 2010<sup>12</sup> considering the relationship between tourism and sustainable development. It saw three main challenges for sustainable tourism - climate change, resource conservation and social cohesion – consistent with the themes identified in earlier work.

<sup>9</sup> [http://statistics.unwto.org/studies\\_experiences](http://statistics.unwto.org/studies_experiences)

<sup>10</sup> See "Methodological work on measuring the sustainable development of tourism", available at: <http://ec.europa.eu/eurostat/web/tourism/methodology/projects-and-studies>.

<sup>11</sup> DPSIR: Driving force, Pressure, State, Impact, Response used by EEA. This framework is an extension of the pressure-state-response framework proposed for environmental indicators and indicators of sustainable development developed by [OECD](#) (1994). See also "Environmental indicators: Typology and overview" available at <http://www.eea.europa.eu/publications/TEC25>

<sup>12</sup> See e.g. Workshop on sustainable development strategies and tourism <http://www.oecd.org/cfe/tourism/workshoponsustainabledevelopmentstrategiesandtourism.htm>; Climate change and tourism policy in OECD countries (<http://www.oecd.org/cfe/tourism/48681944.pdf>)

**European Commission's** initiative on a **European Tourism Indicators System (ETIS)** for sustainable destination management<sup>13</sup>. ETIS has defined 43 core indicators and has been trialed in a number of destinations, including NECSTouR<sup>14</sup> regions. To frame the indicators, they have identified four main themes: Destination management, Social / cultural impact, Economic value, Environmental impact.

**United Nations 10 Year Forward Program (10YFP) on Sustainable Consumption and Consumption(SCP)**<sup>15</sup> has initiated the development of a flexible monitoring and evaluation framework to provide directions and vision and measure its progress on capacity enhancement for the shift towards SCP<sup>16</sup> and incorporates a **Sustainable Tourism Program (STP)** within this broader framing.

**European Environment Agency (EEA)** is developing a reporting mechanism for indicators linking tourism and environment (TOUERM) in order to provide a more comprehensive picture of tourism in the frame of monitoring and informing on pressures and impacts as well as sustainability trends of European industry sectors.

Within the private sector, **UN Environment** is developing a suite of indicators for measuring sustainable tourism within the private sector. Other private sector developments include:

- Voluntary certification standards around sustainable tourism operation with the **Global Sustainable Tourism Council (GSTC)** being a leading facilitator.
- **Hilton** hotels sustainability measurement platform<sup>17</sup>
- Hotel Water Measurement Initiative (HWMI), and its equivalent for carbon, promoted by the **International Tourism Partnership (ITP) of Business in the Community**<sup>18</sup>.
- The **World Travel and Tourism Council (WTTC)**, with **Griffith University and the University of Surrey**, has released research on sustainability reporting in the context of the UN SDGs<sup>19</sup>.

#### 1.4.6 Models: Environmentally extended Input-Output tables and related analysis

One of the distinct advantages of organizing and integrating data using an accounting framework is that the information can be directly linked to economic modeling that uses input-output tables summarizing the structure and inter-linkages of the economy. This is possible due to the use of consistent definitions of income and production and the use of common industry classifications.

<sup>13</sup> See: [http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators\\_en](http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en).

<sup>14</sup> Network of European Regions for a Sustainable and Competitive Tourism (NECSTouR).

<sup>15</sup> The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate the shift towards SCP. It aims at developing, replicating and scaling up SCP and resource efficiency initiatives, at national and regional levels, decoupling environmental degradation from economic growth, and thus increasing the net contribution of economic activities to poverty eradication and social development. It has six initial programmes: Consumer Information; Sustainable Buildings and Construction; Sustainable Food Systems; Sustainable Lifestyles and Education; Sustainable Public Procurement; and Sustainable Tourism.

<sup>16</sup> 20 general pilot indicators have been identified for the four 10YFP objectives, including 7 on Objective 4 (Contribute to resource efficiency and decoupling economic growth from environmental degradation and resource use, while creating jobs and economic opportunities and contributing to poverty eradication and shared prosperity): energy efficiency, mitigation of GHG and other atmosphere, soil and water pollutants, material use reduction, waste reduction, water-use efficiency, sustainable land-use, and decent employment.

<sup>17</sup> <http://newsroom.hilton.com/index.cfm/news/hilton-wins-product-of-the-year-from-environmental-leader-for-corporate-responsibility-measurement-platform-lightstay>

<sup>18</sup> <http://tourismpartnership.org/water-stewardship/>

<sup>19</sup> <https://www.wttc.org/Sustainability-Reporting#undefined>

There are many examples of the use of environmental flow information in connection with standard input-output tables and an introduction to the principles and summary of the relevant literature is provided in SEEA Applications and Extensions (ref). Examples already exist in the area of tourism, for example the work for Wales on the connections of tourism and GHG emissions and tourism and employment (refs needed). Advancing the measurement of integrated TSA and SEEA accounts will further support these efforts in understanding the broader connections between tourism activity and the environment and ensuring that environmental data can be taken into account in economic modeling of tourism.

## **1.5 Structure of the SF-MST document**

<<To be drafted following further discussion on the coverage and structure of the draft SF-MST.>>

## 2 Accounting for the economic dimension of sustainable tourism

**Notes to Chapter 4:** This chapter will describe the ways in which the key existing statistical frameworks related to tourism – the IRTS and the TSA:RMF - can be applied and adapted to support the measurement of sustainable tourism. The chapter provides a short overview of the key aspects of these two statistical frameworks before a discussion on specific aspects of these frameworks that are of most relevance for sustainable tourism. The measurement of employment and human capital related aspects is also included in this chapter, building on the ongoing advances in this area by UNWTO and ILO. The connections of employment to the social dimension, e.g. in terms of decent work, are discussed in Chapter 4. Finally, the chapter will provide a discussion on the measurement of the economic dimension at a sub-national level.

In this preliminary draft, the focus has been limited to a description of the key aspects of measuring economic activity. Future drafts will incorporate material to expand the introduction to tourism statistics, to cover the employment and human capital aspects and to discuss sub-national measurement.

Since the material in this section will be drawn from established statistical sources it is not envisaged that substantive issues for discussion will emerge in the finalization of the SF-MST for this dimension. At the same time, while the conceptual basis for measurement of the economic dimension is well founded, there remain practical challenges in implementation for these areas of tourism statistics that will need to be the focus of capacity building and related work within the MST project.

### 2.1 Introduction

<< To be drafted >>

### 2.2 Key aspects of tourism statistics and the TSA framework

#### 2.2.1 Tourism statistics

<< This section to summarise key aspects of tourism statistics as articulated in the IRTS. The aim is to provide a basis for discussion of other dimensions of sustainable tourism by defining key terms and concepts.>>

Topics to be covered include:

- Visitors and the usual environment
- Visitor movements – inbound, outbound, domestic – purpose
- Visitor consumption



### 2.2.2 The TSA framework

The TSA framework is described in the TSA:RMF. It is designed for the measurement of tourism activity and its economic contribution in a manner consistent with the measurement of value added and gross domestic product (GDP) from the SNA. It covers a number of topics from both the demand and the supply side of tourism statistics, framed into 10 core tables. The main economic phenomena covered by these tables include:

- Production, income and value added of tourism characteristic activities (TSA:RMF Tables 5 and 6)
- Tourism expenditure (inbound, outbound, domestic) (TSA:RMF Tables 1 to 4)
- Employment (TSA:RMF Table 7)
- Gross fixed capital formation (TSA:RMF Table 8)

In sum, the TSA framework provides an agreed basis for defining the extent and structure of tourism activity.

Because tourism activity is defined from a demand perspective; i.e. it is the value added arising due to the economic activity people outside of their usual environment (visitors), it cannot be observed through a focus only on the standard industry based views of economic activity. For example, a measure of the value-added of restaurants cannot be solely attributed to tourism. The TSA provides the framework to identify the tourism component of economic activity in a standardized way.

Key aspects of the TSA are:

- The definition and scope of tourism expenditure and consumption
- The definition and classification of tourism products, tourism characteristic activities and tourism industries
- The definition of tourism direct gross value added, tourism direct gross domestic product, tourism employment and gross fixed capital formation of tourism industries

The TSA:RMF describes all of the relevant accounting aspects of these aspects and presents standard tables and aggregates. The TSA:RMF is aligned with the IRTS and uses the definitions and classifications of visitors to ensure that the collection of tourism statistics, such as those on visitor movements and tourism expenditure, can be utilized directly in the compilation of TSA.

The TSA uses as its starting point the activity of those people defined as visitors. The accounts of the TSA framework record the tourism expenditure, i.e. the amount paid for the acquisition of consumption goods and services, as well as valuables, for and during tourism trips. This expenditure is matched with the supply of the associated goods and services, ensuring a balance is recorded between supply and use.

The majority of visitor expenditure is on goods and services produced by tourism characteristic activities, also referred to as tourism industries and hence there is a particular focus in the TSA accounts on understanding the production, income, employment, investment and value added of these activities.

Box 3 presents the top level categories for tourism products and tourism industries. There is clearly a close link between the descriptions since an activity is defined in relation to a primary product. However, in practice, a single tourism establishment may produce a range of products even if it is classified to its main or primary product. For example, many hotels

will be categorized to the activity “Accommodation for visitors” but will produce a range of products including accommodation services and food and beverage serving services.

<b>Box 3. Categories of tourism characteristic consumption products and activities (tourism industries)</b>	
<b>Consumption products</b>	<b>Activities</b>
1. Accommodation services for visitors	1. Accommodation for visitors
2. Food and beverage serving services	2. Food and beverage serving activities
3. Railway passenger transport services	3. Railway passenger transport
4. Road passenger transport services	4. Road passenger transport
5. Water passenger transport services	5. Water passenger transport
6. Air passenger transport services	6. Air passenger transport
7. Transport equipment rental services	7. Transport equipment rental
8. Travel agencies and other reservation services	8. Travel agencies and other reservation services activities
9. Cultural services	9. Cultural activities
10. Sports and recreational services	10. Sports and recreational activities
11. Country-specific tourism characteristic goods	11. Retail trade of country-specific tourism characteristic goods
12. Country-specific tourism characteristic services	12. Other country-specific tourism characteristic activities
Source: IRTS 2008, Annex 3 and 4.	

## 2.3 Measuring economic activity of tourism

### 2.3.1 Accounting for tourism activity at aggregate level

Given the structural information on tourism activity in the TSA, there is data in the core TSA accounts that can be used to inform on sustainability without any particular extension of the core framework. At a global level this has been recognized in the development of indicators for the measurement of progress towards the UN Sustainable Development Goals (SDGs), where indicators relating to Tourism GDP and employment in tourism, both derived from the TSA, are being developed in relation to Targets 8.9 and 14.7<sup>20</sup>.

In addition, the structural information from a TSA would help to identify potential imbalances in the types of visitors (inbound, outbound or domestic, or based on purpose of travel), use of imports to support tourist demand, and the mix of value added across different tourism activities.

<sup>20</sup> Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. Target 14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

Extensions in the form of additional detail within TSA core tables, might be considered to integrate information on specific market segments such as relating to human resources<sup>21</sup>, cruise ships, eco-tourism, meetings industries (sometimes referred to as MICE<sup>22</sup>), etc. Data can also be organized to highlight macro-economic indicators of tourism activity such as tourism expenditure per visitor and foreign exchange earnings. Each of these different views will inform on the past trends and current structure in an integrated way in which all of the data are confronted.

### 2.3.2 Accounting for characteristics of tourism industries

The compilation of TSA accounts can be undertaken using a number of different approaches but generally it will be based on a combination of information from business surveys and visitor surveys. For business surveys, it is expected statistical practice that these are conducted using a common or central business register that lists all establishments in the economy and classifies them to standard industry classes.

