

STATISTICAL FRAMEWORK FOR MEASURING THE SUSTAINABILITY OF TOURISM (SF-MST)

DRAFT

*Draft prepared for the Expert Group on MST
December, 2022*

Copyright cover photo: © Nicola Messina | Dreamstime.com

Table of contents

List of abbreviations and acronyms	i
1. Introduction	1
1.1. What is the Statistical Framework for Measuring the Sustainability of Tourism?	1
1.2. SF-MST and current tourism statistics frameworks	3
1.3. Approaches to measuring sustainability	5
1.4. Advances in understanding sustainable tourism.....	8
1.4.1. Defining sustainable tourism.....	8
1.4.2. Measuring the sustainability of tourism	9
1.5. Overview of the SF-MST.....	11
1.5.1. Design of the SF-MST	11
1.5.2. Conceptual coverage of SF-MST.....	12
1.5.3. Connecting SF-MST to other statistical frameworks.....	13
1.6. SF-MST outputs	15
1.6.1. Implementation and application of SF-MST	17
1.7. Structure of the SF-MST document.....	18
2. Measuring the economic dimension	21
2.1. Introduction.....	21
2.2. Key aspects of tourism statistics and the TSA framework	22
2.2.1. Tourism statistics.....	22
2.2.2. The TSA framework.....	23
2.3. Measuring the sustainability of visitor flows and expenditure.....	24
2.3.1. Visitor flows	24
2.3.2. Visitor expenditure.....	25
2.4. Measuring the economic structure and performance of tourism industries.....	26
2.4.1. Economic structure.....	26
2.4.2. Economic performance.....	28
2.4.3. Distribution of economic benefits	30
2.5. Measuring tourism investment in produced assets and related infrastructure	31
2.6. Measuring the employment aspects of tourism	32
2.6.1. Introduction.....	32
2.6.2. Characteristics of employment in tourism industries.....	34
2.6.3. Measures of employment for tourism	35
2.6.4. Measuring occupations within the tourism industries.....	37
3. Accounting for the environmental dimension	39
3.1. Introduction.....	39
3.2. General considerations in measuring the environmental dimension of tourism	40
3.2.1. Geographical scale and frequency of compilation	40
3.2.2. Estimating the tourism share of environmental flows.....	41
3.2.3. Distinguishing the production and consumption perspectives.....	42
3.2.4. Allocating environmental flows associated with transport activity	43
3.2.5. Estimating indirect environmental flows	44
3.3. Measuring the use of resources in tourism activity	45
3.3.1. Introduction.....	45
3.3.2. Measuring water resources used in tourism	46
3.3.3. Measuring energy used in tourism activity	50

3.4.	Measuring the passive use of the environment in tourism activity.....	54
3.4.1.	Introduction.....	54
3.4.2.	Land accounts for tourism.....	55
3.4.3.	Accounting for ecosystem assets.....	57
3.4.4.	Accounting for wildlife and key species.....	61
3.5.	Measuring pressures and impacts on the environment due to tourism	62
3.5.1.	Introduction.....	62
3.5.2.	Measuring GHG emissions for tourism	62
3.5.3.	Account for solid waste for tourism	63
3.5.4.	Other environmental flows	65
3.6.	Measuring activities of tourism industries aimed at improving environmental outcomes	65
3.6.1.	Introduction.....	65
3.6.2.	Environmental transactions related to tourism.....	66
3.6.3.	Employment in environmental activities	66
4.	Measuring the social dimension	69
4.1.	Introduction.....	69
4.2.	Statistical framing for the measurement of the social dimension	70
4.2.1.	Introduction.....	70
4.2.2.	Perspectives on the social dimension in tourism	71
4.2.3.	Concepts for the measurement of the social dimension of tourism.....	72
4.2.4.	Combined conceptual framing for measurement of the social dimension of tourism	73
4.3.	Spatial scale and population groups for the social dimension of tourism	74
4.3.1.	Introduction.....	74
4.3.2.	Spatial scale	75
4.3.3.	Population groups.....	75
4.4.	Measurement themes for the social dimension of tourism	75
4.4.1.	Introduction.....	75
4.4.2.	Social context of host communities	76
4.4.3.	Decent work	77
4.4.4.	Institutions and governance	78
4.4.5.	Perception and experience	78
4.4.6.	Accessibility.....	79
4.4.7.	Gender equality	80
4.4.8.	Culture tourism	81
5.	Measuring the sustainability of tourism at sub-national levels	85
5.1	Introduction.....	85
5.1.1.	The demand for sub-national data	85
5.1.2.	A statistical approach to sub-national measurement	86
5.2	Defining scales of measurement	87
5.2.1.	Terminology.....	87
5.2.2.	The need for coherent spatial boundaries	88
5.2.3.	Applying statistical practice at different scales	89
5.3	Measuring sustainability for regional tourism destinations.....	89
5.3.1.	Introduction.....	89
5.3.2.	Core measurement themes at regional level.....	90
5.3.3.	Approaches to compilation.....	91

5.4	Measuring sustainability for local tourism destinations	92
5.4.1.	Introduction.....	92
5.4.2.	Delineating local tourism destinations for statistical purposes	92
5.4.3.	Measurement themes for local tourism destinations.....	94
5.4.4.	Compilation approaches and considerations.....	95
5.4.5.	Linkages with accounting for ecosystems	96

List of abbreviations and acronyms

EG-MST	Expert Group on Measuring the Sustainability of Tourism
ILO	International Labour Organization
IRTS 2008	International Recommendations for Tourism Statistics 2008
MST	Measuring the Sustainability of 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 the Sustainability of 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

1. Introduction

1.1. What is the Statistical Framework for Measuring the Sustainability of Tourism?

- 1.1. Tourism has an impact on the economy, the natural and built environment, the local population at the places visited and the visitors themselves. Owing to this range of positive and negative impacts and the wide spectrum of stakeholders involved, there is a need for a holistic approach to tourism development, management and monitoring. This approach is supported by the World Tourism Organization (UNWTO) in order to formulate and implement national and local tourism policies.
- 1.2. The Statistical Framework for Measuring the Sustainability of Tourism (SF-MST) is a multipurpose conceptual framework designed to support the recording and presentation of data about the sustainability of tourism covering tourism's economic, environmental and social connections and impacts in a holistic way.
- 1.3. A statistical framework is a structure for data and statistics that provides common concepts, definitions, classifications and reporting rules. Statistical frameworks are adopted in all areas of official statistics and play the role of transforming source data into well-accepted and authoritative statistics that can be used to support decision making (Figure 1.1). This transformation of raw data into knowledge to support decision making and the point at which tourism's statistical frameworks, including IRTS, TSA:RMF and SF-MST is further exemplified in Figure 1.2.

Figure 1.1: Using statistical frameworks to link data and policy

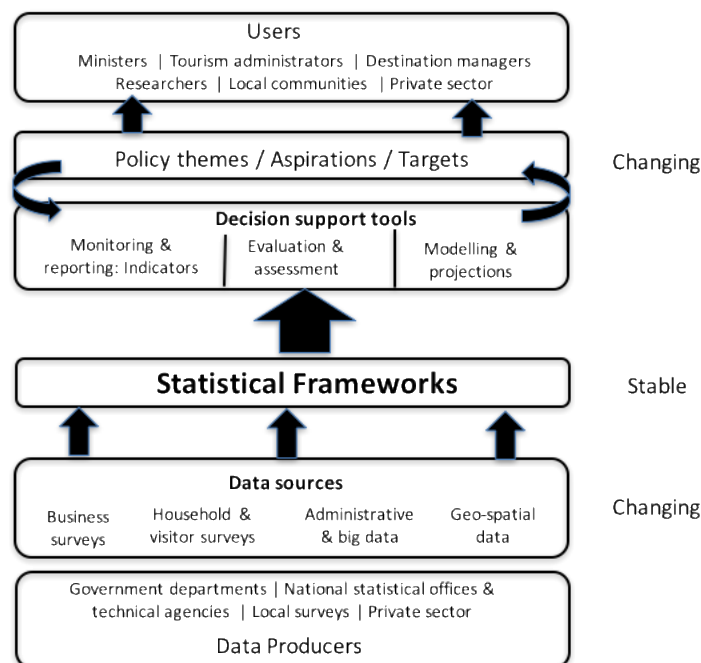
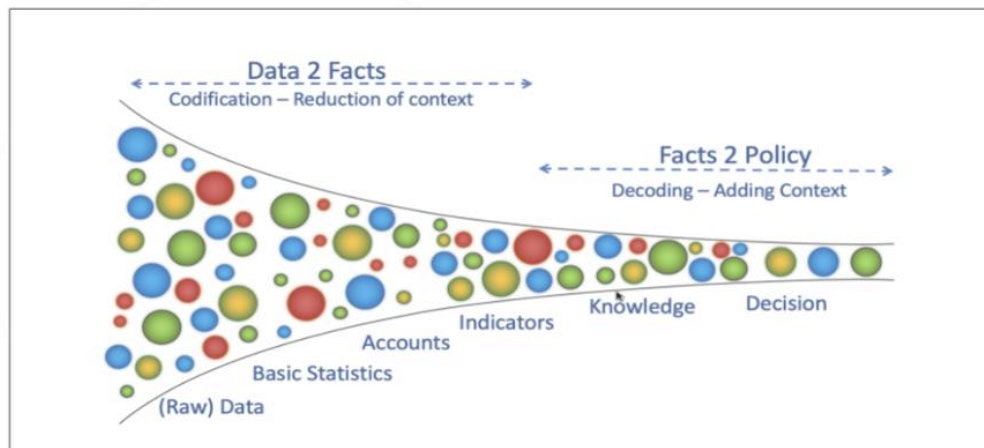
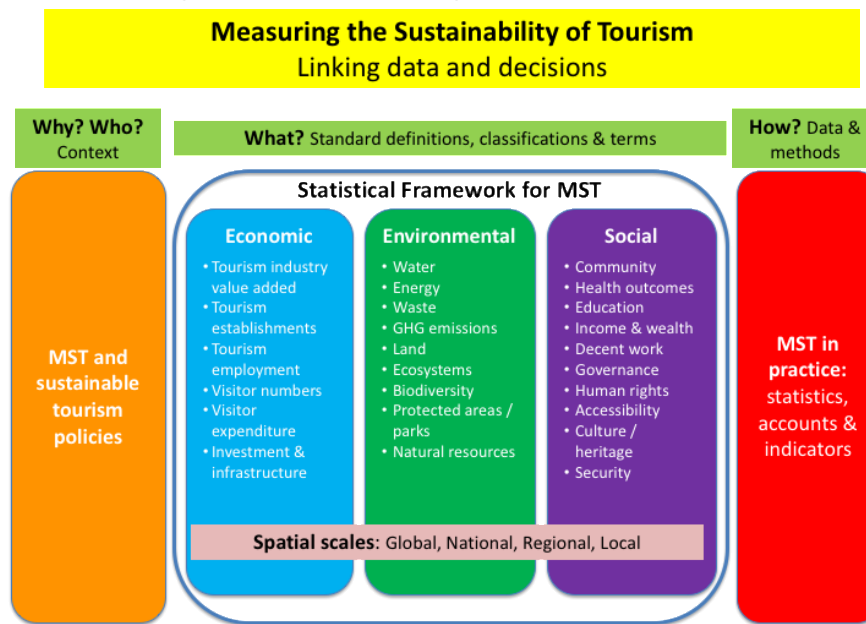