By using basic information provided by business registers, for those establishments classified to industries corresponding to tourism characteristic activities it should be possible to assess the structure of tourism by size of establishment (e.g. in terms of turnover or employment)<sup>23</sup>, by ownership (resident or non-resident), by legal entity (corporation, household business), and by other characteristics, depending on the range of information held. By combining this data with information on the value added, employment, tourism share and other data from TSA core tables, a rich picture of tourism activity can then be developed which may be significant in a sustainability perspective. It is worth noting that such a result can be obtained from a standard statistical infrastructure that brings coherence of data across all economic statistics.

It is also noted that the development of a structured approach to information about tourism establishments can support the organization of data proposed in many existing sets of indicators for sustainable tourism. By way of example, the UNWTO Guidebook (2004) includes a range of indicators that are, in effect, characteristics of tourism establishments: for example, indicators on whether the businesses have appropriate training schemes, undertake environmental activity, engage with local communities, are connected to central sewage systems, have sustainable tourism policies in place, etc. To date, however, it has been unclear as to how such information might be collected on a standardized basis.

All considered, a business register can play a unique role in providing an underpinning framework for the collection of information on business characteristics.

This is not to suggest that it is a simple consideration to add questions to existing surveys, many factors need to be brought into play. It is simply noted here that, where measurement of sustainable tourism would be better informed by the collection of additional business characteristics, the use of a statistical approach in the form of the business register - which also underpins the data presented in the TSA - would be an excellent starting point.

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<sup>21</sup> This has been developed in Canada where TSA Table 7 has been considerably expanded to include, for example tourism occupations. See [http://cthr.ca/en/labour\\_market\\_information/human\\_resource\\_module](http://cthr.ca/en/labour_market_information/human_resource_module)

<sup>22</sup> Meetings, incentives, conventions, exhibitions.

<sup>23</sup> For example, the UNWTO *Compendium of Tourism Statistics* compiles a selection of such information from countries worldwide; see: <http://statistics.unwto.org/content/compendium-tourism-statistics>

### **2.3.3 Accounting for tourism infrastructure and investment**

Another key aspect in assessing the sustainability of tourism activity concerns the capacity and condition of tourism infrastructure and similar assets such as airports, ports, transport equipment, roads and hotels. The core TSA tables include recording of gross fixed capital formation in these types of assets but do not require recording the so-called capital stock. The development of capital stock estimates is a relatively involved process and would not be an immediate area of focus for measurement for MST. However, it would likely be relevant to collect information on indicators of infrastructure capacity and condition to provide insight to the discussion of sustainable tourism. Examples of such indicators include number of beds/rooms in hotels, road quality indicators, number of scheduled flights, cruise ship berths, number of taxis, building quality indicators (e.g. in relation to capacity to withstand natural disasters), etc. Such information would support a discussion on the requirements for investment in infrastructure.

### **2.3.4 Assessing seasonality**

In many locations, a key aspect in understanding the sustainability of tourism activity is the pattern of activity through the year. Since the TSA accounts are framed for the production of annual data they will not necessarily provide the information to support the assessment of sub-annual trends. Nonetheless, it will often be the case that for key variables such as visitor arrivals and hotel occupancy, the information underpinning the TSA estimates will be sub-annual (monthly or quarterly). A relevant extension to the TSA framework would therefore be to present certain sub-annual series ensuring that these data have been appropriately integrated with other information within the TSA framework. Information on visitor arrivals in particular may point to issues associated with the use and availability of resources (such as water) in peak times and questions of access and mobility.

### **2.3.5 Measuring the sharing economy**

<< This section to describe the conceptual aspects of accounting for the emerging sharing economy as an important phenomenon in tourism statistics. >>

### **2.3.6 Extending the TSA to record environmental transactions and eco-tourism operations**

A potential application of the SEEA Central Framework that might be directly considered within a TSA setting is to extend/adapt the TSA accounts for expenditures showing so-called environmental transactions. Environmental transactions encompass payments of environmental taxes and resource rents, receipts of environmental subsidies, and expenditure on environmental goods and services, environmental protection and resource management. Following the economy wide definitions provided in the SEEA Central Framework, recording these transactions in relation to tourism activity could be developed.

Another related extension would be to define appropriate criteria to classify tourism establishments as eco-tourism operations and then to separately identify the activity of these establishments within the broader set of tourism establishments.

In broad terms, the recording of environmental transactions and the identification of environmental activities is designed to provide information that supports tracking the

response of business and government to environmental challenges. By developing these data for tourism industries, indicators could be developed that show the response of tourism industries to environmental challenges both in absolute terms and relative to other sectors.

## **2.4 Measuring the employment aspects of tourism**

<<This section to be drafted building on material from the IRTS and TSA:RMF and also recent work by ILO related to the measurement of tourism employment and jobs. A discussion on the social aspects of employment, e.g. decent work, is included in Chapter 4. >>

Topics to be incorporated:

- Employment in tourism: employees and jobs
- Accounting for the human capital aspects of tourism
  - Demographic information (age, gender, etc)
  - Skills and training
- Green jobs in tourism

## **2.5 Accounting for the economic dimension at sub-national level**

<<This section to describe the application of the principles of sub-national measurement described in Chapter 3 to the measurement of economic and employment aspects of tourism described above. Particular note will be made here about the development of regional/sub-national TSA, for example those in Spain and Canada >>

### 3 Accounting for the environmental dimension of sustainable tourism

**Notes to Chapter 5:** This chapter is centred on discussion of the ways in which the statistical standards and principles for accounting for the environment, the SEEA, can be applied and adapted to the measurement of sustainable tourism.

The chapter provides an introduction to the SEEA highlighting the key features of environmental-economic accounting. It then describes measurement in the following areas:

- Accounting for environmental flows for tourism industries
  - Water
  - Energy
  - GHG emissions
  - Solid waste
- Accounting for tourism related environmental assets and their use
  - Tourism land accounts, including protected areas and national parks
  - Accounting for tourism related ecosystems and biodiversity
  - Accounting for tourism related natural resources including stocks of water resources

The material to develop this chapter is well established and developing the environment-economy linkage has been a key focus of the MST project to date. There are remaining issues requiring discussion, especially in the area of accounting for the consumption perspective of environmental flows, but clear advances in these discussions are taking place and there is an active program of testing and pilot studies underway.

An important output of MST has been the development of a Technical Note Linking SEEA and TSA which has been prepared under the joint auspices of the UNWTO Committee on Tourism Statistics and TSA and the UN Committee of Experts on Environmental-Economic Accounting. The content of that Technical Note provides important material for this chapter.

#### 3.1 Introduction

<<To be drafted>>

#### 3.2 Key aspects of the SEEA framework

The SEEA framework has been developed since the early 1990s to provide a means by which environmental information can be integrated with the standard economic data provided in the national accounts. It is the desire to convey a more complete picture of economic

activity through the integration of environmental data that is at the heart of the SEEA approach.

The SEEA can be separated into four broad types of accounting:

- *Accounting for environmental flows* in physical terms; into, within and from the economy. This includes accounting for flows of water, energy, air emissions, solid waste and emissions to water; and can be extended to account for individual elements and substances such as carbon and nitrogen.
- *Accounting for natural resources* in terms of stocks and changes in stocks (e.g. discoveries of resources, depletion). This includes accounting for stocks of mineral and energy resources, timber, fish, water and soil.
- *Accounting for environmental transactions* that are included in the SNA but not specifically identified as “environmental”. This includes accounting for environmental protection and resource management expenditure, environmental taxes and subsidies and the supply and use of environmental goods and services.
- *Accounting for land and ecosystems*. In this type of accounting the focus is on understanding the changing composition of the area of a country in terms of land use and land cover and the quality of the land in terms of the condition of its ecosystems. Accounting for ecosystem also involves the measurement of ecosystem services and evaluating the capacity of ecosystem to continue to generate market and non-market ecosystem services.

Accounting within the SEEA framework can be undertaken in physical and monetary terms. As a result, the focus of the SEEA is on the alignment of measurement boundaries such that environmental data can be directly and meaningfully related to associated economic data, for example through the use of consistent definition and classification of economic units.

### 3.3 Accounts for environmental flows for tourism industries

#### 3.3.1 Introduction

At this stage in the development of the broader statistical framework for MST, an initial set of four accounts for environmental flows are described focused on linking measurement of environmental flows following the SEEA with tourism industries as accounted for in the TSA. The four accounts cover flows of:

- water
- energy
- greenhouse gas (GHG) emissions
- solid waste.

The level of detail and industry disaggregation of these four accounts is relatively uniform with a clear focus on tourism industries. In addition, specific industries relevant to each account are included, such as the water collection, treatments and supply industry and the sewerage industry in the case of the water account.

The accounts described here are presented in terms of compilation for annual frequencies and at national level. While this is a suitable basis for description of the accounts, for

sustainable tourism both sub-national and sub-annual compilation of accounts is likely to be relevant. In general, the same conceptual considerations will apply, and there may be additional data and compilation issues to take into account.

It is noted that a focus on annual and national level compilation will likely suit the needs for national and international policy and reporting (for example, for the SDG indicators). For sustainable tourism management and analysis, this level of detail will usually not be sufficient. Nonetheless, the framework described here will provide a base for the co-ordination of information at finer levels of detail and this will, in turn, support and more integrated understanding of tourism activity. In this sense, the accounting framework provides the basis for the comparison and aggregation of information at different spatial levels and at different frequencies, recognizing that not all possible combinations of spatial detail and frequency will be needed or relevant.

All of the environmental flow accounts described here are compiled from a production perspective, i.e. by considering for each tourism industry the relevant flows of water, energy, GHG emissions and solid waste. This is distinct from starting the analysis from the set of products purchased by visitors which will embody these flows in their production. The relationship between the production and the consumption perspectives is considered further later in this chapter.

While having a specific focus on tourism industries, the accounts encompass an economy wide view such that the various environmental flows for tourism can be compared to economy wide aggregates. It is important to recognize however, that for any given industry, including tourism industries, not all of the output is purchased by visitors. In which case, when viewed from a production perspective, not all environmental flows for the tourism industries should be attributed to tourism. For example, only a part of the water use by the restaurant industry should be attributed to tourism - its tourism share. This same principle also applies in the case of non-tourism industries since some of their output and associated environmental flows will be attributable to tourism. The estimation of tourism shares is considered further later in this chapter.

### **3.3.2 Accounts for water flows for tourism industries**

The first account is a physical supply and use table for flows of water. It contains information on the supply and use of water and provides an overview of water flows from the environment into tourism and other industries, the distribution and use of this water and the generation and treatment of wastewater. It is likely that, in practice, only relatively few cells in the table will be of significance and these should form the focus of initial development. These cells are highlighted in green.

Physical supply and use tables for water can be compiled at various levels of detail, depending on the required policy and analytical focus and data availability. Of particular interest for sustainable tourism are the seasonal patterns in water use since in specific locations there will be peaks in the demand for water that may not correspond to the patterns of water supply, e.g. across dry and rainy seasons.

Consistent with the advice in the SEEA Central Framework, it would be preferable for the tables to be compiled for individual catchments since the pressures on water supply will vary by location. It is noted that the nature of water supply will also vary by location with different combinations of surface water, groundwater and desalinated water being used. Although the table below does not distinguish between these different sources of water, additional rows can be incorporated to record this detail.



The breakdown of economic activities identified in the tourism industries water flow account distinguishes the main tourism industries and the main industries associated with water supply and use. Recognizing that in any given industry not all water flows will be attributable to tourism, the distinction between tourism and non-tourism flows should be made following the methodological advice discussed below.

In both the supply table and the use table, the rows are grouped into five sections, which each capture different aspects of water flows. These sections follow the structure of the physical supply and use table for water presented as core account #1 in the SEEA Technical Note on water accounting, i.e. Account 1: Physical supply and use table for water.

For the purposes of describing the application to tourism, the full set of entries has been reduced to provide a focus on those entries expected to be of most relevance to the analysis of water flows for tourism industries. Ideally, the accounting for these flows would be undertaken as part of an economy wide accounting for water and the structure described supports this approach.

Table 5.1: Tourism industries water flow account (cubic metres)

Physical supply table for water												Flows from the Rest of the world	Flows from the Environment	Total supply				
Abstraction of water; Production of water; Generation of return flows																		
Tourism industries										Water collection, treatment and supply	Sewerage				Other industries	Households		
Accommodation for visitors		Food & beverage serving		Passenger transport		Travel agencies & reservation services		Other tourism industries		Total tourism industries								
Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total	Tourism	Total						Tourism	Total
1. Sources of abstracted water																		
Total supply abstracted water																		
2. Water																		
Distribution of abstracted water																		
Own-use of abstracted water																		
3. Wastewater and re-used water																		
Wastewater to treatment																		
Own treatment of wastewater																		
Re-used water produced (for distribution)																		
Total Wastewater and Re-used water																		
4. Return flows of water																		
Total Return flows																		
5. Evaporation of abstracted water, transpiration and water incorporated into products																		
Total																		
TOTAL SUPPLY																		

NB: Dark grey cells are null by definition; green cells reflect those of most likely importance

Physical use table for water																
Abstraction of water; Intermediate consumption; Return flows												Accumulation	Flows to the Rest of the world	Flows to the Environment	Total use	
Tourism industries										Water collection, treatment and supply	Sewerage	Other Industries	Households	Exports		
		Accommodation for visitors	Food & beverage serving	Passenger transport	Travel agencies & reservation services	Other tourism industries	Total tourism industries									
		Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total					Tsm   Total				
1. Sources of abstracted water																
Inland water resources																
Other water sources																
Total use abstracted water																
2. Water (use)																
Use of distributed water																
Own-use of abstracted water																
3. Wastewater and re-used water																
Total Wastewater and Re-used water																
4. Return flows of water																
Total Return flows																
5. Evaporation of abstracted water, transpiration and water incorporated into products																
Total																
TOTAL USE																

NB: Dark grey cells are null by definition; green cells reflect those of most likely importance

### 3.3.3 Accounts for energy flows for tourism industries

The second account is a physical supply and use table for flows of energy. It contains information on the supply and use of energy by type of energy product including energy from renewable and non-renewable sources. It is likely that, in practice, only relatively few cells in the table will be of significance and these should form the focus of initial development. These cells are highlighted in red.

Physical supply and use tables for energy can be compiled at various levels of detail, depending on the required policy and analytical focus and data availability. For example, where there may be limitations in the availability of energy from specific sources, understanding the seasonal patterns in energy use may be of interest. It is likely to be important to include estimates for the generation of energy on own-account for example through the installation of solar panels. The changing demand for energy will be missed if such own-account production is excluded.

The breakdown of economic activities identified in the tourism industries energy flow account distinguishes the main tourism industries. All other industries are grouped in a single column and hence for additional breakdowns and comparisons, an economy wide energy flow account will need to be considered. Recognizing that in any given industry not all energy flows will be attributable to tourism the distinction between tourism and non-tourism flows should be made following the methodological advice discussed below.

In both the supply table and the use table, the rows are grouped into four sections, which each capture different aspects of energy flows. These sections follow the structure of the physical supply and use table for energy presented as core account #1 in the SEEA Technical Note on energy accounting, i.e. Account 1: Physical supply and use table for energy.

For the purposes of describing the application to tourism, the full set of entries has been reduced to provide a focus on those entries expected to be of most relevance to the analysis of energy flows for tourism industries. Ideally, the accounting for these flows would be undertaken as part of an economy wide accounting for energy and the structure described supports this approach.

A useful extension is to distinguish the use of energy products between energy from renewable and non-renewable sources.

Table 5.2: Tourism industries energy flow account (joules<sup>24</sup>)

Physical supply table for energy															
Production energy products & Generation of residuals											Accumulation	Flows from the rest of the world	Flows from the environment	TOTAL	
Tourism industries								Electricity and gas supply	Other industries	Households	Imports				
Accommodation for visitors	Food & beverage serving	Passenger transport	Travel agencies & reservation services	Other tourism industries	Total tourism industries										
Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Total	Tourism   Total								
1. Energy from natural inputs															
Natural resource inputs															
Inputs of energy from renewable sources															
Other natural inputs															
2. Energy products															
Total production of energy products															
3. Energy residuals															
Total energy residuals															
4. Other residual flows															
Residuals from end-use for non-energy purposes															
Energy from solid waste															
TOTAL SUPPLY															

NB: Dark grey cells are null by definition; green cells reflect those of most likely importance

<sup>24</sup> According to the International Recommendations for Energy Statistics (IRES), energy statistics are supposed to be compiled by converting physical measures of mass and volume such as tonnes, litres and cubic metres into a common unit representing energy content in net calorific terms. Joule is the common unit generally used for expressing energy flows.

Physical use table for energy																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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NB: Dark grey cells are null by definition; green cells reflect those of most likely importance



Central Framework. The items selected for the categories of solid waste are those deemed relevant for tourism industries and for the activities of other industries that meet visitors' demand.

Physical supply and use tables for solid waste would generally be compiled at a national level and at annual frequency but it may be relevant to compile accounts for specific municipal areas in which tourism is a significant activity and, depending on the capacity for the treatment and disposal of waste, measurement at sub-annual frequencies to monitor peaks in waste generated by tourism activity may be relevant.

The breakdown of economic activities identified in the tourism industries solid waste flow account distinguishes the main tourism characteristic activities and the main industries associated with waste collection and disposal. The categories of solid waste are described in Annex 1 of the SEEA Central Framework. As yet there is no standardized classification of solid waste but these categories can provide a basis for collection of data and compilation of accounts. It may be of interest to compile estimates of the total quantity of solid waste, irrespective of type.

Table 5.4: Tourism industries solid waste account (tonnes)

Physical supply table for solid waste												
Generation of solid waste										Flows from the rest of the world	Flows from the environment	Total supply
Tourism industries								Other industries	Households	Imports of solid waste	Recovered residuals	
Accommodation for visitors	Food & beverage serving	Passenger transport	Travel agencies & reservation services	Other tourism industries	Total tourism industries							
Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total	Tourism   Total					
<b>A. Generation of solid waste residuals</b>												
Metallic waste and other recyclables												
Discarded equipment and vehicles												
Mixed residential and commercial wastes												
Other wastes												
Total solid waste												
<b>B. Generation of solid waste products</b>												
Total solid waste												
Physical use table for solid waste												
Intermediate consumption; Collection of residuals										Final consumption	Flows to the rest of the world	Flows to the Environment
Tourism   Total								Tourism industries	Other industries	Households	Exports of solid waste	Total use
Landfill	Incineration	Recycling and reuse	Other treatment	Total	Tourism   Total	Tourism   Total						
<b>C. Collection and disposal of solid waste residuals</b>												
Total solid waste												
<b>D. Use of solid waste products</b>												
Total solid waste												

NB: Dark grey cells are null by definition; green cells reflect those of most likely importance



### 3.3.6 Estimating the tourism share of environmental flows

As noted in the introduction to this section, the available statistical information on environmental flows does not make reference to tourism, though environmental flows related to tourism activity are embedded in the estimates. For example, data on GHG emissions generated by production processes that produce output purchased by visitors (e.g. accommodation or transport services) is not available with specific reference to the tourism share. What is required therefore, are techniques to estimate the proportion of a given environmental flow that is attributable to visitor activity. A number of different techniques were examined by Costantino (2017) and the findings are summarized here.

The paper recognizes that, at least in theory, data on environmental flows related to visitors may be collected directly in cases where tourism and non-tourism businesses are capable of providing information on the different environmental flows as they relate to visitors and non-visitors. While some detailed information may be available in some cases (and should be used if at all possible), the paper concludes that it is unlikely to envisage these data being available on a regular basis for official statistics.

In the absence of directly collected data, three different tourism shares are described:

- output shares - calculated by dividing an industry's output sold to visitors by its total output
- value added shares - calculated by dividing an industry's value added attributable to sales of output to visitors by its total value added
- intermediate consumption shares – calculated by dividing an industry's intermediate consumption for the production of output sold to visitors by its total intermediate consumption

Each of these could be used to estimate, for each industry, the proportion of an environmental flow (water, energy, GHG emissions, solid waste, etc.) attributable to visitor activity and hence to tourism. In concept, all of these shares can be derived from a TSA (TSA:RMF Table 6).

By way of example, the tourism share of water use in the restaurant industry may be estimated by multiplying the total water use of that industry by the output share of the restaurant industry that is attributable to visitor consumption.

Some care should be taken in the use of the different tourism shares for different environmental flows. Output shares should be used where the magnitude of the environmental flow of interest is directly related to the level of production (e.g. GHG emissions and solid waste) while intermediate consumption shares are best applied for those environmental flows that are inputs to production (e.g. energy).

Value added shares can be used when output or intermediate consumption shares are not available and estimating value added shares can turn out to be relatively more affordable, but they are not preferred. Their use depends on the extent to which it can be assumed that there is a close relationship between the value added share and the share of output or intermediate consumption. At the same time, where output and intermediate consumption shares are quite high then it is likely that the value added share is also high and then value added ratios may be good proxies for output ratios or intermediate consumption ratios.

The more general assumption in estimating tourism shares is that the production function (mix of outputs and inputs) for an industry is the same for visitors and non-visitors. For example, the amount of water used to make a restaurant meal is invariant between consumers. In concept, this assumption is likely reasonable provided that information is

available at a relatively fine level of industry detail. For example, estimates of energy use may vary between air freight and air passenger transport and more accuracy in the tourism shares will be obtained if calculations can be completed at the finer level. However, in practice it may be difficult to source suitably fine levels of industry detail in which case the appropriateness of the assumption will depend on the extent of differences in the consumption patterns of visitors compared to residents and the mix of products within the industry.

### 3.3.7 Distinguishing the consumption and the production perspectives

To this point, the discussion in this section has focused on the measurement of environmental flows from the perspective of tourism industries, i.e. a production perspective. The next step is to consider, for the same environmental flows (water, energy, GHG emissions and solid waste), the methods that would be appropriate in estimating the attribution of flows based on visitor activity.

First of all, the investigation should consider the environmental flows associated with tourism activity where households and individuals undertake activity on their own-account. For example, the energy and GHG emissions associated with driving one's own car on holiday. Also for consideration are the environmental flows associated with visitors staying with friends and relatives. In allocating SEEA estimates to tourism, these environmental flows should be taken into account in addition to those caused by production processes discussed in this section.

Furthermore, in line with SEEA directions concerning possible applications and extensions of economic-environmental accounts, one way to consider the measurement challenge from a consumption perspective is to recognize that all products are outputs from production processes which are, at an aggregate level, reflected in standard supply and use tables. By using the information on the relationships between inputs and outputs of goods and services reflected in these tables, in principle it is possible to determine a link between the environmental flows of specific production processes along the whole supply chain linked to tourism demand and the outputs that are ultimately consumed by visitors. For example, it would be possible to estimate the quantity of energy embodied in the provision of accommodation services for visitors. The same logic could be applied for other environmental flows such as water and GHG emissions.

The techniques of attributing environmental flows to categories of final demand are well established and widely applied. The SEEA Applications and Extensions provides an introduction to the relevant approaches and associated literature in Chapter III and, in Chapter IV, it provides an example of applying this approach in relation to household consumption. It could be possible to use the principles outlined in SEEA Applications and Extensions to attribute environmental flows to tourism characteristic products, potentially using information on tourism expenditure also to differentiate this attribution by different types of visitor.

Beyond the considerations noted above, more investigation of this topic is required to resolve specific issues. For example, since visitors are by definition outside of their usual environment, there is the dual challenge of both attributing a flow to visitors and also assigning that flow to the residence of the visitors. There is no doubt overlap here with the production perspective but differences in scope do exist.