Figure 1.2: Linking data to knowledge and decisions

- 1.4. There are significant benefits from using statistical frameworks that the SF-MST seeks to secure including:
- Establishing a foundation for providing a single, coherent and complete picture of the sustainability of tourism and its trends
 - Describing a common language for discussing the sustainability of tourism by tourism actors and with other key policy areas such as planning, industry, infrastructure, environment, social affairs, finance and central banks
 - Comparing the performance of tourism activities and the impacts of different policies on a consistent basis with other sectors and in different destinations
 - Providing a basis for identifying and assessing opportunities to use new and alternative data sources
 - 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 tourism.
- 1.5. The importance of developing a common framework to support comparison is very high. 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 influence each other, as do the policy choices of different government departments and agencies. Given this reality, there may be considerable barriers to progress if different stakeholders have information based on varying definitions and measurement boundaries. A holistic statistical approach as described in the SF-MST works to overcome these information barriers and support more engaged and inclusive decision making.
- 1.6. The general coverage and role of the SF-MST is shown in Figure 1.2. The figure highlights that the SF-MST encompasses measurement of the economic, environmental and social dimensions of tourism and is intended to support application at all spatial scales from the local destination level to the global scale. Further, SF-MST is concerned with *what* should be the focus of measurement. The topic of *how* data might be collected and transformed following the concepts and definitions of the SF-MST is described in supporting statistical compilation guidance and the topic of *who* might use the data and *why* it might be used should be the subject of ongoing discussions between compilers of statistics and various decision makers and stakeholders – SF-MST is intended to support those discussions.

Figure 1.2: The coverage and role of SF-MST



- 1.7. Having reliable statistics is essential for policymakers and others to make effective decisions. Only with sufficient and adequate data that generate credible statistics, it is possible to undertake different types of analysis of tourism. This is essential in order to evaluate the different social, economic and environmental aspects of tourism. The science-based and consensus-backed approach of statistical data provides credibility, fosters dialogue and collaboration among different stakeholders, feeds more effective and coherent policy, and promotes transparency and stronger institutions. It also supports a better recognition of tourism's potential and its risk assessment.
- 1.8. The importance of SF-MST will become more apparent over time 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 statistical framework at the heart of measurement, with periodic refinements to ensure alignment with decision making contexts and wider changes, ensures that data can be linked to policy in meaningful ways and that effective comparisons can be made on an ongoing basis, notwithstanding the ongoing changes in data sources and policy needs.

1.2. SF-MST and current tourism statistics frameworks

- 1.9. UNWTO has a UN mandate for the collection and dissemination of tourism statistics and the development and implementation of associated international statistical standards. The work dates back as far as 1937 with the first definition of an “international tourist” and extends through more than 80 years. It includes 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; and the 2001 Tourism Satellite Account: Recommended Methodological Framework.

- 1.10. The most recent advances are reflected in the International Recommendations for Tourism Statistics 2008 (IRTS) (UNWTO et al, 2008) and the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA: RMF) (UNWTO et al, 2010). These comprise the current internationally agreed standards for measuring tourism. The IRTS provides the main concepts, definitions and classifications for measuring visitor flows and characteristics, and for measuring the industries that cater to this demand. A key feature of the TSA: RMF is its reconciliation of the supply (business) and the demand (visitor) sides of tourism activity. By providing a means to demonstrate the differences and connections between these two sides, it becomes possible to present the majority of data on the economic dimension of tourism in a coherent fashion.
- 1.11. Notwithstanding these significant advances in tourism statistics to support decision making, it is well recognized that a significant gap remains from an official statistics perspective in defining standards with respect to tourism activity that consider economic, environmental and social dimensions as well as differentiations at relevant spatial levels (including local, national and global). This gap was recognized in both the IRTS and the TSA: RMF. With the aim of closing this statistical gap, in 2016 the UNWTO launched the Measuring the Sustainability of Tourism (MST) project¹.
- 1.12. A feature in the development of tourism statistics has been the role of international conferences in providing platforms to launch each stage of development.² The developments in measuring the sustainability of tourism are no exception, with the profile of work being strongly endorsed at the 6th 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 participants³. Among a range of actions, the Manila Call to Action explicitly requests the development of the SF-MST, a call that had been endorsed at the 48th session of the United Nations Statistical Commission meeting held in March 2017 and that was reinforced as a key area of work at the UNWTO General Assembly in September 2017.
- 1.13. The MST programme of work incorporates a number of key components including the development of the SF-MST, the testing of the framework in various countries and locations, and the development of appropriate guidance for implementation, training and capacity development. At one level, the SF-MST itself represents the next step in the development of standards for tourism measurement but it also represents a significant extension in recognizing the wider, non-economic, connections and impacts of tourism. In this regard, the integration of economic, environmental and social dimensions into a single statistical framework should be understood as a landmark development in statistics generally.
- 1.14. In this context, this chapter provides an overview of the wider context for the measurement of the sustainability of tourism and an introduction to the components of the SF-MST. Section 2 provides a general introduction to the challenge of measuring sustainability and the approaches that have been developed. Section 3 focuses on the definition of sustainable tourism and describes past approaches to measurement. Section 4 provides an overview of

¹ <http://cf.cdn.unwto.org/sites/all/files/docpdf/brochures.pdf>

² IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of tourism statistics.

³ <<insert link>>

the SF-MST describing its statistical approach, summarizing the components and outputs, and noting approaches to implementation. Section 5 gives an overview of the other SF-MST chapters.

1.3. Approaches to measuring sustainability

- 1.15. 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, inflation, economic growth and visitor numbers.
- 1.16. For the measurement of sustainability, there are generally agreed concepts reflecting the central idea of meeting the needs of the present generations while not compromising the potential for future generations to meet their needs⁴. However, while this concept may be generally agreed, converting this concept into a measurable definition for statistical purposes has proved very challenging.
- 1.17. As reflected in the extensive discussion on the measurement of sustainability from a statistical perspective in the work of the Conference of European Statisticians⁵, there is general agreement that measurement should encompass three primary dimensions – economic, environment and social. This scope is needed to recognize the importance of environmental and social factors when considering sustainability, for example concerning climate change and income distribution. Further, it is generally accepted that whether or not a context can be considered sustainable will be dependent on the **time** horizons being considered, the **territorial scale** of analysis (e.g. local destinations or countries), the **perspective** of the analysis (local business, government official, visitors, local communities) and the relative importance placed on different **themes** across the economic, environmental and social dimensions.
- 1.18. However, the precise combination of time horizons, territorial scales, perspectives and themes has not been agreed, in large part because the circumstances and priorities will vary significantly from place to place and over time. Consequently, the data and indicators that should be the singular focus of measurement cannot be defined, i.e. a single measure of sustainable tourism is not a meaningful concept that can be applied in different countries and destinations. At the same time, it is possible to provide a consistent and comparable framing for the variety of measures that will need to be incorporated in an assessment of the sustainability of tourism wherever an assessment is undertaken. Describing such a framing is the primary objective of SF-MST.
- 1.19. The conceptual basis for the framing described in SF-MST reflects a multiple capital approach. The use of a multiple capital approach to underpin the measurement of sustainability has been reflected in a range of work, most notably from a statistical perspective in the Conference of European Statisticians Recommendations on Measuring Sustainable Development⁶.

⁴ Brundtland, 1987

⁵ UNECE, 2014

⁶ UNECE (2014) https://unece.org/fileadmin/DAM/stats/publications/2013/CES_SD_web.pdf

- 1.20. Multiple capital approaches consider the relationship between (i) the flows of benefits (including monetary and non-monetary benefits) and (ii) the underlying stocks of capital (encompassing produced, natural, human and social capital). The aim with respect to sustainability is to understand whether the flow of benefits can be sustained in the future, in line with the intention inherent in the Brundtland Commission definition of sustainable development.
- 1.21. There are a range of multiple capital approaches many of which focus on a sub-set of the full range of the four capitals. Usually, multiple capital approaches are implemented using accounting frameworks. Among the set of statistical frameworks, capital-based approaches are evident in the System of National Accounts⁷ (with a primary focus on economic capital) and the System of Environmental-Economic Accounting⁸ (with a primary focus on natural capital). A range of thematic accounting frameworks have also been developed covering tourism (e.g. the Tourism Satellite Account has consideration of economic capital), education, health and culture, each having links to stocks of capital to varying degrees.
- 1.22. At their most comprehensive, multiple capitals approaches are present in frameworks referred to as wealth accounting. Wealth accounting has been the subject of increasing interest, for example in the IHDP-UNU and UNEP work on Inclusive Wealth Accounting^{9,10} and the World Bank's Changing Wealth of Nations (World Bank, 2018).
- 1.23. The use of accounting frameworks to implement multiple capitals approaches works well since accounting rules provide a sound theoretical framing for recording data on stocks and flows and hence provide a structured and consistent approach to the integration of data across economic, environmental and social dimensions. Clear definitions and measurement boundaries for each of the various stocks and flows can be established which, in turn, supports comparability and encourages understanding of the interlinkages between different themes.
- 1.24. Multiple capitals approaches do have some limitations. Concerning their scope, work to date has found it can be difficult to fully articulate relevant themes in the social dimension of sustainability into a stocks and flows framing. Consequently, most work on multiple capitals has focused on integrating produced, natural and human capital.
- 1.25. Further, a common misunderstanding is that the use of a multiple capitals approach and associated accounting frameworks requires a full monetization of all stocks and flows. For example, in the context of the environment, accounting can be understood to require measurement of a total value of the environment in monetary terms. However, this is not the intent or necessary application of multiple capitals approach. Rather, the intent is to place all relevant information in an appropriate context, distinguishing clearly between stocks and flows, whether the data are expressed in monetary or non-monetary terms.
- 1.26. Data organized in this way is then well suited to supporting assessments of sustainability that are comparable and consistent. This occurs through the creation of an integrated dataset that supports the derivation of sets of indicators that can be used to provide an overall assessment of progress towards sustainability. The use of a multiple capitals approach thus

⁷ EC et al (2009) System of National Accounts 2008

⁸ UN et al (2014) System of Environmental-Economic Accounting 2012 Central Framework

⁹ Tourism Satellite Account: Recommended Methodological Framework 2008

¹⁰ http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDM_2014.pdf

provides a way of consistently framing the discussion of sustainability, and related topics of capacity and resilience while allowing flexibility in the choice of indicators used to summarize performance.