A conceptual issue lies in appropriately defining the spatial boundaries for consumption. This is especially so since environmental boundaries are open, and visitors travel between

countries. The aim here is thus to describe possible methods of presenting a consumption perspective in relation to the environmental flows under investigation. It is quite likely that different approaches are relevant for different flows. Ultimately there should be an alignment of methods here with the delineation of spatial boundaries for destinations but at this stage it should be possible to develop relevant criteria for presenting the consumption perspective without knowing precisely how destinations might be defined.

This discussion provides a brief introduction to the topic and further investigation and discussion of this topic should be undertaken to support compilation activities. It is recommended that initial estimates be undertaken using the production approach since this is generally well aligned with data available through the TSA and SEEA based data sets.

### **3.3.8 Allocating environmental flows associated with transport activity**

Within the general discussion of the estimation and allocation of environmental flows to tourism activity a particular consideration concerns flows related to transport activity. Because transport businesses operate by moving people and products between locations within and between countries, the allocation of relevant environmental flows to specific countries and destinations is not as straightforward as for other businesses. There are national accounting conventions, in particular the residence principle concerning the allocation of economic units to economic territories, that apply in relation to the treatment of expenditures and revenue by these businesses. Hence, the starting point for measurement from a production perspective in a joint SEEA / TSA approach is to consider that these conventions apply in the case of environmental flows.

However, a question requiring further consideration is whether there are any additional considerations in relation to transport that emerge when considering a consumption perspective on these flows. For example, what is the best way to consider allocation of the GHG emissions from a British Airways plane travelling between Singapore and London and carrying passengers from the United States and Australia. At this stage, no specific answers have been developed and it remains an area requiring further investigation and discussion before more concrete advice can be provided.

## **3.4 General features of measuring environmental assets**

### **3.4.1 Introduction**

Following the *SEEA Central Framework* (UN et al, 2014a), environmental assets are defined broadly as

“the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.” (para 2.17).

There are so many different types of environmental assets, ranging from pristine wilderness to areas heavily influenced by people (such as, city parks and beaches), that applying a single definition can be problematic. The intention however, from a measurement perspective, is to consider that the scope of environmental assets is suitably broad ranging.

Given the range of environmental assets, it is not surprising that many perspectives and associated measurement approaches are adopted. Indeed, in the biophysical sciences, it is clear that there are many specialties including hydrology, geology, climatology, and ecology, and specialisations concerning specific types of ecosystems (e.g. marine areas, forests,

deserts) and species (insects, mammals, conifers). Given this variety and the associated breadth of methods and areas of focus, it is perhaps not surprising that there has been, to date, relatively little integration of environmental data into standard national statistical operations.

Nonetheless, there is a very substantial quantity of data and expertise about environmental assets. The challenge from an ongoing measurement perspective is to find ways of gathering, standardizing and presenting the information in a manner that (i) can be integrated with economic and social data, (ii) is useful for policy making, and (iii) respects the underlying science. The accounting framework of the SEEA is designed to provide a platform to meet this challenge.

### 3.4.2 Approaches to accounting for environmental assets

The SEEA describes two approaches to the measurement of environmental assets. The first approach concerns the measurement of individual assets such as minerals, energy resources, timber, fish, soil and water. This is described in the SEEA Central Framework. Many of these assets are the focus of extraction or use by primary industries and do not directly support tourism activity. Consequently, there is likely to be little need to develop estimates of the stocks and changes in stocks for these resources in the context of measuring sustainable tourism. There are two main exceptions in this regard: the measurement in physical terms of water resources and the measurement of individual species (e.g. gorillas, wild boar). Accounting for both of these types of environmental asset are described below (sections 4 and 5).

The second approach is accounting for the extent and condition of land and ecosystem assets as described in the *SEEA Experimental Ecosystem Accounting* (SEEA EEA) (UN et al., 2014b). In the SEEA, land is a unique and fundamental environmental asset. At one level it can be accounted for as an individual resource by recording changes in the composition of land use and land cover within a territory over time. In this way indicators of deforestation and urbanization may be derived.

At the same time, land defines the space within which all activity takes place and other assets are situated and it is the spatial aspects of land that need special and distinct consideration. In the context of environmental assets, accounting for land and ecosystems involves separating an overall territory (e.g. country, region) into distinct spatial areas, known as ecosystem assets, each categorized according to different characteristics. Generally, this will relate to different vegetation types and hence, at an aggregate level there will be a mix of ecosystem assets such as forests, wetlands, coastal areas, urban and built-up areas, farmland, savanna, etc. delineated within a territory. The approaches to land and ecosystem accounting in the context of tourism activity are described further below (sections 6, 7 and 8).

#### *Environmental asset accounts*

Accounting for all environmental assets follows basically the same logic. The first step is assessing the stock of the particular environmental asset at a point in time (in accounting terms the beginning of the accounting period). This will likely involve some measurement of the physical stock of the asset using different measurement units depending on the asset. Numbers of wildlife and cubic metres of water would be common metrics.

The second step involves measuring changes in the stock of the asset, both additions and reductions, over an accounting period. Ideally, measurement would be undertaken each

year but, for many environmental assets, monitoring over 3-5 year periods might be sufficient to support policy discussion.

The measures of the changes in stock must then be reconciled to measures of the stock at the end of the accounting period (i.e. the first step is repeated at a later point in time). This accounting identity that opening stock + additions – reductions = closing stock is a powerful equation that supports telling coherent stories over time. Table 5.5 shows the basic form of an asset account that reflects this identity.

Table 5.5: Basic form of an asset account

<b>Opening stock of environmental assets</b>
<b>Additions to stock</b>
Growth in stock
Discoveries of new stock
Upward reappraisals
Reclassifications
<i>Total additions of stock</i>
<b>Reductions of stock</b>
Extractions
Normal loss of stock
Catastrophic losses
Downward reappraisals
Reclassifications
<i>Total reductions in stock</i>
<b>Revaluation of the stock*</b>
<b>Closing stock of environmental assets</b>

<sup>a</sup> Only applicable for asset accounts in monetary terms.

Often gathering the information to measure each of the accounting entries in Table 2 is very challenging and hence biophysical models may be applied that provide estimates of, for example, additions to the stock of timber resources using information on the size and age of the forest and the primary species. In this sense, the accounting framework provides a means by which a variety of environmental information can be integrated with economic data since the underlying recording principles are the same.

An important feature of the SEEA's environmental asset accounting is that it can be conducted in both biophysical (quantitative) terms and in monetary terms. In the first instance, the focus is most commonly on recording data in biophysical terms and indeed, in a sustainability context, understanding the actual physical stock is a fundamental requirement. As well, this information is generally the focus of measurement since the biophysical characteristics can be observed and monitored.

The valuation of environmental assets in monetary terms is a challenging area of research and measurement. It is necessary in cases where the information demand is for comparing environmental assets to other assets or for estimating the capital cost of using environmental assets in the generation of income (e.g. estimating depletion adjusted GDP). However, there are a range of methodological challenges and assumption associated with valuation of environmental assets since they are not commonly traded on markets. Issues associated with valuation are not pursued further in this paper and interested readers are invited to consider material in SEEA Central Framework, Chapter 5 and SEEA EEA, Chapters 5 and 6.

### 3.4.3 Accounting for water resources

As highlighted earlier, in locations and countries where there are concerns about the availability of water to support tourism activity, it will not be sufficient to record only the levels of water use by tourism activities. In addition, it will be necessary to record information on the stock of water and changes in this stock. The appropriate account for this task is the water resources asset account – shown below in Table 3. This account records the stock of water at the beginning and end of the accounting period and the changes in the stock of water due to both human activities and natural phenomena such as precipitation and evaporation. The information can provide a basis for the assessment of the pressure being exerted on water resources through abstraction for economic activity including for tourism.

Ideally, as explained in the SEEA Central Framework, water resources asset accounts would be compiled for each water catchment across a country. In the context of assessing sustainable tourism it would be appropriate to focus only on those catchments where there is a significant connection to tourism activity. The water resources asset account provides information as to the stocks and changes in stock of the overall resource and hence the use of water by tourism activities can be seen in context. As a consequence, there are no specific issues pertaining to tourism that need to be considered in developing an appropriate water resource asset account.

Table 5.6: Water resources asset account (cubic metres)

Accounting entries		Type of water resource					Total	
		Surface water				Groundwater		Soil water
		Artificial reservoirs	Lakes	Rivers and streams	Glaciers, ice and snow			
Opening stock of water resources								
Additions to stock								
	Returns							
	Precipitation							
	Inflows from other territories							
	Inflows from other inland water resources							
	Discoveries of water in aquifers							
	<i>Total additions to stock</i>							
Reduction in stock								
	Abstraction							
	of which: for <b>tourism purposes</b>							
	Evaporation and actual evapotranspiration							
	Outflows to other territories							
	Outflows to the sea							
	Outflows to other inland water resources							
	<i>Total reductions in stock</i>							
Closing stock of water resources								

The compilation of water resource asset accounts is described at length in a range of materials. These include:

- SEEA Central Framework
- SEEA Water
- International Recommendations on Water Statistics
- SEEA Technical Note: Water accounting

Commonly, the estimates of stocks and changes in stocks of water will be based on hydrological monitoring and associated models concerning precipitation, evaporation, run-off and other flows. Direct measurement of stocks of water, particularly with respect to surface water is more challenging but is likely to be relevant where abstraction from groundwater is a primary source.

In some situations, for example in island nations, it may be relevant to assess changes in the quality of available water resources as increases in the salinity of groundwater are a known concern and will limit the availability of water, and/or increase the costs of providing water for tourism activity.

A significant issue in some tourism areas will be the seasonality of tourism activity. Where storage capacity is limited, it may be highly relevant to monitor both water use and changes in the stock of water on a monthly basis such that information for monitoring the capacity to meet peak tourism demand is well established. This may be particularly important as weather and climate patterns vary such that rainfall and peak visitor arrivals do not align well.

To provide a complete picture with respect to water resources, it will be relevant to compile estimates of water use within tourism activities as presented in Table 3.1. Approaches to the collection of these data and the attribution to visitors are described in the Technical Note linking the SEEA and the TSA.

Focus in the SEEA is on the active use of water that occurs as it is abstracted and distributed to economic units and households. This will include for example, the abstraction of water to fill swimming pools and related water park facilities. Beyond this, tourism activity will also use water resources passively. Examples include surface water (lakes and rivers) and coastal waters being used for recreation and swimming, and water providing the medium for water transport (ferries, cruises, etc.). Passive uses of water are not the focus of accounting in the SEEA however application of the principles of land accounting (section 6), in terms of accounting for land use, may be applied to provide information to support management of these areas.

An important issue related to both the active and passive use of water resources is water quality and the associated issue of the treatment of wastewater. The issue of wastewater treatment is covered in the discussion of the supply and use of water in the Technical Note linking the SEEA and the TSA. Water quality is a challenging area of measurement as introduced in the SEEA Water, although in part this challenge lies in providing aggregate measures of water quality at a national or other larger scale. Approaches to the measurement of water quality in specific locations are well established and it is likely of relevance, particularly in coastal tourism destinations, to collect and record water quality information on an ongoing basis. Approaches to recording this information are described in the section below on ecosystem accounting.

### 3.4.4 Accounting for wildlife and key species

Another individual asset for which asset accounts might be developed are accounts for selected species of wild animals, for example, animal species that provide the focus for safari and related activities in national parks and species that are a focus for recreational hunting and fishing.

Recording changes in the stock of such key species over time would support an understanding of the environmental assets supporting tourism activities. Related areas of measurement such as measurement of biodiversity and protected areas are considered under the topic of land and ecosystem accounting (see following sections).

A basic, but potentially very useful, asset account would focus on numbers of particular species monitored at regular intervals and entered into an asset account format. This might be extended to show additions (e.g. through natural births and releases from breeding programs) and reductions (e.g. through natural losses, poaching), to provide more detail concerning the nature of the changes over time. Such an account over multiple time periods is shown in Table 5.7 for the Big Five mammals of southern Africa. Further extensions to integrate information on the age and composition of the stock of animals, for example to understand the number of breeding females, could also be made. The same approach can be applied for all species that may support tourism activity (e.g. Californian redwoods, penguins, wild boar, trout, etc.), noting that many possibilities may be considered.