- 1.27. The use of a multiple capitals approach to support the integration of data aims to avoid some of the challenges that arise from approaching the measurement of sustainability through processes that directly design sets of indicators. There is indeed a vast number of sustainability indicator sets for countries, sub-national regions, destinations and sectors. Positively, indicator sets can raise awareness of sustainable development by encompassing data from the three key dimensions of sustainability – economic, environment and social – and, consequently they can support the setting of expectations and policy targets with respect to individual aspects of sustainable development. Raising awareness and setting expectations is commonly achieved through open and participatory approaches to determining the set of indicators.
- 1.28. However, the direct selection of themes and indicators by different groups leads to a diversity of indicators that are challenging to compare since different themes will be covered in different indicator sets and, even for the same theme (e.g. energy use) different indicators may be chosen that may be derived using data defined in different ways. Further, within any single set of indicators there is no capacity to describe the interlinkages between the dimensions and 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 conceptual model of how data from each of the dimensions might be connected, which themes and indicators are the most important and how to interpret the evolution of indicators over time, for example with respect to local constraints and thresholds.
- 1.29. An extension of the set of indicators 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 income¹¹. A clear advantage of this approach is that a simple and easy-to-communicate message can be conveyed using a single number.
- 1.30. However, in the context of sustainability assessment, the interpretation of these measures is challenging as (i) each composite index has its own set of themes and indicators, (ii) the relative importance (or weighting) of each indicator will vary between locations and will be affected by different perspectives on sustainability, and (iii) commonly these indexes tend to smooth out the effects of internal variations present in the component indicators (i.e., the effects of increases in some indicators and decreases in others will tend to average out at the aggregate level). Consequently, while there are many composite indexes that aim to measure, to varying degrees, the various dimensions of sustainability, there has been little wide scale progress in using these indexes in decision making contexts.

¹¹ <http://hdr.undp.org/en/content/human-development-index-hdi>

1.4. Advances in understanding sustainable tourism

1.4.1. Defining sustainable tourism

- 1.31. Sustainable tourism¹² has been a topic of discussion in tourism circles for many decades¹³. The ongoing and building 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”. These ideas have been embraced in the United Nations 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDG).
- 1.32. The second key factor has been the tremendous growth in tourism activity over the past decades reflecting ongoing increases in household income and the declining relative prices of travel, especially air fares. This growth has established five lines of interest in tourism’s sustainability:
- 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 notion that tourism activity can provide a path by which lower income countries and regions might improve their standard of living and support more sustainable development
 - iii. the recognition of the dependence of tourism activity on its environmental and social contexts and the need to keep these underpinning resources in good condition and even contribute to their protection and improvement.
 - iv. the understanding that tourism is also good for the visitors themselves (and their origin countries) from a wider social perspective through things like personal wellbeing and relaxation, social cohesion (supporting elderly and other disadvantaged groups to have access to tourism), and building peace and mutual understanding across locations.
 - v. the potential for tourism to build a wider appreciation of a country’s reputation and hence serve as an impetus for foreign investment to underpin sustainability more generally.
- 1.33. The response of UNWTO to these two factors is reflected in a range of contributions to policy and measurement concerning sustainable tourism. These contributions include milestone reports *What Tourism Managers Need to Know* (UNWTO, 1997) and *Making Tourism More Sustainable: A Guide for Policy Makers* (UNEP/UNWTO, 2005); as well as significant UN General Assembly resolutions on sustainable tourism for poverty eradication and environmental protection (e.g. A/RES/69/233 and A/73/274 in 2014 and 2018 respectively).
- 1.34. A key output from this work has been a definition of sustainable tourism published in 2005 and used since. Using a focus on tourism destinations, 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. UNWTO and UNEP define sustainable tourism in the following way

¹² Here we include the development of ‘sustainable tourism’ products and the discussion around the sustainability of tourism more holistically.

¹³ See for example Wagar (1964); Wenkam (1975); and Cohen (1978).

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:

- 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.
- 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.
- 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. ¹⁴

- 1.35. The profile of sustainable tourism was further enhanced with 2017 being declared the United Nations International Year of Sustainable Tourism for Development (IY2017). The discussion around IY2017 recognized that tourism has the potential to contribute, directly or indirectly, to all of the 17 SDGs. In particular, targets relating to sustainable tourism are explicitly referenced in SDG 8 on decent work and economic growth, SDG 12 on responsible consumption and production and SDG 14 on life below water.

1.4.2. Measuring the sustainability of tourism

- 1.36. With respect to measuring the sustainability of tourism, a key contribution of UNWTO has been in the space of developing sets of indicators that respond to policy and destination management 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. This work highlights the importance of measurement in supporting the design and implementation of policy and practices that support sustainable tourism, but also the potential complexity involved in learning valuable policy lessons from extensive and varied indicators.

¹⁴ UNEP/UNWTO 2005, Making Tourism More Sustainable: A Guide for Policy Makers.

- 1.37. Implementation of these ideas has been promoted through the UNWTO Network of Tourism Observatories initiative¹⁵ created in 2004 to support monitoring the economic, environmental and social impact of tourism at the destination level and the continuous improvement of sustainability and resilience in the tourism sector. A range of additional indicator work has taken place in parallel, particularly in Europe (see Box 1).
- 1.38. A particular challenge in sustainable tourism measurement work to date has been the diversity of approaches that have been developed. While all have similar motivations and generally encompass similar themes, the diversity hampers the potential to compare performance and outcomes among destinations and across scales. Thus, “while the research related to sustainable indicators in the fields within the tourism sector is constantly growing, there are inconsistencies at the implementation and aggregation level, especially when it comes to measuring of these indicators. Different metrics, units, measures and reporting forms are used by the different actors in the tourism sector”.¹⁶
- 1.39. From the perspective of statistical frameworks, a number of the indicators that have been used in sustainable tourism indicator sets can be derived from data collected following the definitions and standards presented in the IRTS and TSA: RMF. Examples are international visitor numbers and expenditure and tourism contribution to GDP. However, there tends to be a disconnect in many instances with sustainable tourism indicators being developed for application at destination level and statistical frameworks being used to support the collection of national level data. As well, the IRTS and TSA: RMF are limited to having a primary focus on the economic dimension and employment, and do not encompass environmental or social dimensions.

Box 1. Selected sustainable tourism indicator initiatives

Eurostat¹⁷ released a comprehensive review in 2006 of the measurement of sustainable tourism. The work proposed 20 indicators, primarily from economic and environmental domains, and including some social/cultural indicators, all set within the DPSIR indicator framework¹⁸. The indicator set was intended to be applied at regional/sub-national level.

The OECD¹⁹ summarized the findings of a workshop in 2010 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 tourism sustainability work.

The European Commission launched a European Tourism Indicators System (ETIS) for sustainable destination management²⁰. This initiative commenced in 2013 and has defined 43 core indicators and has been trialed in a number of destinations, including NECSTouR²¹ regions. The work aims to also support global initiatives such as the UN 2030 Development Agenda and the related 10YFP on Sustainable Production and Consumption²² and the shift towards Sustainable Consumption and Production (SCP)²³.

The 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.

¹⁵ See <http://insto.unwto.org>

¹⁶ Abstract, 2014 UNWTO workshop report on Improving evidence-based decision making in the tourism sector

¹⁷ See "Methodological work on measuring the sustainable development of tourism", available at: <http://ec.europa.eu/eurostat/web/tourism/methodology/projects-and-studies>.

¹⁸ 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>

¹⁹ 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>)

²⁰ See: http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en.

²¹ Network of European Regions for a Sustainable and Competitive Tourism (NECSTouR).

²² The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate the shift towards SCP.

²³ 20 general pilot indicators have been identified for the four 10YFP objectives.

Countries and regions, sometimes led by line ministries and/or academic researchers, including work currently being carried out in MST pilot studies (see information on the UNWTO MST website²⁴).

Corporate and business entities including voluntary certification standards around environmentally sustainable tourism operations such as those facilitated by the Global Sustainable Tourism Council (GSTC). The private sector is increasingly aware of the need to measure and report in a consistent way, as demonstrated for example by initiatives such as the Hotel Water Measurement Initiative (HWMI) and its equivalent for carbon promoted by the International Tourism Partnership (ITP) of Business in the Community²⁵.

1.5. Overview of the SF-MST

1.5.1. Design of the SF-MST

- 1.40. The primary intent in the design of the SF-MST is to provide a holistic statistical framework that operationalizes measurement within the scope of the UNWTO/UNEP description of sustainable tourism. Specifically, the SF-MST aims to provide a common set of concepts, definitions, classifications and reporting structures to guide and underpin measurement of tourism across its economic, environmental and social dimensions and at different territorial scales and locations.
- 1.41. At the core of the SF-MST design is a multiple capitals approach to the measurement of sustainability. Thus, the SF-MST provides an approach that involves measuring the stocks of produced, natural, human and social capital and the various flows of benefits that arise in relation to tourism. This provides not only a comprehensive framing for data but also a clear narrative for the assessment of the sustainability of tourism. A multiple capitals approach can be implemented using accounting frameworks and a feature of the SF-MST is its combination of existing accounting frameworks (see section 4.1.2). However, accounting frameworks have not yet been sufficiently developed in some areas, particularly concerning social capital. Consequently, SF-MST implements a multiple capitals approach using both accounting frameworks and complementing this with statistics and data on selected themes.
- 1.42. The design of SF-MST recognizes the importance of reflecting the interactions between the economic, environmental and social dimensions at different spatial scales, from national and global scales to sub-national and destination scales. This supports the application of the UNWTO/UNEP definition of sustainable tourism which is generally embodied at a finer spatial scale (e.g., in relation to host communities). At the same time, interactions at a local level occur within a broader setting and issues that gain more relevance at national and global scales, such as concerning financial markets and climate change, need also to be considered. Thus, from a statistical perspective, the SF-MST aims to ensure a consistency in definition that supports comparison from local to national to global scales.
- 1.43. More generally, SF-MST recognizes that individual contexts, such as for a single tourism destination, are 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 (Costanza et al, 2012) is shown in Figure 1.3b in contrast the more traditional conception of the relationship between the three dimensions in Figure 1.3a where the economy, the environment and society are distinct systems, even if slightly overlapping. Using a nested-systems framing to consider the

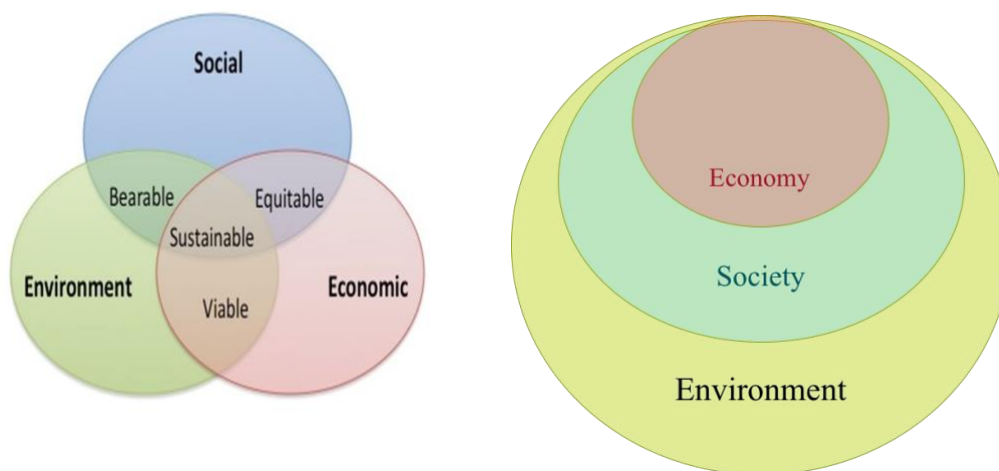
²⁴ http://statistics.unwto.org/studies_experiences

²⁵ Developed by the International Tourism Partnership in partnership with KPMG and 18 global hotel companies <http://tourismpartnership.org/water-stewardship/>

sustainability of tourism supports inclusion of all three primary dimensions of sustainability and provides the opportunity to explicitly consider the connections between different spatial scales.

- 1.44. A consequence of this framing is that SF-MST does not establish a single measurable definition of sustainable tourism. This would require determining, for all locations, the appropriate thresholds across the dimensions of sustainability such that the outcomes were considered sustainable. Establishing such thresholds is not an appropriate statistical task. Thus, the focus of SF-MST is organizing a sufficiently comprehensive set of data such that decision-makers and other stakeholders at different locations and at different scales can make their own assessments of the sustainability of tourism in a holistic and well-informed way.

Figure 1.3a: Traditional view of systems Figure 1.3b: Nested view of systems



1.5.2. Conceptual coverage of SF-MST

- 1.45. The conceptual coverage of the SF-MST supports the integration of information on the three primary dimensions of sustainability – economic, environmental and social and different spatial scales from local to global scales. It is noted that the breadth of data brought together in the SF-MST will enable multiple perspectives on sustainability to be considered, including the perspective of tourism businesses (supply side), the perspective of visitors (demand side) and the perspectives of host communities and governments.
- 1.46. The following short descriptions are intended to provide a general sense of the coverage. There are linkages and overlaps between the dimensions such that specific themes may be considered part of more than one dimension, scale or perspective. For example, employment is relevant in both economic and social dimensions, will need consideration at both local and national scales and will have different meaning for businesses and host communities.
- 1.47. 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 industries, and human capital (including skills and experience); and information on tourism establishments including the number, size, industry class and ownership.

- 1.48. The **environmental dimension** concerns the stocks and changes in stock of environmental assets, often referred to as natural capital, that support tourism activity through the provision of ecosystem services, a stable climate and biodiversity; or are affected by tourism activity. 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 (including food waste and plastics), wastewater and other pollutants.
- 1.49. 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 local livelihoods, 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, equality of opportunity, diversity and inclusion, and other aspects of equality; and the development of social capital reflected in the strength of community networks and institutional arrangements.
- 1.50. When referring to different spatial areas, 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 (e.g. EU, Caribbean, Pacific)
National – referring to countries
Regional - referring to the level of administrative unit directly below the national level (corresponds to the NUTS 1 level in the EU territorial classification scheme)
Municipal or city-region - referring to the level of administrative units corresponding to localized, but relatively large, populations. Generally, it will not be the case that tourism is concentrated evenly throughout an administrative unit.
Location - referring to the areas or zones within a given municipality that exhibit particular concentrations or clusters of tourism activities and businesses.
- 1.51. The term **tourism destination** might refer to any of these scales (except global). Thus, a destination might be a supra-national area, a country, a region, a municipality or a location. In the discussion of the sustainability of 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 generally being applied.

1.5.3. Connecting SF-MST to other statistical frameworks

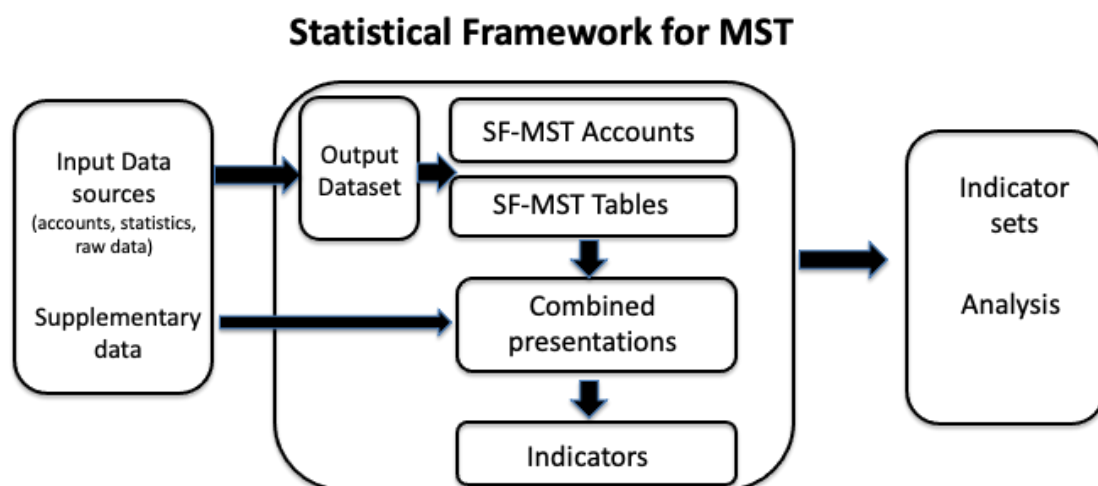
- 1.52. As introduced above, the implementation of a multiple capitals approach in the SF-MST will involve the use of data from existing accounting frameworks, statistics and other data sources on selected themes where accounting frameworks have not yet been developed. In this regard the SF-MST represents the integration of existing statistical frameworks. While not complete, the coverage of currently available statistical frameworks is very good across the economic, environmental and social dimensions. SF-MST presents the results of tailoring these frameworks to the tourism context.

- 1.53. The logical starting point for the implementation of multiple capitals 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. The measurement scope of the SNA encompasses a range of other standards for economic statistics including the balance of payments statistics, government finance statistics and price statistics each of which have separate, but integrated, statistical standards.
- 1.54. The application of the SNA principles to tourism is encapsulated in the international standard for TSA - the Tourism Satellite Accounts: Recommended Methodological Framework 2008 (TSA: RMF 2008). This document describes in detail the accounting framework for describing tourism's role in economic activity using a set of 10 interlinked tables. The TSA: RMF is underpinned by the International Recommendations for Tourism Statistics 2008 (IRTS 2008) which provides the international standard for the measurement of visitor flows and their characteristics, tourism expenditure and other key tourism statistics.
- 1.55. With respect to natural capital, the System of Environmental-Economic Accounting (SEEA) 2012 is the overall international statistical standard for the measurement of the environment and its relationship to the economy. The SEEA, like the TSA: RMF, is a national accounting-based framework that applies the accounting principles of the SNA. More recently, the SEEA has been extended to consider finer, sub-national, spatial scales through the development of standards for ecosystem accounting. Ecosystem accounting organizes data on ecosystems and their links to economic activity and is well suited to providing insights into the connection of tourism to the environment at local scales.
- 1.56. The SF-MST takes advantage of the common origin of the SEEA and the TSA: RMF in the SNA which allows the environmental dimension of tourism to be coherently integrated with the economic dimension. The integration of the SEEA and the TSA: RMF is an important component of the SF-MST.
- 1.57. Data on human capital is reflected in the SF-MST in two ways. First, using information on tourism employment by building on existing statistical work in this area by UNWTO and ILO. Second, the SF-MST discusses the potential for the measurement of human capital in tourism following accounting based approaches which have been implemented in a number of countries and by the OECD.
- 1.58. Social capital has not been sufficiently well defined and a standard statistical framework has not been developed. In the SF-MST, the measurement of the social dimension has therefore utilized statistical advances on relevant themes, such as standards for the measurement of decent work by the ILO, work on gender statistics by the UN and work on income distribution by the OECD.
- 1.59. Collectively, the SF-MST demonstrates how the concepts and definitions that have already been endorsed by the statistical community can be combined to take advantage of existing and new data sources to tell a more comprehensive story about the sustainability of tourism. In that sense, SF-MST should not be considered as a "stand alone" sustainability framework for tourism, but rather as a demonstration of the potential of statistical frameworks to operate in a joined-up fashion.

1.6. SF-MST outputs

- 1.60. The implementation of the SF-MST involves integrating **input data** from a wide variety of data sources covering the economic, environmental and social dimensions of tourism. The input data are integrated using the definitions, classifications and measurement boundaries of the SF-MST to generate coherent **output data**. These SF-MST output data can then be presented and disseminated, most commonly in tabular form, but also potentially in the form of maps depending on the type of source data.
- 1.61. There are three forms of tabular output in the SF-MST which are collectively referred to as **SF-MST outputs**. **SF-MST accounts** are tabular outputs that present data using a structure that reflects accounting rules, for example ensuring entries for stocks and flows are consistent and that the total supply and use of goods and services balances. **SF-MST tables** are tabular outputs that present data using a single measurement unit but which do not have an accounting structure. **Combined presentations** are tabular outputs that present data using a mixture of measurement units (e.g. data in monetary and non-monetary units).
- 1.62. The SF-MST output data can also be used to derive **indicators** that summarize performance. There are three types of indicators that are considered in the SF-MST: (i) totals and aggregates (e.g. total visitor numbers, tourism direct GDP); (ii) structural statistics (e.g. share of international visitors of total visitors, proportion of tourism employment in total employment); and (iii) ratio indicators (e.g. number of visitors compared to local population; energy use per visitor). The SF-MST itself does not incorporate a definitive indicator set for assessing the sustainability of tourism. However, throughout the chapters, as each measurement theme is discussed, relevant indicators are described and Chapter 6 provides an indicative set of themes and associated indicators that are commonly considered in the measurement of the sustainability of tourism. No composite indexes, involving the weighting and aggregation of a number of selected indicators, are described in the SF-MST.

Figure 1.4: The role of SF-MST in linking data inputs to indicators and analysis



- 1.63. Table 1.1 provides a summary of the different topics covered by SF-MST accounts and tables outputs. They are grouped according to their strength of association with the economic, environmental or social dimension. To ensure consistency and comparability of data, all SF-MST accounts and tables present data that are grouped and classified using the same classifications.