Table 5.7: Stylised asset account for the Big Five mammals of southern Africa (numbers of animals)

Accounting entries	Species									
	Lion		African elephant		Cape buffalo		Leopard		Black rhino	
	Total	In Protected areas	Total	In Protected areas	Total	In Protected areas	Total	In Protected areas	Total	In Protected areas
Opening stock										
Additions to stock										
Natural births										
Breeding programs										
Other additions										
Reductions in stock										
Natural losses										
Poaching										
Other reductions										
Net change in stock										
Closing stock										
Opening stock										
Additions to stock										
Reductions in stock										
Closing stock										
:										

Information of this type for key species may well be available to managers of national parks and protected areas or from active research programs. The aim of accounting is to provide a platform for this information to be placed in context alongside information on visitors and tourism activity and hence provide a more complete picture for decision makers. Indeed, the relevance of this type of information has been highlighted in a recent UNWTO briefing paper



Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa (UNWTO, 2015).

For wildlife, there will be a direct link between the stock and the condition (quality) of the associated ecosystem, such as a forest, wetland or savanna. As well, it is common for the assessment of the numbers of species to be determined on the basis of the extent of suitable habitat and hence there will be connections to approaches used in ecosystem accounting.

#### 3.4.5 Land accounts for tourism

The use of land for tourism activity and development is often a contentious aspect of ongoing tourism growth. The contention arises where there are limitations in the availability of land to satisfy all potential users and hence choices must be made in terms of how land is used and who is provided with the opportunity to secure the associated benefits.

In this context, land accounts can provide an important information source to support discussion of planning and land allocation decisions. Following the basic structure of the asset account described above, land accounts report the opening and closing stocks (areas) of land classified by different classes of use, cover or ownership. Thus land accounts provide information that shows the changing composition of land over time. This information can be extended by examining the types of additions and reductions for different land classes during an accounting period.

Another important output that can be directly related to land accounts are maps showing the areas of land classified by use, cover or ownership. Maps are important tools since they are able to convey the actual configuration of an area that is not apparent when looking at a set of accounts in tabular form.

Both land cover and land use accounts are likely to be of interest in measuring sustainable tourism. For a given territory (country, region, destination), accounts for land cover will provide an understanding of the relative size of areas that are covered by, for example, forests, wetlands, rivers, built-up areas, agricultural areas, grasslands, coastal areas and beaches, etc. If converted into maps, this information will clearly identify key environmental areas and ecosystems and their relative significance and configuration. An interesting overlay of this information would be to incorporate information on protected areas and national parks which might be a focus for certain tourism activities. Changes in the size of such areas might be of particular interest.

Accounts for land use will be able to highlight the relative significance of land used by tourism industries such as hotels, restaurants, recreational facilities, transport hubs, etc. When mapped, this will highlight whether there are particular clusters and how these might be changing over time. While such tourism maps might be regularly produced for cities and regions, the advantage of using a SEEA based land accounting framework is that the information on tourism activity is fully integrated with information on other activities in a mutually exclusive and comprehensive manner.

For tourism purposes, the land account structure that is likely to be of most value is an account that shows an integration of land use and land cover classes. This would involve starting from a land cover account with broad classes, as suggested above (forest, grasslands, etc.) and within the class of built-up areas breaking this down further into various tourism industry use of land and non-tourism uses. Further, within the non-urban land cover classes it would be logical to determine the area of land that was most relevant

for tourism activities – e.g. beaches. A map of these various classes, produced on a regular basis, would provide substantive input to planning and other tourism related discussions.

An account showing these types of classes is shown in Table 5.8. It represents a melding and adaptation of the interim land use and land cover classifications described in the SEEA Central Framework. The proposed classes are illustrative only and are included to give a sense of the potential structure of a tourism land account. Descriptions of the relevant classes are provided in the SEEA Central Framework, Annex 1.

*Table 5.8: Tourism land account (hectares)*

Land classes	Accounting entries				
	Opening stock	Additions to stock	Reductions in stock	Net change in stock	Closing stock
Built-up areas / artificial surfaces					
Transport and storage					
Commercial, financial and public services					
Hotel and catering services					
Retail trade					
Other commercial services					
Recreational facilities					
Residential areas					
Other built up areas					
Crops (herbaceous, woody, other)					
Grassland					
Tree-covered areas					
Mangroves					
Shrub-covered areas					
Shrubs and other vegetation, aquatic and regularly flooded (incl wetlands)					
Sparsely natural vegetated areas					
Terrestrial barren land					
Permanent snow and glaciers					
Inland water bodies					
Coastal water bodies and intertidal areas					
<b>Total area</b>					

The compilation of land accounts is the focus of much ongoing statistical attention. The SEEA Technical Note on land accounting provides an introduction to this area of work. Generally speaking, the compilation of land accounts will require a close relationship to be established with experts in geo-spatial data since there should be a relatively direct connection between land accounts (along the lines of Table 5) and maps showing the same information.

Land accounts can be compiled at different scales. The key from a SEEA perspective is consistency in the application of classifications across spatial scales such that different land accounts (and associated maps) can be nested using consistently defined boundaries. This type of approach, which will likely require some level of national co-ordination, will directly support the type of cross-jurisdictional interaction and discussion that is considered necessary for progressing sustainable tourism.

### 3.4.6 Accounting for tourism related ecosystem assets

#### *Introduction*

The final type of environmental asset to consider is ecosystem assets. While ecosystems are not new concepts, the logic of fully incorporating ecosystems into an accounting structure is

quite recent. In a statistical context, this was first presented in the SEEA EEA. The approach involves identifying (delineating) separate spatial areas within a country each representing an ecosystem asset. Most commonly, these separate areas are determined on the basis of different vegetation types but other factors can be incorporated. In effect, each spatial area – referred to as an ecosystem asset – is a statistical representation of an ecosystem as understood by an ecologist.

#### *Ecosystem extent*

Consistent with SEEA accounting principles, all ecosystem assets (i.e. discrete spatial areas) within a territory are classified to a type of ecosystem asset in a non-overlapping manner. Each of these ecosystem assets might change in size – extent – over time. One key role of ecosystem accounting is to record these changes in extent, and measure the composition of a territory in terms of its ecosystem types at points in time. In this regard, there are strong connections to the land cover accounts discussed in the previous section.

Ecosystem extent accounts for tourism could be used to record the current composition and changes in composition of tourism areas according to different ecosystem types. For example, the changing composition of ecosystems such as beaches, coastal zones and dunes, mangroves, rivers and estuaries, forests, wetlands and urban areas may be tracked over time. Maps of these changes may also be useful policy tools. The delineating and mapping of ecosystem assets provides the underlying framing for ecosystem accounting.

#### *Ecosystem condition*

In addition to measuring the extent of ecosystem assets, ecosystem accounting records changes in the condition of each asset. This is done by considering, for each asset type, a range of characteristics relevant to the assessment of the overall integrity and functioning of the asset. Characteristics may include water flow and quality, species abundance and diversity, vegetation density and cover, soil fertility, etc. The choice of characteristics is ideally determined at the local level by ecologists familiar with the various ecosystem types. The ecosystem accounts provide a structure within which this ecological information can be brought together and tracked over time. The same approach can also be used to monitor the condition of coastal waters and reefs that may be of importance in some tourism areas, for example by recording changes in coral cover.

#### *Ecosystem services*

The next stage in ecosystem accounting involves measuring the flows of ecosystem services generated by ecosystem assets. Commonly, ecosystem services are grouped into three broad classes: provisioning services, regulating services and cultural services. Provisioning services relate to the extraction and harvest of materials from the environment including timber, fish and water. These will largely be inputs to primary industries, e.g. agriculture, forestry and fisheries, but there will be cases of relevance for tourism, for example when a hotel or resort abstracts water from the environment.

Regulating services are generally the least recognized and the most taken for granted. These services include the filtering and purification of water and air by ecosystems, the regulation of soil and water flows to minimize the impacts of flooding and the sequestration of carbon, to name just a few. Communities and tourism activities gain directly from these services but usually do not pay for them.

Cultural services concern the opportunities provided by ecosystems to enjoy and learn from nature. They include educational and scientific connections and, most significantly for tourism, cultural and recreational opportunities including wildlife watching, hiking, camping, visits to national parks, swimming and other outdoor recreation, etc.

### *Application of ecosystem accounting to tourism*

Although much further discussion on the application of ecosystem accounting to tourism is required, there appears a direct link that can be made between the spatial detail required for ecosystem accounting and the common destination level focus of sustainable tourism. Thus the application of ecosystem accounting principles and the development of ecosystem accounts should provide information that can be directly used at destination level to progressively build a picture of tourism's use of and impact on local ecosystems. For example, it would be possible to:

- Understand the size and location of ecosystem assets that are of primary interest in the local area
- Record how these ecosystem assets are changing in condition and the extent to which the change in condition is a result of tourism activity
  - This could be negative e.g. where tourism activity leads to poor quality water due to lack of sewage treatment, or loss of forest condition due to excessive numbers of tourists
  - Or it could be positive where activity by tourism businesses leads to ecosystem restoration or protection.
- Understand the flows of ecosystem services that are used by tourism businesses, for example in the production of ecotourism outputs.

Overall, the ecosystem accounts that might be developed in this section would provide a framework for incorporating information on

- protected areas
- biodiversity and iconic species
- water quality
- beach, seas water and reef quality/condition
- air quality

In concept, adapting ecosystem accounting to tourism would require the delineation of spatial areas for analysis including the tourism area itself and for associated ecosystem types, for example beaches, national parks, marine areas, etc. Thus each tourism area, e.g. a region or local destination, would be expected to comprise a combination of different ecosystem types (e.g. a combination of beaches, forest, rivers and built-up areas).

For each ecosystem within a tourism area, an assessment would be made of ecosystem condition, for example using indicators of the quality of beaches, which could be tracked over time to provide insight into the environmental impact that could be attributable to tourism activity in that tourism area.

The scope of accounting might be extended to include the changing condition of water catchments and associated groundwater systems that underpin the provision of water to support tourism activity. This would complement the water resources asset account described above.

Assessment could also be made of the supply of ecosystem services from the various ecosystems within a given tourism area, including both those services that contribute to tourism activity (e.g. the recreational opportunities from forests) and other services that may be produced at the same time (e.g. carbon sequestration) but where the user of the service is not the visitor. An important distinction might be identified between visitor direct

consumption of natural inputs, e.g. water; and visitor use of ecosystems for recreation, e.g. lakes, rivers and beaches.

Understanding the flows of ecosystem services to different users, including visitors, permanent residents of the area and others, can support a broader discussion on the trade-offs that arise if the supply of ecosystem services changes as result of tourism activity and/or development that impacts the quality of ecosystems within a tourism area. Equivalently, in cases where tourism activity or investment enhances the condition of local ecosystems, the ecosystem accounting approach provides a framework for recording the likely positive impacts on flows of ecosystem services both to visitors and to the local community.

In the first instance, ecosystem accounting in physical terms would be a likely focus. However, there may be interest in the valuation of ecosystem services and related ecosystem assets. To this end, the fact that much information on tourism can be attributed to specific destinations may provide data to support direct valuation of ecosystem services. There is a rapidly growing body of work in this area with more than 50 countries involved in ecosystem accounting projects or initiatives.<sup>25</sup>

Finally, it is noted that the spatial accounting for ecosystem assets envisaged in the SEEA EEA, can also be extended to consider a broader range of assets that are present in the landscape. For example, to understand changes in particular destinations it may be relevant to consider the influence and condition of infrastructure that supports tourism such as walkways, viewing platforms and camping sites. Also, it would be appropriate to account spatially for cultural assets that may be frequently visited. In short, the spatial accounting principles of ecosystem accounting provide a basis for capturing many aspects of relevance to sustainable tourism at a destination level.