Table 1.1: Topics covered by SF-MST accounts and tables

Dimension	SF-MST accounts and tables
Economic	Tourism activity
	Visitor movements
	Tourism expenditure
	Tourism infrastructure
	Employment in tourism
	Demographics of tourism establishments
Environmental	Water flows (including wastewater flows)
	Energy flows
	GHG emissions
	Solid waste flows
	Land use (incl marine areas)
	Land cover (incl marine areas)
	Water resources
	Ecosystem condition for tourism related areas
	Ecosystem services flows for tourism related areas
Social	Social capital and benefits (e.g. concerning crime, health, decent work)
	Visitor perception and satisfaction
	Host community perception and satisfaction
	Tourism governance

- 1.64. There are two primary types of SF-MST accounts – supply and use accounts and asset accounts. **Supply and use accounts** can 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 (for example concerning flows of water and energy). They may also be structured so as to show flows between different spatial areas. Supply and use accounts compiled in monetary terms contain the information required to estimate tourism gross value added and related measures of economic activity.
- 1.65. **Asset accounts** can be compiled in monetary and non-monetary terms as well. They are designed to show the opening and closing stocks of specific asset types (e.g. produced capital, natural capital, human capital, social capital) and changes in the stocks of assets over an accounting period (e.g. one year). Changes in stocks of assets will include those due to investment, depreciation and degradation.
- 1.66. The 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.
- 1.67. SF-MST **tables** present data required to assess the sustainability of tourism but the table structures do not embody accounting rules. Examples of SF-MST tables include presentation of data on employment, demographics of tourism establishments, visitor movements and data on social capital and benefits. SF-MST tables will be particularly relevant for the organization of data at sub-national and local scales where the compilation of SF-MST accounts is likely to be more challenging in relation to data requirements.

- 1.68. Each SF-MST account and table stands alone in the sense of providing a coherent set of information. At the same time, within the SF-MST, each account and table is part of an overall system in which linkages can be made among different outputs each focusing on a specific aspect. Further, this system of accounts and tables is designed for connection to similar accounts and tables concerning other activities, (e.g., agriculture, retail and finance), and hence the SF-MST accounts and tables can support integrated approaches to planning and decision making.
- 1.69. SF-MST **combined presentations** are designed to support the communication of information on the sustainability of tourism and the derivation of indicators. Combined presentations provide a means to bring together a range of information from more disparate sources and usually cover a number of topics in a single presentation and use a mixture of measurement units. In this context, the underlying accounts and tables provide the means to ensure that data in combined presentations are coherent and consistently compiled for any given topic, for example, environmental flows of water or energy.

1.6.1. Implementation and application of SF-MST

- 1.70. The SF-MST as introduced in this section has a wide coverage of topics and, on first impression, implementation is likely to be considered daunting. At the same time, three key points must be recognized:
- All of these topics are being considered in some way by decision makers within tourism but most likely in an ad hoc manner. The range of data is therefore broad but appropriate in the sense of ensuring that tourism statistics can cover the information requirements.
 - While the development of tourism statistics for some of these topics is less developed, for many of the topics there are existing statistical standards and methods that are in place and which indicate that implementation of SF-MST is not starting from a zero base. Tourism statisticians are very much encouraged to start with the data that they currently have and to build from there. Further, technical support and expertise for compilation can be found in many different organizations, particularly at sub-national and destination level, and for topics not commonly measured by statisticians. SF-MST should be considered in this respect to provide a common point for the exchange of data, knowledge and experience.
 - There is no expectation that all SF-MST accounts and tables should be compiled immediately or that the benefits of SF-MST can only be obtained if all accounts and tables are compiled. Like many other statistical standards, including the TSA: RMF, implementation should be considered in a flexible and modular way. That is, tourism statisticians should look to identify those SF-MST accounts and tables that are most relevant in their context and focus on their implementation in the first instance and, over time, look at the extension of the initial set.
- 1.71. In adopting a flexible and modular approach—depending on context, circumstances and priorities— it is envisaged that the tourism statistics community will work towards the compilation of a core set of data for assessing the sustainability of tourism that can be used for international comparison. While such an approach means that not all countries will implement all possible parts of the SF-MST at the same time or in the same order, all countries and destinations will be able to effectively compare, exchange experiences and understand the common challenges through the application of the same concepts, definitions and data organizations structures.

- 1.72. Implementation will require involvement from a range of agencies including data producing/supplying entities and data using entities. It is expected that national statistical offices (NSOs) and national tourism administrations (NTAs) will play leading roles. Chapter 6 provides an extended description of the types of roles that these and other agencies can play and discusses various issues of implementation and institutional arrangements.
- 1.73. The focus of implementation of SF-MST will commonly be the derivation of indicators and the release of a set of indicators to support discussion of the sustainability of tourism. The selection of components that should be the focus of measurement and indicators 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.
- 1.74. Indicators are particularly important in providing clear signals concerning the effects of 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.
- 1.75. Data to support analytical modeling of economic, environmental and social phenomena is another important output supported by SF-MST. 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 ensure the relevance and accuracy of the analysis.

1.7. Structure of the SF-MST document

- 1.76. Chapter 1 has provided an explanation of the rationale for the development of a statistical framework for measuring the sustainability of tourism, an overview of the SF-MST and a summary of implementation and potential applications. It provides a general entry point for data compilers since there will be a wide variety of experts involved in the development of the SF-MST, many of whom may not be official statisticians. Chapter 1 should have provided a common understanding and reference point for the implementation and application of the framework.
- 1.77. Chapters 2, 3 and 4 describe the relevant concepts, definitions, measurement boundaries, SF-MST outputs (including accounts, tables and indicators), and measurement issues for the economic, environmental and social dimensions of tourism respectively. Collectively, these chapters provide the core of the statistical framework in terms of determining the potential

areas of measurement and describing the various stocks and flows that are the focus of assessing sustainability. The majority of the descriptions in these chapters are applications of existing statistical standards and guidance. It is not intended to repeat all of the relevant material but rather to explain how these various existing materials can be integrated and applied to the challenge of measuring the sustainability of tourism.

- 1.78. 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.
- 1.79. Chapter 6 introduces the ways in which the data compiled in the SF-MST may be presented in combined presentations, used to derive indicators of sustainability, including the context of the United Nations Sustainable Development Goals, and applied in analytical models. The intent is to provide an indication of the potential applications of the SF-MST.
- 1.80. Annexes provide supporting information on classifications, definitions and a research agenda.

2. Measuring the economic dimension

2.1. Introduction

- 2.1. The activities of visitors drive a range of economic benefits at local, national and global scales. These benefits include incomes earned by tourism businesses, wages and salaries paid to employees in tourism businesses and indirect benefits to economic units that supply goods and services to tourism businesses. Recording these various economic benefits has been a focus of tourism measurement over recent decades. Measuring sustainability in this economic dimension concerns organizing data that allows assessment of the potential for economic benefits to be secured in the future.
- 2.2. There is a range of economic factors that should be considered in assessing this potential that are the focus of this chapter. Of course, in line with the systems framing described in Chapter 1, there will be non-economic factors – i.e. environmental and social factors – that will also affect the potential for economic benefits to be secured. These are considered in later chapters.
- 2.3. The relevant economic factors concern:
 - Visitor flows – i.e. the extent to which current patterns of visitor flows will continue or change in the future
 - Visitor expenditure – i.e. the extent to which current patterns of visitor expenditures will continue or change in the future
 - Economic performance and structure of tourism businesses – i.e. the extent to which the performance, composition and characteristics of tourism businesses will continue or change in the future
 - Produced assets, including infrastructure, used by tourism businesses – i.e. the extent to which the produced assets used to support tourism activity have sufficient capacity to supply goods and services to visitors in the future
 - Employees of tourism businesses – i.e. the extent to which there are sufficient people with appropriate skills and experience (human capital) to supply goods and services to visitors in the future
- 2.4. The chapter commences with a short summary of the key statistical definitions that underpin the measurement of tourism activity and the associated economic benefits. Measuring flows of and characteristics of visitors, and the economic benefits associated with tourism activity has been a long standing focus of tourism statistics and is reflected in the content of the statistical standards for tourism, namely the International Recommendations for Tourism Statistics 2008 (IRTS2008) and the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA:RMF). As a result of this statistical development, there is significant statistical guidance for the measurement of the economic dimension.
- 2.5. The economic factors concerning sustainability listed above are discussed in the remaining sections of the chapter. Generally, all of the data required for assessing each of the factors can be sourced from the IRTS2008 and TSA:RMF or from extensions to these standards.

2.2. Key aspects of tourism statistics and the TSA framework

2.2.1. Tourism statistics

- 2.6. Tourism is often described as a demand-driven phenomenon. The same economic activity providing the same goods and services may be considered tourism, or not tourism, depending on whether the consumer is a visitor or not. This makes the concept of “visitor” central to understanding whether economic activities qualify as tourism or not. From an economic perspective, the demand side of tourism refers to the activities of visitors and their role in the acquisition of goods and services. The supply-side of tourism is understood to be the set of productive activities that cater (mainly) to visitors.
- 2.7. The international standard for tourism statistics is the IRTS2008 published in 2010. The IRTS 2008 focuses on the activities carried out by visitors and on measuring them in both monetary and non-monetary terms. It provides a system of definitions, concepts, classifications and main indicators that are internally consistent and that facilitate the link to the conceptual frameworks of the national accounts, especially Tourism Satellite Accounts, Balance of Payments, labour statistics and other statistics.
- 2.8. The framing of the visitor activity that is at the heart of tourism statistics and at the heart of the SF-MST, and is clearly defined in IRTS2008. The key points in the framing are that:
- A **visitor** is a traveller taking a trip to a main destination outside his/her **usual environment**, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited.
 - **Tourism** refers to the activity of visitors.
 - A visitor is classified as a **tourist** (or overnight visitor) if his/her trip includes an overnight stay, or as a **same-day visitor** (or excursionist) otherwise.
 - A tourism trip is a trip undertaken by a visitor and may be categorised as domestic, inbound or outbound trip depending on the residency of the visitor and the main destination. The activity of visitors on trips within their country of residence is called domestic tourism, activity on trips within a reference country by non-residents is called inbound tourism and activity on trips outside a reference country by residents is called outbound tourism (these constitute the different forms of tourism).
- 2.9. The definitions of residence and economic territory (which defines the geographical scope of a country) are the same as described in the System of National Accounts and the Balance of Payments.
- 2.10. For the measurement of economic benefits a key concept is **visitor expenditure** which is the amount paid by visitors for the acquisition of consumption goods and services, as well as valuables, for and during tourism trips.
- 2.11. Another key concept concerns **usual environment**. It is defined as the geographical area (though not necessarily a contiguous one) within which an individual conducts his/her regular life routines. It complements the concept of residence applied in economic statistics and the concept of usual residence as applied in household statistics (which refers to the place at which people reside).

- 2.12. Additional details on the definitions of visitors, trips and usual environment are provided in IRTS2008 Chapter 2 together with description of relevant inclusions, exclusions and recommended treatments. These same definitions and treatments apply in the SF-MST.

2.2.2. The TSA framework

- 2.13. The compilation of tourism satellite accounts has long been recognized as the tool for measuring the economic contribution of tourism, and an excellent basis for assessing its wider indirect and induced impacts on the economy. The international standard for compiling TSA is described in the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA:RMF) published by the UN, Eurostat and the OECD in 2010. Importantly, it builds directly on the IRTS2008 and complements that system of statistics by providing the link to the National Accounts, detailing the mechanism for bringing together tourism supply and demand data in order to obtain the tourism share of different industries that can then be aggregated to form Tourism Direct GDP, and presenting corresponding accounts and analytical tables.
- 2.14. Indeed, the TSA:RMF was necessary because the standard descriptions and classifications of economic activities do not explicitly identify “tourism” as an economic activity. Since tourism is defined from a demand perspective, and hence encompasses production activity across a range of industries within the standard industrial classification and the industry based view of economic activity (such as accommodation, transport, retail and entertainment). In the standard industry view the groupings of activity are based on similar outputs and inputs, while for tourism a diverse range of inputs and outputs exists. The TSA provides the framework to identify tourism activity within these various industries, and for subsequently deriving the tourism component of different measures of economic activity (like value added, Gross Domestic Product) in a standardized way.
- 2.15. The descriptions in the TSA:RMF are designed to complement the national accounting principles and measurement boundaries described in the SNA 2008. It is essentially a conceptual framework for understanding tourism from a macroeconomic perspective. Further, the use of these accounting principles at the core of tourism statistics provides the basis for the SF-MST to adopt an accounting approach for the organization of information about the sustainability of tourism activity.
- 2.16. Key definitions within the TSA:RMF beyond those defined in the IRTS2008 concern:
- The definition and classification of tourism characteristic products and tourism characteristic activities (tourism industries)
 - The definition of tourism direct gross value added, tourism direct gross domestic product, tourism employment and gross fixed capital formation (investment) of tourism industries
- 2.17. The majority of visitor expenditure is on goods and services, referred to as tourism characteristic products. These are produced largely (but not exclusively) by tourism characteristic activities, also known as tourism industries. Tourism characteristic activities are those that typically produce tourism characteristic products and would not exist if there were no visitors. They are also referred to as tourism industries. There is a particular focus in the TSA:RMF on recording the production, income, employment, investment and value added of these industries.

2.18. Box 2.1 presents the top-level categories for tourism characteristic products and tourism activities. There is clearly a close link between the descriptions of products and activities since an activity is defined in relation to a primary product. However, there is not a one to one relationship. 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 these establishments will usually produce a range of products including accommodation services and food and beverage serving services.

Box 2.1. Categories of tourism characteristic consumption products and activities (tourism industries)	
Consumption products	Activities / Industries
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.

2.19. The TSA:RMF covers a range of economic topics, framed into 10 interrelated tables as follows:

- Tourism expenditure (inbound, outbound, domestic) and other components of tourism consumption, by product (TSA:RMF Tables 1 to 4)
- Production, income and value added of the tourism industries (tourism characteristic activities) (TSA:RMF Tables 5 and 6)
- Employment (TSA:RMF Table 7)
- Gross fixed capital formation (TSA:RMF Table 8)
- Tourism collective consumption (TSA:RMF Table 9)
- Non-monetary indicators (TSA:RMF Table 10)

2.20. Across these different aspects, the TSA:RMF provides an agreed basis for defining the extent and structure of tourism activity. It also highlights particular issues such as the treatment of vacation homes, the recording of transactions with travel agencies and the treatment of consumer durables purchased for tourism purposes. The SF-MST does not alter these definitions and treatments. Rather the focus is on using this data to supporting assessments of sustainability and extending the IRTS and TSA datasets to organize additional data.

2.3. Measuring the sustainability of visitor flows and expenditure

2.3.1. Visitor flows

2.21. A strong starting point in understanding the sustainability of tourism-related activity will be gained through ongoing recording of visitors flows according to different types of visitors and their characteristics. The total number of visitors to a country or destination may be a key indicator of sustainability from an economic perspective when considered in relation to, for

example, total visitor expenditure, the income that can be generated for tourism businesses, the number of employment opportunities and the available infrastructure (e.g. transport and accommodation facilities). In addition, there will be connections to environmental and social dimensions of sustainability.

- 2.22. To support a range of analysis, flows of visitors should be recorded according to the various characteristics recommended in the IRTS2008. These will include visitor flows concerning:
- inbound visitors, domestic visitors and outbound visitors;
 - number of trips and nights; same-day visits;
 - country of residence; main purpose (for which nine main types are listed); types of 'tourism product'; duration of trip; origin and destination; modes of transport; and types of accommodation.
 - gender, age, economic activity status, occupation, annual income and education
 - timing of visits through the year.
- 2.23. As appropriate, these different characteristics of visits should be measured for visitor flows at both national and sub-national level.
- 2.24. The TSA:RMF Table 10a (Number of trips and overnights by forms of tourism and classes of visitors) and Table 10b (Inbound tourism: number of arrivals and overnights by modes of transport) demonstrate the type of data that can be used to support the monetary analysis of tourism which is the focus of the other TSA tables.
- 2.25. Countries are encouraged to expand this set using the information on characteristics of visitors and tourism industries as presented in the IRTS 2008. From an economic sustainability perspective, the key question is whether the mix of visitors flows is overly dependent on a specific type of visitor. In general, over-reliance on specific type of visitor may heighten the risks of sustaining tourism activity in a country or destination if circumstances change. For example, if visitors are predominantly from a particular country and relationships with that country change, visitor flows may be affected; or if visitors are predominantly arriving by air and issues arise with air transportation then economic sustainability may be affected. Thus, understanding the composition of visitor flows and how they are changing over time will help identify critical points of economic dependency.
- 2.26. At a national level, an important economic sustainability indicators concerning visitor flows include the **number of inbound visitors relative to total visitors**. A high ratio of inbound visitors may point to potential economic risks if circumstances change such that visitors from other countries were not able to travel.

2.3.2. Visitor expenditure

- 2.27. The natural extension of measuring visitor flows is the measurement of visitor expenditure. Ideally, for all of the categories of visitor flows listed above, data on visitor expenditure would also be collated. In the first instance, this data can provide richness to the discussion of economic dependency since the expenditure per visit ratio will likely vary for different types of visitors. Thus, from a purely economic perspective, there will be heightened risks around sustainability in case where the incomes of tourism businesses are dependent on high levels of expenditure from specific visitors.

- 2.28. More generally, information on visitor expenditure per visit in aggregate measured over time can point to changes in the composition of types of visitors and be used as an indicator of changes in the income arising from tourism activity. The core sustainability indicator concerning visitor expenditure is **average visitor expenditure, i.e. the ratio of visitor expenditure to total visitors.**
- 2.29. Table 2.2, reflects a summary presentation of TSA:RMF tables 1-3. It shows for different forms of tourism (inbound, domestic, outbound; tourists, same-day visitors) the levels of expenditure on different tourism products. This additional detail on the products purchased by visitors provides insight into which tourism businesses are likely to be affected if there are changes in levels of visitor expenditure, including vis changes in visitor flows.

Table 2.2: Data on visitor expenditure (local currency)

	Form of tourism						TOTAL
	Inbound trips		Domestic trips		Outbound trips		
	Tourists	Same-day visitors	Tourists	Same-day visitors	Tourists	Same-day visitors	
Tourism characteristic products							
Accommodation services							
Food and beverage serving services							
Railway passenger transport services							
Road passenger transport services							
Water passenger transport services							
Air passenger transport services							
Transport equipment rental services							
Travel agencies and other reservation services							
Cultural services							
Sports and recreational services							
Country-specific goods and services							
Other consumption products							
Valuables							
TOTAL							

2.4. Measuring the economic structure and performance of tourism industries

- 2.30. Data about visitor flows and visitor expenditure gives insight into the demand side of tourism and from this data conclusions may be drawn as to which economic activities are most likely to be affected if there are changes in tourism demand. However, to more fully understand the economic implications and to understand the potential economic response, it is necessary to know the types of businesses that supply tourism products and their economic performance over time.

2.4.1. Economic structure

- 2.31. Data on the characteristics of tourism businesses is most readily organized utilizing and extending the information available in a business register. A business register is a central listing, often maintained by the national statistical office or taxation office, that lists all businesses within an economy, classifies them to standard industry classes and attributes data about other characteristics.

- 2.32. Within the structure of a business register, for those businesses classified as being involved in tourism industries (following the classes listed in Box 2.1), it is possible to assess the economic structure of tourism using variables such as:
- industry class (e.g. by ISIC class)
 - size of establishment (e.g. in terms of turnover or employment)¹,
 - employment (e.g. by gender, occupation, skills, experience)
 - ownership (resident or non-resident), and
 - legal entity (corporation, unincorporated/household business)
- 2.33. A basic framing for the organization of data on the characteristics of tourism establishments is presented in Table 2.3. For tourism industries this table presents data on the number of establishments, their size in terms of number of jobs, whether the ownership is by resident or non-resident units and the type of legal entity. The table adapts and significantly extends the TSA:RMF Table 10d: Number of establishments in tourism industries classified according to average number of jobs.
- 2.34. An assessment of sustainability using the types of data in Table 2.3 could be made by considering whether there are imbalances in composition of tourism businesses. For example, ongoing economic sustainability may be affected if a significant portion of accommodation was owned by non-resident economic units.
- 2.35. The assessment of sustainability could also involve analysis of changes in the structure of tourism businesses over time and analysis of the demographics of tourism businesses in terms of how many new businesses are created, how many close, their average business life, etc. All of these measures will give insight into the stability of the economic structure and give a sense of its sustainability.
- 2.36. Where available, business registers are most commonly developed at a national level to include all economic units within a country. Since many aspects of assessing tourism's sustainability should be considered at a sub-national level, it will be appropriate to place focus on determining the geographical location of the operations of tourism businesses. Given the ongoing advances in geospatial economic statistics² there is likely the potential to develop location-based information on tourism establishments to support assessment at finer geographic scales and there is increasingly geo-location information about businesses stored within the business register.

¹ 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 See for example is about: <http://qqim.un.org/UNGGIM-expert-group/>

Table 2.3 Characteristics of tourism establishments

	Tourism industries												
	Accommodation for visitors	Food & beverage serving activities	Railway passenger transport	Road passenger transport	Water passenger transport	Air passenger transport	Transport equipment rental	Travel agencies & reservation services activities	Cultural activities	Sports and recreational activities	Other activities	Total tourism industries	
Number of establishments													
Size of establishments (# jobs)													
1-9													
10-49													
50-99													
100-500													
>500													
Ownership (# establishments)													
Resident													
Non-resident													
Legal entity type (# establishments)													
Corporation													
Household (unincorporated)													
Government													

2.4.2. Economic performance

2.37. In addition to recording information on the characteristics of tourism businesses, measures of economic sustainability must incorporate also data on the economic performance of tourism businesses over time. Following the measurement framework of the TSA, economic performance can be assessed in terms of

- Production and turnover
- Intermediate consumption,
- Compensation of employees
- Gross operating surplus and gross mixed income
- Value added
- Gross fixed capital formation.