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<sup>25</sup> For a summary see SEEA EEA Technical Recommendations, Annex 1 (UN, 2017). [https://seea.un.org/sites/seea.un.org/files/technical\\_recommendations\\_in\\_support\\_of\\_the\\_seea\\_eea\\_final\\_white\\_cover.pdf](https://seea.un.org/sites/seea.un.org/files/technical_recommendations_in_support_of_the_seea_eea_final_white_cover.pdf)

## 4 Accounting for the social dimension of sustainable tourism

**Notes to Chapter 6:** Accounting for the social and cultural dimension of sustainable tourism is the least developed from a statistical perspective but this is not to suggest a lack of importance of this dimension in measurement. Developing this area of measurement is a high priority on the MST research agenda with the intent of taking advantage of the active body of research and measurement practice in these areas, especially in the context of the SDGs.

### 4.1 Introduction

From a statistical perspective, the standardization and co-ordination of data on social aspects is much lower compared to the economic and environmental dimensions. In short, while there is a relatively common set of themes that are measured concerning social aspects (including health, education, poverty, crime and safety and decent work) and this measurement is undertaken for a range of population groups (including children, the elderly, indigenous peoples, ethnic and religious minorities and people with disabilities), there is not an agreed overarching framework that places all of these aspects of the social dimension in a common context. Consequently, determining the scope of any assessment of the social dimension is a matter of judgement for those involved in a given measurement project. This may be appropriate for each assessment but without an overarching framework the potential to understand what has been excluded from any assessment is removed and there is much more limited potential to compare the state and trends in the social dimension between different assessments.

For the economic and the environmental dimensions, the SF-MST has applied and integrated existing statistical frameworks to support improved measurement of sustainable tourism. For the social dimension, the approach and ambition must be different. With the broad aim of supporting compilers to establish a relevant set of social indicators, this chapter proposes an organization and presentation of social aspects appropriate for the assessment of sustainable tourism. There are four parts which need to be joined and rationalized:

- The different conceptual approaches to the social dimension including concepts of social capital, social inclusion and exclusion, social equity and welfare, social cohesion and well-being.
- The different perspectives on the social dimension of tourism primarily the visitor, the host community and tourism businesses.
- The aspects that are most commonly associated with the social dimension such as health, education, decent work, etc.
- The different population groups including children and youth, the elderly, people with disabilities, etc.

The blending of these four parts in the chapter is aimed at placing relevant data in context and providing a pathway for compilers to make decisions about which data requires collection and for users to understand which data are of most relevance.

The framing provided in this chapter also goes some way towards suggesting possible relationships between different social data sets but this is limited to answering questions of

the appropriate description of the social dimension to support discussion and decision making. There is no intention or ambition to articulate causal relationships between social variables.

## 4.2 Concepts in the measurement of the social dimension

A range of different concepts have been developed in relation to the measurement and interpretation of the social dimension. Given the accounting based nature of the SF-MST, of particular interest is the concept of social capital but other concepts such as social inclusion and exclusion, social equity and welfare, social cohesion and well-being are also relevant.

To provide a starting point for the consideration of these concepts in the context of sustainable tourism, the following question is proposed as representing the focus of efforts in the measurement of the social dimension –

What is the extent to which engagement in tourism (both direct and indirect) affects social development.

Social development in this context is considered to be reflective of improvements in social capital, social inclusion, social equity, social cohesion and overall well-being recognizing that these are separate but overlapping components, and that the notion of improvement may be a challenging conceptual point in its own right. Nonetheless, this measurement question should provide a suitable starting point for framing the discussion.

<< It is intended that the following paragraphs will summarize the main points on the different concepts. In general, it is intended to make the distinction between the stock of social capital that underpins social development (as reflected in the extent and quality of networks, shared values, institutions, etc.) and the measures that reflect the performance of the social system including, for example measures of poverty, health, education, etc.

It is noted that these performance or outcome measures will likely reflect inputs from a combination of capitals, for example health outcomes will reflect a combination of the quality of doctors, hospitals, the external environment (e.g. air quality) and social capital. In measuring the social dimension, it is therefore insufficient to focus on changes in social capital.

It is also noted that there is not a single view or concept of the social dimension which is sufficient for capturing all of the aspects that decision makers may be interested in. From a statistical framework perspective, it is considered appropriate to be able to provide a logic which allows all of the relevant aspects to be included and for data to be available to users to apply whatever interpretative lens is appropriate. Thus, in a situation where a single aspect, e.g. poverty, is relevant in relation to more than one conceptual view, e.g. poverty is relevant in the measurement of social equity and well-being, the statistical framework should only include the aspect once.

Finally, it is noted that, to a greater extent than for the economic and environmental dimensions, the differences in cultural and societal values that exist around the world may make it more challenging to assess performance of countries with respect to the social dimension. Clarity will be needed on the connection between measurement of various social phenomenon and the interpretation of these data in relation to different societal norms and expectations. >>



### 4.3 Perspectives on the social dimension in tourism activity

To appropriately capture the various aspects of the social dimension is it important to consider the different perspectives of those involved in tourism activity. Three perspectives are considered central for the measurement of sustainable tourism – the visitor, the host community and tourism businesses. Each represents a different way in which people engage with tourism, either directly or indirectly, and hence each will have different perspectives on tourism's influence on social development.

The **visitor perspective** can be separated into the social dimension at the place/s visited and within their usual environment. Key features of the social dimension at the place visited will include visitor perceptions, visitor experiences (e.g. of health, crime, congestion), engagement with local communities (e.g. cultural experiences, heritage, local products) and issues of accessibility (for example with respect to age, disability, or to infrastructure)

Within their usual environment, it may be relevant to consider the extent to which engagement in tourism provides visitors with improved overall well-being, improved social networks, educational outcomes, or more negatively, experience limited access to tourism opportunities (e.g. due to cost, ethnicity).

The **host community perspective**, is a high profile focus of sustainable tourism discussion. A common area of interest is whether a host community is heavily impacted (i.e. in terms of quality of life) due to the extent of tourism activity. A simple measure of pressure (e.g. number of tourists relative to population) may provide an initial indication of potential host community perspectives. However, a more encompassing assessment should include community perceptions of tourism and indicators of various social aspects such as access to housing, quality of infrastructure (e.g. roads), availability of basic services (including water, energy, health), crime and safety, the distribution of benefits arising in terms of incomes and employment and the degree of recognition of cultural and indigenous heritage. And collectively, the host community perspective should encompass assessment of their capacity (both awareness and involvement) to participate in decision making.

The **tourism business perspective** is needed to ensure that the contribution of these businesses to social development is considered in assessing sustainable tourism. A particular aspect of focus under this perspective is decent work, i.e. the extent to which tourism businesses provide employment opportunities, adequate earnings, safe working environments etc. To some extent, this perspective might be encompassed within the perspective of the host community (and the extent to which the economic benefits of tourism are shared locally) but taking an explicit business perspective facilitates consideration of businesses which operate across multiple communities.

### 4.4 Aspects of the social dimension

The term aspect is used here to refer to the different areas, topics and themes which are the most common focus of measurement in the social dimension. Sometimes these aspects make most sense when considering specific population groups (e.g. education makes most sense in the discussion of children and youth) but in other cases assessment for the whole population will be relevant (e.g. in relation to crime). The following aspects are listed to indicate the coverage of the SF-MST noting that in practice it will be necessary to consider

the relevant perspective (visitor, host community or business) and the appropriate population groups) before determining the scope of measurement.

<<The following list is for discussion. It is recognized that there are overlaps among the groups listed. The intention is to ensure complete coverage and then to pursue improved organization.

Following discussion on the coverage and organization of social aspects, it is intended that the chapter will provide a short description of each aspect, its connection to the social dimension and links to relevant to statistical or measurement definition and advice. It is noted that all of the following aspects have been proposed for measurement across a range of international initiatives over the past 10-15 years, including through the SDGs. >>

#### Potential aspects of the social dimension for sustainable tourism

- Income and wealth distribution; Poverty
- Health; Nutrition
- Education; Skills, Training
- Housing
- Personal security, safety, crime, peace (of visitors; of host communities)
- Social capital
  - Social connections and networks
  - Community and individual levels of trust / tolerance
  - Civic engagement and participation
  - Institutions and governance
  - Corruption
- Subjective well-being of host communities; of visitors
- Visitor perceptions of destinations, Community perceptions of visitors
- Human rights – discrimination, empowerment, social equity
- Participatory processes and decision making
- Decent work
  - Employment opportunities
  - Decent hours
  - Adequate earnings and productive work/life balance
  - Child and forced labour
  - Job security
  - Equal opportunity and remuneration
  - Safe working environments
  - Social security

- Social dialogue and representation
- Accessibility and use of infrastructure
  - Roads, transport systems
  - Congestion and noise
  - Basic services (water, energy)
  - Environmental space (green space, national parks, beaches)
- Culture and heritage
  - Participation in production (cultural products, employment, income), social and cultural inclusion
  - Festivals and events
  - Protection of heritage incl. language, arts, etc.
  - Respect for traditional values and cultural assets

## 4.5 Population groups

The final part of the framing for the measurement of the social dimension concerns the relevant population groups. While it is possible to measure the range of aspects listed above in relation to a population as a whole, in many instances of most relevant in discussion of the social dimension is the situation with respect to specific groups of people in society. Indeed, it is not unusual for approaches to measurement of social indicators to mix aspects and population groups when establishing the appropriate areas for measurement. Thus persons with a disability and indigenous people are often identified as distinct areas of measurement.

The approach taken in the SF-MST is to distinguish the aspects and the population groups thereby establishing a matrix showing combinations of these two parts. This matrix can be used to identify the key areas that should be the focus of measurement.

The proposed list of relevant population groups is below. Pending discussion, it is intended to provide a short description of each population group, the connection to the different perspectives on sustainable tourism described above and relevant measurement advice. It is noted that individuals may be a member of more than one group and hence the organization of data about population groups effectively provides a different set of lenses with which to consider social information. Also, it is expected that in many cases it will be relevant to organize data following criteria such as age, income level, and educational status but these are not distinguished here as distinct population groups. Finally, it will be relevant to consider how to best consider data on a spatial basis. The following chapter considers the ways in which the areas within a country maybe delineated to support the measurement of sustainable tourism. In many cases, the assessment of social aspects at detailed sub-national levels will be relevant – especially from the perspective of host communities.

### Proposed population groups

- Women; gender
- Children and Youth
- Elderly

- Persons with a disability
- Indigenous groups
- Ethnic and religious minorities
- Migrant workers
- Families
- LBGTQI

#### **4.6 Integrating the four parts of the social dimension for the measurement of sustainable tourism**

<< Building on the descriptions in the previous sections, and pending discussion on the framing and coverage of the social dimension those sections present, this section will develop an overall framing for the measurement of the social dimension for SF-MST. It will outline the key areas (i.e. combinations of perspective, aspect and population group) that should be the focus of measurement while at the same time allowing for compilers to recognize means of providing additional or alternative views of the data. The section will also describe key indicators that emerge from the development of the data sets.

It may be useful for determination of the areas of focus to utilize a starting point such as the set of social themes included in the UNWTO 2004 Guidelines on sustainable tourism indicators. >>

## 5 Defining spatial areas for the measurement of sustainable tourism

**Notes to Chapter 5:** The measurement of the various dimensions of sustainable tourism will commonly be conceptualized at different scales from local level to national and global levels. In practice, the assessment of sustainable tourism and the implementation of relevant policy responses has often taken place at a sub-national level, while the measurement of tourism statistics is usually coordinated at national level. The Sustainable Development Goals embody the tracking of progress globally in a way that is comparable across countries.

This chapter aims to describe a conceptually sound but practical approach to integrating data to underpin measurement across the economic, environmental and social dimensions. There is little doubt this is a challenging area of measurement.

The intent is to provide a common framing and language about spatial areas in the measurement of sustainable tourism to support the discussion and interpretation of data and to provide opportunities for the enhanced integration of data from different dimensions.

The current text is uses material developed in the context of research undertaken for the MST project that was presented at the 6<sup>th</sup> International Conference on Tourism Statistics. The material provides only a starting point for further discussion. It is expected that substantial progress in this area will take place through the development of the SF-MST.

### 5.1 Introduction

The development of the concept of sustainable tourism over the past 25 years has had a clear and direct focus on the sustainability of tourism activity at a destination level as distinct from considering the broader sustainability of tourism at national or global levels. In this context, tourism destinations have commonly been conceptualized as relatively small, local areas such as cities or small islands. Using this small spatial area perspective, the sustainability discussion and related measurement and indicator activity is focused on encompassing and finding balance among the three dimensions of sustainable tourism – the economy, the environment and society.

As described in *Framing Sustainable Tourism*<sup>26</sup> this small spatial area perspective is very distinct from the broader national perspective that has been the focus of official tourism statistics. The significant statistical developments of the International Recommendations on Tourism Statistics (IRTS) and the Tourism Satellite Accounts: Recommended Methodological Framework (TSA:RMF) in 2008 provide an excellent platform for measuring tourism activity in a comparable and credible way. However, as both documents have a national and global focus, they do not provide direct guidance for sub-national measurement although they continue to provide an underlying conceptual reference for measurement at sub-national levels.

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<sup>26</sup> Discussion paper drafted or the Meeting of the Working Group of Experts on MST, Madrid, 20-21 October, 2016

The purpose of this chapter is to describe how a bridge can be built between these two perspectives – the smaller scale sustainable tourism perspective and the larger scale official tourism statistics perspective. It is important to recognize however that building a bridge is not simply a case of examining the extent to which currently available national level data can be “downscaled” to provide information at a destination level. Or whether the type of data desired at a destination level can be collected using statistical processes. Rather, the ambition is to describe how both detailed spatial data and national level data may be best integrated to provide a “single best picture” of tourism activity that is of most use to decision makers and other stakeholders at different scales.

Compiling a single best picture does not imply that all economic, environmental and social information must be available at every spatial scale. This would not only provide an endless compilation challenge but also likely produce a substantial volume of data that are not useful. Rather the ambition should be that the information set compiled is both appropriate for the spatial level of analysis and use, and coherent with information at other spatial levels. For example, estimates of visitor expenditure on accommodation at national level should be consistent with estimates of visitor overnights at destination levels with a country.

The importance of coherence emerges from a policy perspective as it is recognized that decisions made at each spatial scale – local, regional, national, global – are not independent. Choices made at a local level will have impacts on broader regions, and national and global policies will influence outcomes at a local level. These inter-connections are best understood and interpreted when the data organized at each level tells a consistent and coherent picture of the structure of tourism activity and the change over time.

There are some data that may seem relatively non-spatial in nature. For example, visitor perceptions, migrant labour movements and climate change indicators. It is certainly the case that the way in which these types of indicators connect to locations is less direct than, for example, indicators of visitor consumption on accommodation and restaurants. However, this paper starts from the general premise that “everything happens somewhere” and hence connection to spatial areas is meaningful for all types of measurement. Thus, visitor perceptions will concern a location or set of locations and the visitor will be resident somewhere. Climate change is a globally diffuse phenomenon but actions that contribute to climate change can be spatially located and the impacts of climate change occur in specific locations.

The framework is not prescriptive and does not articulate which data might be most relevant at different spatial scales. Rather the focus is on establishing a consistent way in which different spatial scales and spatial areas might be defined / delineated within a country, and hence support coherent policy and decision making. This will support all stakeholders, including users and data providers, to work towards a common approach within their country for the collection and use of data at different spatial scales.

The approach described comes from the perspective of official statistics in the sense of imagining the potential for a nationally coordinated, internationally comparable, set of information. However, it is important that the perspectives of many other areas of expertise are incorporated to better support decision making.

The initial framing described in this chapter builds on a range of work including the statistical guidance of the IRTS and the TSA:RMF, the spatial accounting in the System of Environmental-Economic Accounting Experimental Ecosystem Accounting (SEEA EEA) (UN et al, 2014b), and work on sub-national and sustainable tourism of UNWTO and the INRouTe network, among a number of other materials. It does not provide a definitive and final word on this topic which will be the focus of ongoing discussion within the MST project.

## 5.2 Terminology with respect to spatial areas

Discussion of the topic of defining spatial areas immediately suffers from the choice of language and wording to describe the different scales of measurement and analysis that different stakeholders are considering. The section proposes some terminology to be applied in the MST framework.

The broadest scale is considered the **global** scale encompassing both all countries and all marine areas.

The **supra-national** scale is used to refer to groupings of countries, usually in contiguous areas, including for example, Africa, the Middle East, the South Pacific. Within international statistics these are commonly referred to as “regions”, but this term is reserved here in relation to certain sub-national areas (see below).

The **national** scale is the most common level of statistical measurement and is the level of government that sets the overarching legislative and policy frameworks and engages with other countries.

The **regional** scale is used to refer to the level of administrative unit directly below the national level. This use of the term is the same as applied in the recent INRouTe document (INRouTe, 2016) and corresponds to the NUTS 2 level in the EU territorial classification scheme (although it is noted that compilation at the NUTS 1 level may also be relevant) (Eurostat, 2015). Countries may also use the terms state, province, county, etc. It does not refer to aggregations of countries.

The **municipal** or **city-region** scale is used to refer to the level of administrative units corresponding to local but relatively large populations. Large cities may have a number of municipalities. In rural areas, the municipal scale may encompass both some urban and agricultural areas.

The **local** scale is used to refer to the areas or zones within a given municipality that exhibit particularly concentrations or clusters of commonly purposed or aligned activities and businesses. In the context of this paper the focus is on concentrations of tourism activity but other activities may also be of particular interest. It is not expected that administrative units would be defined at this spatial level.

The term **sub-national** is used to refer to the three spatial scales below the national level. In different countries and contexts some of these scales may merge or there may be additional scales within the five scales described here. However, these five scales are considered sufficient for the purposes of discussing the relevant concepts.

The term **tourism destination** might refer to any of these scales (except global). Thus, a destination might be a country, a region, a municipality or a location. In the discussion of sustainable tourism, the concept of a tourism destination appears to be most commonly associated with spatial areas defined at the local or municipal level and, when the term destination is used, it is this smaller conception of tourism area that is being applied.

The intent in the MST is to integrate economic, environmental and social data. For many of these data, it is appropriate to consider that the scales listed above would be appropriate, in the sense that data should be able to be attributed to a location and hence to the other, larger scales. The important exception to this will be cases where large ecosystems, for example forests, agricultural areas, etc., or other environmental scales, for example water catchments, national parks, etc., cross municipal, regional or national boundaries. The appropriate approaches for integrating data in these situations requires further discussion.

### 5.3 The statistical challenge in defining spatial areas<sup>27</sup>

#### *The need for coherent spatial boundaries*

From a statistical perspective, the methodological challenge is to develop the structure and tools to support providing relevant information for policy and analysis at the appropriate spatial scale. As noted above, most commonly, the starting point for statistical measurement is the national scale. Thus, national statistical agencies will tend to focus primarily on the collection and dissemination of economic, social and environmental data at national level. This reflects their historically primary role as providing a service to national governments.

At the same time, many countries operate statistical systems that are federated in nature. That is, national level data are compiled using information collected at the sub-national level. Thus, there are commonly regional and sometimes municipal level statistical processes and outputs.

While both national and sub-national level data sets are commonly produced, a standard feature of a statistical approach to spatial data is to ensure consistency and coherence across spatial scales. Thus, for any given data set, a national level aggregate must be consistent with the results obtained for the component regions or municipalities.

Importantly, this does not imply that for every data sets, precisely the same sub-national boundaries must be used. For example, data on water is likely best considered in terms of water catchments at sub-national level. Given this potential variation there are two challenges to consider:

- i. ensuring that for each data set the spatial boundaries are internally coherent
- ii. determining which spatial boundaries should be used to facilitate comparison across data sets.

This requirement for internal coherence should ensure that there are mutually exclusive and exhaustive spatial boundaries – i.e. the different spatial scales are defined or delineated in such a way that all areas within a country are included and no areas are covered more than once. This ensures that data coverage is complete and that there is no double counting.

This requirement for the delineation of spatial areas such that there is complete and non-overlapping coverage within a country poses a quite different challenge to the situation in which measurement is being designed for a single region, municipality or location. That is, if there is a focus on only one spatial area, it can be defined without consideration of neighbouring areas. This has been the approach taken in many indicator initiatives, where even in exercises that bring together data from different destinations, the definition of each destination has often been determined by the managers of each destination.

Unfortunately, this area-specific approach limits the potential to compare data between similar types of spatial area, since they may be delineated in overlapping ways. More significantly it limits the potential to compare data across spatial scales. Thus, unless there is an **agreed and nested structure** to spatial areas it is not possible for national level analysis to easily integrate information available at smaller municipal and local type scales if these have been defined in alternative, non-nested ways.

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<sup>27</sup> The focus in this discussion is on methodological issues surrounding spatial data. In addition, it should be recognized that there are likely to be significant institutional challenges to be faced in developing spatial data sets including establishing co-ordination and management across levels of government and ensuring appropriate data sharing and use arrangements are in place.



Thus, for the purpose of official statistics, it is important that a set of commonly agreed spatial boundaries are delineated for different datasets. This is not to say however that the process of reaching such a common set of spatial boundaries must be top-down. Instead, it will be essential that those working at the various sub-national levels are involved in the discussion and their insights into how spatial areas are defined can generate information that are suitable for analysis and policy at those sub-national level. One pathway forward in reconciling top-down and bottom-up perspectives may be the delineation of spatial areas at very fine levels that can then be aggregated to form different intermediate spatial areas for analysis and reporting. For example, a combination of small spatial areas may be used to represent a single tourism destination.

### *The application of statistical and accounting principles*

In the context of spatial areas, all statistical standards (and related accounting standards) clearly specify the geographical boundaries for the collection, compilation and dissemination of data but these boundaries are almost exclusively related to national scales of measurement. As a consequence, the general understanding is that statistical standards pertain primarily to the compilation of national level data sets. This extends, for example, to the expectations concerning the appropriate measurement of the substantial global value chains that exist in tourism and other sectors. Statistical standards will tend to consider these chains in terms of linkages between countries rather than as linkages between (or within) businesses for specific goods and services.

In fact, statistical and accounting principles are independent of scale. By way of example, the national accounting principles outlined in the System of National Accounts (SNA) apply equally to a large and diverse economy of the United States and the small island nation of Tonga. Most definitely, the measurement of the national accounts will be a more involved task in the United States, and in both countries different types of data are likely to be used, but the principles applied are the same. The same logic applies in sub-national situations since the essential difference between national and sub-national scales is one of size.

Often it is imagined that there are quite fundamental differences in measurement principles at sub-national scales. In fact, the differences lie in the application of the principles and hence in developing sub-national level statistics. The important considerations are primarily of feasibility (i.e. are resources available to measure national level statistics at finer spatial scales) and relevance (i.e. should all national level data be compiled at finer spatial scales).

Nonetheless, there are two specific measurement challenges that are significant in the context of tourism. The first concerns the recording of information on transport and visitor movements at a sub-national level and the associated attribution of production activity, particularly of transport companies. This is no doubt a challenging measurement issue. However, recognizing that conventions have been established to deal with such issues between countries then, at least in principle, and assuming unlimited resources, it would be conceivable that each location or municipality within a country could be considered a separable area for transport purposes and all movements and production allocated using the national level treatments.

Second, again at least in principle, it should be possible to estimate the allocations to tourism activity that are required to calculate, for example, tourism gross value added. In practice, this can be challenging at national level and is likely to involve additional issues in finding appropriate data at a sub-national level. Conceptually as well, the allocation of data for a single business operating across multiple locations within a country is not straightforward.