2.38. The collation of data on these economic variables is summarized in accounting format in the TSA Table 5 relating to tourism supply. Table 2.4 presents these data detailing the tourism products produced by each tourism industry and the summary measures of economic performance for each industry. A key indicator of economic performance is the measure **Tourism Direct GDP** (derived from TSA Table 6) estimated by aggregating the value added for all tourism industries together with any other value added associated with visitor expenditure. In terms of assessing sustainability, it will be relevant to assess the share of value added accruing to compensation of employees and gross operating surplus, trends in output and intermediate consumption, and the extent of dependence on individual tourism industries in contributing to total tourism gross value added.

Table 2.4: Data on tourism supply (local currency)

	Tourism industries											Total tourism industries
	Accommodation for visitors	Food & beverage serving activities	Railway passenger transport	Road passenger transport	Water passenger transport	Air passenger transport	Transport equipment rental	Travel agencies & reservation services activities	Cultural activities	Sports and recreational activities	Other activities	
Output of Tourism characteristic products												
Accommodation services												
Food and beverage serving services												
Road passenger transport services												
Water passenger transport services												
Air passenger transport services												
Transport equipment rental services												
Travel agencies and other reservation services												
Cultural services												
Sports and recreational services												
Country-specific goods and services												
Output of Other consumption products												
Output of Valuables (and other non-consumption products)												
Total Output												
Total intermediate consumption												
Gross value added												
Compensation of employees												
Other taxes less subsidies on production												
Gross mixed income												
Gross operating surplus												

- 2.39. More generally, structural information about tourism demand and supply that is present in TSA accounts (especially Table 6) can be used to identify potential imbalances in tourism activity concerning, for example, different forms of visitors (inbound, outbound or domestic), or based on purpose of travel), the use of imports to support tourist demand, and the composition of value added across different tourism activities.
- 2.40. Beyond the main categories of tourism demand and supply presented in the TSA:RMF, extensions incorporating additional detail within tables 2.3 and 2.4 might be considered to focus on specific market segments such as activities related to **cruise ships and eco-tourism**. For this purpose the specific market segment would be included as an “of which “ column in either of the tables.
- 2.41. The measurement of eco-tourism activities is commonly associated with the measurement of tourism sustainability but in no way is the SF-MST limited to considering the data that allows for assessing sustainability elements of specific “tourism products” (IRTS paras. 3.22-3.23) like eco-tourism. While eco-tourism may be of common interest, and all relevant economic, environmental and social data sets will incorporate these activities, at this stage there is no single definition of either the supply or demand for eco-tourism from a statistical perspective that can support the organization of these data.
- 2.42. The measurement of the **sharing economy** (or new platform tourism services) is of particular interest as its significance in relation to overall tourism activity grows, although the precise scope of this activity is yet to be defined. In concept, the economic activity associated with the sharing economy is captured within the scope of the IRTS2008 and the TSA:RMF and hence conceptually included in the types of tables described above in relation to the measurement of sustainability. The development of measurement practice to collect and record relevant data continues to develop.
- 2.43. For activities in the sharing economy, it is clear that in particular locations there may be particular tourism management challenges associated with the activity (e.g. in relation to accommodation services) and capturing these effects and changes in the data is important

as part of assessing the sustainability of tourism in certain locations. Consequently, compilers should make special note of the coverage of the data and indicators such that appropriate interpretation is made. For example, exclusion of accommodation services used by visitors and accessed via the sharing economy may understate the level of service provision and affect understanding of any related environmental flows (e.g. water use).

2.4.3. Distribution of economic benefits

- 2.44. A key question for economic sustainability is the extent to which the benefits associated with tourism activity – for example in terms of wages and salaries to employees, profits to businesses and taxes to government – can be considered to be well distributed and expected to continue. For assessing these distributions, it is largely a question of examining the relative shares of benefits accruing to different economic units. Where shares are low, this may raise a concern that there is an imbalance in the distribution that, in turn, might affect whether the associated economic units have sufficient incentive to continue to supply inputs to tourism activity.
- 2.45. For some countries and destinations there may be interest in compiling measures of **tourism leakage** where the value added generated from tourism activities does not accrue to local economic units but rather is earned by non-resident units. Ideally, tourism leakage would be assessed by distinguishing in Table 2.4 the gross value added, compensation of employees and gross operating surplus that accrues to resident and non-resident economic units. If this data is not available, more basic indicators may be derived, for example, using information on the ownership of tourism businesses from Table 2.3.
- 2.46. Another form of tourism leakage will arise where the inputs (e.g. food, fuel) to tourism activity are imported in which case this will reflect a cost to the economy supplying the tourism product. Similarly, where jobs in tourism are undertaken by non-residents, this will indicate that the distribution of benefits from tourism activity are not accruing to residents.
- 2.47. Another form of distribution is temporal. In many locations, a key aspect in understanding the sustainability of tourism activity is the pattern of activity through the year. Where tourism activity is very uneven across the year this will tend to place some stress on those supplying tourism products if they do not have sufficient resources to maintain their incomes through the non-tourism periods of the year. Key indicators of seasonality will be demand-side variables such as visitor flows, visitor expenditure, average expenditure per tourist, and hotel occupancy.
- 2.48. Understanding the seasonal pattern of tourism activity will also be of relevance in considering the environmental and social dimensions of sustainable tourism. For example in relation to the use and availability of resources (such as water) in peak visitor periods, and to questions of access and mobility (e.g. traffic congestion). In addition, consideration of seasonal patterns in specific destinations will be of high relevance.

2.5. Measuring tourism investment in produced assets and related infrastructure

- 2.49. Within the multiple capitals framing of sustainability, the role of assets is central. Assets, reflecting the stocks that supply capital services, underpin the capacity of systems to generate benefits in the future. In this respect, an understanding of tourism related assets is critical to understanding the economic sustainability of tourism.
- 2.50. The investment in and depreciation of capacity through improvement or decline in the quantity and quality of assets is thus of particular interest in considering sustainability. To assess capacity, focus is placed on organizing data about the stock of assets – their quantity, size, quality and location. Further, understanding changes in assets over time allows informed decisions about investments in new assets or the re-investment in existing assets, particularly when considered in conjunction with information on expected patterns of demand for tourism products.
- 2.51. For the economic dimension a key focus is thus on tourism fixed assets and tourism related infrastructure. According to the TSA:RMF (para. 2.46), tourism driven investment can be classified in three main categories, as follows:
- *Tourism specific fixed assets* which are used exclusively or almost exclusively in the production of tourism characteristic products (e.g. cruise ships, hotel facilities, convention centres, marinas, ski lifts, vacation homes, etc.) (TSA:RMF 2.44). TSA:RMF Annex 5 provides a classification of tourism specific fixed assets in line with SNA 2008.
 - *Investments by tourism industries in non-tourism specific fixed assets* (e.g. computers, cars, furniture, hotel laundry services) which will reflect the balance of investment in fixed assets by tourism industries. Though no specific classification exists for tourism purposes, countries are encouraged to identify as specific classes of non-tourism specific fixed assets:
 - transportation equipment,
 - IT equipment and software,
 - buildings and other construction, and
 - other equipment.

Further, it is recommended that data about non-tourism specific fixed assets are classified by tourism industry

- *Tourism-related infrastructure* which is put in place principally by public authorities to facilitate tourism (TSA:RMF 2.45). These may have been developed for the specific purpose of supporting tourism activity, or they may facilitate or support tourism activity even though this was not the primary/sole objective of the investment. Primary types of tourism-related infrastructure are: airports, ports, railways stations and lines, roads, car parks, and utilities (water supply and treatment, electricity and energy supply, waste collection and treatment). Oftentimes, these assets are not expressed as a factor (cost) of production from the point of view of the industries catering to visitors, even though the existence and use of these assets may be very important for carrying out tourism activity. A clear example is the case of land transportation services, which requires roads but which does not factor in the cost of roads (if no fee is attached to their use) into the producer's production costs.

- 2.52. Although the measurement of investment in fixed assets is commonly challenging, the general ambitions of sustainability assessment require that attention be given to this task. Measures of investment (gross fixed capital formation) by asset type for the tourism industries can be compiled with associated compilation of measures of the capital stock of these assets. Relevant measurement guidance at the economy wide level is provided in the OECD manual on capital stock measurement³. For individual asset types and industries, the key requirements are to collect data on the levels of investment and the age and expected life of the assets. This combination of information can be used to underpin models of investment and capital stocks. Note that in some countries, there will be national accounts estimates of capital stock by broad industry groups, e.g. accommodation and restaurants, transports that may provide some general trends to support analysis and provide a starting point for compilation of estimates at the appropriate level of detail for tourism industries.
- 2.53. In many instances, tourism-related infrastructure is provided and maintained by governments as a public good for both visitors and non-visitors. As a result the investment in infrastructure may not be recorded as expenditure of tourism industries. Thus, in a first stage of measurement it is appropriate to identify the relevant infrastructure that is tourism related, irrespective of which economic unit has undertaken the investment. In a second stage, focus may be placed on estimating the extent to which tourism activities use or are dependent on specific types of infrastructure. This may be undertaken by measuring the share of use of infrastructure that can be attributed to visitors or tourism businesses.
- 2.54. Where data are not currently available to fully capture investment related to tourism (i.e. investments/assets by the tourism industries and investments/assets benefitting the tourism industries and visitors directly), a realistic and useful first step is the collection of data on the number, quality and capacity of tourism fixed assets and related infrastructure. Examples of such data include number of hotel beds/rooms, road extent and quality indicators, number of scheduled flights, cruise ship berths, number of taxis and tourism related buildings quality indicators (e.g. building age, capacity to withstand natural disasters).
- 2.55. For decision making purposes, and in support of the location-based assessment of tourism sustainability, information on the location of tourism specific assets and related infrastructure is likely to be important. Where possible and relevant, the data such as those just described could be organized for sub-national tourism areas and destinations. Location based information may be particularly applicable in risk assessments concerning the impacts of natural disasters and the longer-term impacts of climate change, especially since a large proportion of tourism activity takes place in coastal areas. As well, such information on tourism -related assets could support analysis of accessibility, safety and security, connectivity and other factors which can support and sustain tourism activities.

2.6. Measuring the employment aspects of tourism

2.6.1. Introduction

- 2.56. Tourism characteristic activities can be a major source of employment since the activities are generally service oriented and labour-intensive. Further, they can be a significant source of employment for disadvantaged and vulnerable groups such as women, young people,

³ <https://www.oecd.org/publications/measuring-capital-oecd-manual-2009-9789264068476-en.htm>

indigenous peoples and migrant workers that are often engaged in part-time, seasonal and casual employment. Consequently, governments are often interested in measuring the contribution of tourism in terms of generating jobs and providing people with access to income.