## 5.4 The feasibility and relevance of compiling sub-national data

Although statistical and accounting principles could be applied at all spatial scales, the reality is that this does not take place and generally there will be far less data available at sub-national scales than at national scales. This reality arises for two key reasons. First, the available resources for statistical collection are generally allocated so as to optimize the compilation of national level estimates and this means that finer level detail is generally either not produced or is of relatively poor quality (e.g. very high standard errors).

Second, there are commonly different decisions made at national levels compared to regional and municipal levels and hence there are different types of data that are relevant. For example, detailed data on the performance of the financial markets is not of relevance at sub-national levels.

These two points provide an explanation for the most common situation of a lack of standardized coverage of spatially detailed official statistics. For national level decision making, this may be satisfactory for macro-economic management, but it is generally unsatisfactory for many other areas of policy and decision making where understanding the location and context is imperative. Put differently, relying on national averages is often likely to be misleading and ignore important variations among different areas within a country.

At sub-national level, the immediate demand for standardized spatial areas from decision makers may be less clear since they will have a focus on data for their own spatial area. However, there may be significant benefits in being able to discuss policy and other issues with other sub-national areas and with national level decision makers on the basis of a common understanding of the different spatial area within a country.

The case for extending and improving sub-national statistics is very apparent in considering sustainable tourism. Sustainable tourism requires the integration of data across the environmental, economic and social dimensions and assessing sustainability across these dimensions and determining context-specific policy responses is most meaningful at finer spatial scales. The need to consider sustainability at finer spatial levels is evident in the almost complete focus on destinations in the conceptual and policy work on sustainable tourism. Further, the case for sub-national statistics for sustainable tourism has been made strongly in much previous work, including by INRouTe (2017), the Regional Government of Andalusia, Spain and the OECD (OECD, 2016) The relevant arguments have been picked up in the MST project.

Although the case for sub-national level data is strong and statistical principles can, in theory, be applied equally at sub-national level, it is not the case that the logical ambition is to replicate all national level statistical outputs at all sub-national spatial scales. Aside from the potential cost, since the types of decisions made at different spatial scales vary, not all data will be equally relevant at all scales. Indeed, some data may be most relevant at finer scales and not relevant or meaningfully aggregated to national scale, e.g. data on traffic congestion.

## 5.5 Current definitions of spatial areas for tourism

From a statistical perspective, there is little standardized advice on sub-national tourism statistics. The IRTS has a brief mention of the need for sub-national tourism statistics but provides no guidance on how sub-national areas might be delineated. The TSA:RMF does not consider sub-national measurement.

The concept of a tourism destination is not defined from a statistical perspective although it has been defined by UNWTO for tourism management purposes (see Box 5.1). Unfortunately, this definition, while clearly linked to a spatial concept, does not provide the means by which a standardized approach to delineating sub-national tourism areas can be established within a national context.

*Box 5.1: Destination management definition*

**A Tourism Destination** is a physical space with or without administrative and/or analytical boundaries in which a visitor can spend an overnight. It is the cluster (co-location) of products and services, and of activities and experiences along the tourism value chain and a basic unit of analysis of tourism. A destination incorporates various stakeholders and can network to form larger destinations. It is also intangible with its image and identity which may influence its market competitiveness. (UNWTO, 2016).

In its research and discussion on sub-national tourism measurement, the INRouTe project (2017) proposed a series of classes to support the organization of statistical information at sub-national levels. Those classes are shown below in Box 5.2. The classes are placed in two groups - regional and local. The classes are not defined in a hierarchical manner, i.e. they are not nested such that smaller areas lie within larger areas, and hence information associated with the different classes cannot be meaningfully aggregated or disaggregated. Thus, the classes provided by INRouTe do not provide a classification as such but rather a typology of different spatial areas that may be of interest. This is certainly useful in furthering the understanding of statisticians and other stakeholders of the levels at which information is required. However, since there is no specific connection between the different classes, particularly between the local and regional levels, it is not clear precisely how a coherent set of spatial areas might be defined.

*Box 5.2: INRouTe sub-national classes*

REGIONAL

- Region
- Multi-regional (supra-national)
- Multi-regional (intra-national)
- Other administrative units
- Analytical units

LOCAL

- Municipality
- Multi-local
- Other administrative units
- Analytical units

It is worth emphasizing that the ambition of developing a nested set of spatial areas for the organization and aggregation of statistical information on tourism should remain the objective recognizing that it is likely that the resulting set of spatial areas will not satisfy all requirements or analytical demands.

Perhaps the most established approach to sub-national area classification is the European NUTS classification (Eurostat, 2015) that was originally established in 1970. It has four levels and two additional levels that allow for further disaggregation. The boundaries are established based on the three principles of population thresholds, administrative divisions

and stability through limited amendments over time (<http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics>). The fully nested nature of the NUTS classification scheme perhaps provides a structure within which tourism destinations can be identified.

At national level, there are also classifications of areas that may be relevant. In Australia, primarily for the purpose of organization of population census information, but also for the organization of other socio-economic data, a classification of spatial areas based on concentrations of population has been implemented. (ref#) This works from so-called “mesh-blocks” at the finest level through to a series of larger areas known as “statistical areas”. Statistical area boundaries are nested/constrained to the regional level of aggregation but different aggregations of mesh blocks are used to generate municipal level information. Thus, from a fine level spatial area alternative and complementary aggregate spatial areas can be defined. In the UK, at fine level, “neighbourhood” statistics have been developed where neighbourhoods are delineated on the basis of census output areas or electoral boundaries (electoral wards). No doubt there are many other examples of national approaches to sub-national classification.

The majority of approaches are likely to have a close link to administrative units, which in turn are commonly based on concentrations of people and the households they comprise, particularly at finer spatial levels. Using boundaries delineated in this way to analyse the behavior of visitors, the productive activities of tourism industries and associated environmental stocks and flows may suggest additional factors need to be considered.

The System of National Accounts briefly discusses the idea of sub-national/regional accounting systems, a topic also picked up by Eurostat (2010). The System of Environmental-Economic Accounting (SEEA) Central Framework (UN et al, 2014a) focuses almost exclusively on national level statistics although recognizes that environmental assets and flows will be recorded in relation to a specific location. The SEEA Experimental Ecosystem Accounting (UN et al., 2014b) explicitly takes a spatial perspective in defining ecosystem assets wherein the assets are defined in terms of the area of different ecosystem types, e.g. forests, wetlands, grasslands, etc.<sup>28</sup>

## 5.6 Pathways forward in defining spatial areas for measuring sustainable tourism

Overall, there are a number of examples of statistically based classifications of sub-national spatial areas. On the whole, aside from the ecosystem accounting approach, the approaches used start from administratively defined areas and have a nested delineation of progressively smaller areas. At the same time, complementary areas may also be defined for the purposes of being able to present statistics in reference to different spatial areas.

Finding a pathway forward will require reconciling the general motivation of statisticians to provide data based on administratively defined spatial boundaries and the reality that the spatial areas of most relevance for the analysis of sustainable tourism do not conform to these boundaries. There is thus a balance to be found between feasibility on the one hand

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<sup>28</sup> For details see SEEA EEA Technical Recommendations (UN, 2017), Chapter 3. [https://seea.un.org/sites/seea.un.org/files/technical\\_recommendations\\_in\\_support\\_of\\_the\\_seea\\_ee\\_a\\_final\\_white\\_cover.pdf](https://seea.un.org/sites/seea.un.org/files/technical_recommendations_in_support_of_the_seea_ee_a_final_white_cover.pdf)

and relevance on the other, recognizing that comparability among spatial areas is likely a key feature of relevance given the inter-linkages both within and across spatial scales.

Ultimately, relevance must take the highest priority and methodologies should be developed that support implementation. Providing data at a spatial scale that is currently most feasible but which is not relevant for decision making and analysis, would not represent a good return on investment. Nonetheless, to the extent that the provision of data on the basis of administrative areas is relatively more tractable it is then important that these spatial areas retain an important place in the proposed structure. Discussion of the types of data for which administratively based areas would be most appropriate is relevant in this context. The next step is to consider how areas of relevance for the analysis of sustainable tourism might be delineated.

From the literature, it appears the clearest approach is to define areas on the basis of significant functions or roles. This reflects the type of approach that underpins the delineation of social-ecological systems (see, for example, Leslie et al., 2015), the way in which ecosystem accounting (described in the SEEA EEA) delineates between different ecosystem assets and in relation to spatial areas for tourism (see, for example, Hernandez-Martin, 2014).

Methodologically, the primary issue then becomes which factors, characteristics or criteria should be considered to determine whether tourism is significant in a particular location. It should be noted that the choice of characteristics for delineation is not an independent process but rather needs to be conducted by involving all stakeholders such that the resulting statistics are meaningful for policy and analysis at all levels to the greatest extent possible.

In this regard, it should be accepted that the delineation of spatial areas for statistical purposes will not result in spatial areas that are considered ideal for all purposes. However, the alternative of applying different spatial boundaries for every project and in every context significantly limits the potential to compare across projects, across dimensions of sustainability and over time. It is a focus on improving the potential to compare that is at the forefront of efforts to measure sustainable tourism.

A final factor to consider is that since the SF-MST encompasses data from a range of dimensions, the delineation of spatial areas should be relevant to different data. Thus, the potential power of sub-national data will be considerably enhanced if data from different dimensions can be attributed to a standard set of spatial areas. In this regard, the availability of data at finer scales may be an important consideration.

#### *Possible characteristics and criteria for delineating sub-national spatial areas*

Given the multi-faceted nature of tourism that is encompassed by tourism statistics there are two perspectives to be considered – (i) a tourism supply perspective in which the focus is on the location and concentration of tourism industries and (ii) a visitor demand perspective in which the focus is on the places visited.

The supply perspective is perhaps the most tractable pathway to delineating smaller spatial areas. This would involve using information on the location of tourism characteristic industries and determining a boundary around particular concentrations of these industries. In many cases it is likely that such areas are relatively well known and evidenced by known concentrations of hotels and associated restaurants. In some areas, it may be a concentration of, for example, theme parks and similar attractions. For statistical purposes, it would be relevant to provide methodological guidance on how relevant concentration

thresholds may be estimated at sub-national and national levels (as distinct from proposing universal standards to be applied which would not be appropriate). This would be developed as part of the SF-MST.

Delineation from the perspective of visitor demand will, in many cases, overlap with a delineation based on tourism supply. That is, in cases where the visitor receives goods and services from a tourism business, the relevant location is the same in both perspectives. However, there will also be instances where visitor activity takes place away from, or at least adjacent to, the location of tourism businesses. Particular examples will be national parks, beaches, reefs, cultural sites, etc. In addition, there will be many exchanges between visitors and non-tourism businesses. Taken together both the demand and supply perspectives should enable a description of a set of tourism areas within a country.

To initiate discussion the following possibilities are listed:

- Industry concentration – e.g. location of tourism establishments
- Employment concentration – e.g. location of tourism jobs
- Visitor concentration – e.g. location of visitor overnights
- Expenditure concentration – e.g. location of visitor expenditure

At this stage, no specific guidance has been developed beyond these initial descriptions. It is intended that the development of the MST framework will facilitate further discussion and the descriptions in this preliminary draft represent a starting point for this discussion and research. Some particular points for discussion include:

- describing the relationship between small tourism areas and the concept of “usual environment” that underpins tourism statistics
- developing suitable criteria for determining tourism significance for application in delineating small tourism areas
- considering with particular care the application of the approaches to delineation in large cities where tourism activity will be important but one of many activities taking place
- understanding the extent to which the delineation of small tourism areas raises questions of maintaining confidentiality in the release of statistics
- appropriately integrating environmental and social data for small tourism areas and, at the same time, related areas such as water catchments.

## **Annexes**

**Manila Call to action**

**Relevant classifications**

## Glossary

<<To be developed>>

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