- 2.57. At the same time, important challenges exist since tourism jobs can be characterized by low wages, long working hours, a high turnover rate and limited social protection. Shift and night work, seasonality, temporary and part-time employment, as well as other non-standard forms of employment, including an increasing rate of outsourcing and subcontracting are also common in tourism. More recently, the ongoing digitalization of the economy and society is influencing tourism activities and the related employment.
- 2.58. The importance of measuring tourism employment was showcased at the 5th UNWTO International Conference on Tourism Statistics held in Bali, Indonesia in April 2009. Under the theme of “Tourism: an engine for employment creation”, the Conference highlighted in the Bali Statement the importance of tourism in generating employment, “especially for those segments of the population with less access to labour markets, such as women, young people, immigrants and rural populations”. Thus employment is not only an important theme from an economic dimension but is also of great relevance in securing inclusive economic growth and social development. Thus issues around wages, education, skills and decent work are all of relevance.
- 2.59. More recently, there has been growing interest in the extent of employment focused on environmental activities, such as environmental protection. This has led to the development of concepts around green jobs which are discussed further in Chapter 3 on the measurement of the environmental dimension.
- 2.60. Overall, governments, businesses and the community are looking for more reliable statistical measures of tourism employment, including on special features such as occupations, skills, level of education, income, compensation, hours of work of person employed and their conditions of work in the tourism sector. And, it is important that these measures are comparable to performance in the rest of the economy to provide appropriate benchmarking and reference points of measurement.
- 2.61. It is noted that within the multiple capitals framing of SF-MST, employment is underpinned by human capital. Using the concept of human capital is useful in interpreting information about the characteristics of employment that are commonly measured, and in making connections between the size and quality of the labour force and the potential to sustain tourism industries and local communities. Given the close connection between human and social capital and the various social aspects of employment, further discussion on human capital is included in Chapter 4 on the social dimension.
- 2.62. The focus in this section is on employment from an economic perspective as labour is a critical factor of production in tourism activity. This includes measurement of the key characteristics (skills, experience, demographics) of the tourism labour force that is available to support tourism industries. Discussion of employment in the environmental sector and green jobs is provided in Chapter 3 while a discussion of decent work and the link between employment and local livelihoods is provided in Chapter 4.

2.6.2. Characteristics of employment in tourism industries

- 2.63. For a more complete understanding of the sustainability of tourism with respect to employment, it is important to collate information on the characteristics of the tourism labour force. The IRTS2008 provides a list of recommended characteristics to summarise employment in tourism industries. These are:
- Employment by age group, sex and nationality/country of residence
 - Employment by type of establishment (size, formal/informal, etc)
 - Employment classified by occupation and status in employment
 - Permanent/temporary employment expressed in terms of number of jobs, hours of work, full-time equivalence, etc
 - Employment by educational attainment, skills
 - Hours of work (normal/usual, actually worked, paid for)
 - Working time arrangements
 - Compensation of employees (including wages and salaries)
 - Additional labour costs (e.g. worker transport, clothing, labour hire taxes)
 - Mixed income of self-employed persons
- 2.64. Statistical definitions and treatments for all of these characteristics are found in the relevant ILO and SNA publications. (References to be developed and included in annex or glossary)
- 2.65. The ultimate selection of characteristics that are relevant for an assessment of sustainability will need to be made by compilers based on context and on data availability. As an indication of how this information could be presented, Table 2.5 provides a set of core variables for the purposes of international comparison that will also support a wide range of discussions on the employment dimension of the economic sustainability of tourism. Some of these characteristics will also be relevant in the measurement of decent work, education and skills, discussed further in Chapter 4.
- 2.66. For SF-MST, particular note is made of the characteristics concerning education and occupation. There is generally a close link between education and skills held by an individual and their occupation. Together, these concepts help to provide a bridge between the demand and supply of labour and hence may be of considerable interest in the longer-term development of tourism and its potential for supporting economic and sustainable development more broadly. The International Standard Classification of Education (ISCED-97) is considered to be directly applicable in a tourism context. Approaches for the measurement of occupation in tourism industries is discussed further below.

Table 2.4 Characteristics of employment in tourism industries

		Tourism industries											
		Accommodation for visitors	Food & beverage serving activities	Railway passenger transport	Road passenger transport	Water passenger transport	Air passenger transport	Transport equipment rental	Travel agencies & reservation services activities	Cultural activities	Sports and recreational activities	Other activities	Total tourism industries
		Number of jobs											
Sex	Female												
	Male												
Age (years)	<20												
	20-29												
	30-39												
	40-59												
	>60												
Education level (ISCED-11 classes)	Basic												
	Intermediate												
	Advanced												
Occupation (by ISCO major groups)	Managers												
	Professionals												
	etc												
Job tenure (months)	<6												
	6-12												
	13-24												
	>24												
Salary (relative to average earnings)	<30% average earnings												
	30-50% average earnings												
	50-70% average earnings												
	>70% average earnings												
Residency status	Resident												
	Non-resident												
Hours of work	Part time												
	Full time												

2.6.3. Measures of employment for tourism

2.67. The importance of employment is reflected in the IRTS2008 and the TSA:RMF with chapters and sections dedicated to discussion of the measurement of employment and jobs (see IRTS2008 Chapter 7 and TSA:RMF Section 3.C.2). Tourism-related employment measures from the TSA:RMF and IRTS 2008 stem from the same statistical sources and use the same international employment concepts and classifications from the ILO. However, the methodology and the output of both approaches are somewhat different.

2.68. In the first instance, a key distinction must be made between the measurement of employment in tourism industries and tourism employment. Employment in tourism industries covers all jobs⁴ in tourism industries while tourism employment provides a measure of the number of jobs directly attributable to tourism demand in both tourism and non-tourism industries. Each measure serves a different purpose and countries may adopt one or more measure depending on the intended use and the data available.

⁴ A job is defined as a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment.

- 2.69. Following the IRTS2008, employment in tourism industries can be measured in three ways with each measure relevant in different contexts. The key distinction between the measures is that one person employed may hold more than one job and, where this occurs, not all jobs will necessarily be in tourism industries. The three measures are the number of:
- *persons employed*⁵ in the tourism industries in any of their jobs
 - *persons employed* in the tourism industries in their main job
 - *jobs* in the tourism industries⁶.
- 2.70. Where the intent is to determine the number of people who depend to some extent for their livelihoods by working in the tourism industries, then a count of persons with a job (main or other) in these industries would be appropriate. A measure based on a person's main job would serve to gauge those with significant attachment to the tourism industries.
- 2.71. If the intent is to make a comparison between tourism and non-tourism industries or between the tourism industries and the economy overall, then a count of jobs in the tourism industries would be more appropriate since a focus on the number of persons employed would require an allocation of individuals across tourism and non-tourism industries.
- 2.72. Beyond counts of jobs and persons employed, the intensity of work will vary. Thus, it is likely to be relevant to collect data on the total number of hours worked in jobs by type of industry and over time. By then dividing by the full-time average hours worked per job an estimate of the full-time equivalent (FTE) employment can be derived which will equal the number of full-time equivalent jobs. Since employment in tourism is often characterized by part time work and also is often heavily affected by seasonality implying less than a full year of work will be undertaken, it will be important to make FTE adjustments for comparability purposes over time and across countries. IRTS2008, Figure 7.3 sets out the linkages between these different employment measures.
- 2.73. TSA:RMF Table 7 (Employment in the tourism industries) records (i) the number of jobs in tourism industries; (ii) the number of hours worked; and (iii) the number of full-time equivalent jobs. It also includes cross classification by sex and status of employment (either employees or self-employed).
- 2.74. In addition to measures of employment in tourism industries, it is important to consider the extent to which employment in the economy is attributable to tourism demand, a concept referred to as tourism employment. Measurement of tourism employment involves adjusting aggregate measures of employment in each industry using tourism shares to account for the reality that not all output of each industry is consumed by visitors, i.e. the total input of labour in each industry should not be solely attributed to visitor demand. To estimate the tourism share of employment it is recommended to apply the tourism output ratio for each industry on the assumption that, for each industry, there will be a stronger relationship between levels of output and employment relative to levels of value-added and intermediate consumption.
- 2.75. For the tourism industries alone, the measurement of tourism employment will generate a lower level of employment (since tourism shares will be <1). However, an economy wide measure of tourism employment should also include labour input within non-tourism industries (who supply goods and services to visitors).

⁵ Persons employed includes both employees and self-employed people.

⁶ IRTS 2008, Figure 7.1 provides a schematic showing the linkages between these measurement scopes.

- 2.76. For sustainability measurement purposes, a number of indicators may emerge from these data. Basic indicators include the total employment in tourism industries in terms of number of jobs and number of persons and the percentage of employed persons in tourism industries relative to the total economy. More analytically, it may be relevant to compare the total number of jobs to the total persons employed in tourism industries to provide insights into the nature of the labour market, how it is changing over time and what the future of work in the tourism industries might look like.
- 2.77. Further, it may be relevant to derive measures of labour productivity, i.e. output per unit of labour input (e.g. hours worked, jobs). Measures of labour productivity can provide insights in the potential to generate additional output in the future which in turn informs on the potential sustainability of tourism businesses and also the potential to secure future increases in wages and salaries for employees.
- 2.78. Labour productivity measures can be compiled based on data from TSA tables providing data on tourism output and value added, and data shown in the table above concerning tourism employment. Methods for measuring productivity have been fully articulated in OECD guidelines⁷. These can be readily compared over time and to other industries.

2.6.4. Measuring occupations within the tourism industries

- 2.79. Jobs are classified by occupation with respect to the type of work performed, or to be performed (ILO, 2007). Data on occupational groups within the tourism industries provides a policy and analytical connection between existing data on jobs in the tourism industries (discussed above) and related information on relevant skills-specific labour demand and supply in the tourism industries. In this context, it is valuable to collect and compile data about occupations and skills related to jobs in the tourism industries to:
- Understand the nature and type of jobs to be found in industries that cater to the needs of visitors and to monitor change over time; and
 - Examine labour demand and supply in terms of occupations, skills and training requirements.
- 2.80. To compile data about occupations and skills related to jobs in the tourism industries, the starting point is the use of national occupational classifications that are based on the International Standard Classification of Occupations (ISCO). These classifications group jobs into categories of occupations based on work tasks, duties performed and skill levels required.
- 2.81. At this stage, there is no specific recognition of tourism occupational categories, in part because of the special character of tourism as a cross-cutting economic activity. It is proposed therefore, as part of the SF-MST research agenda, to establish a list of tourism characteristic occupations for international comparability based on ISCO-08 using the approach underpinning the set of tourism characteristic activities (based on ISIC Rev. 4) and tourism characteristic products (based on CPC, Ver. 2). This should reflect also the ISCO-08 intention to develop thematic views for various activities, including tourism. Development of an internationally agreed tourism typology of characteristics for a tourism occupation should also be pursued.

⁷ <https://www.oecd.org/sdd/productivity-stats/2352458.pdf>

- 2.82. The development of a list of tourism characteristic occupations has been pioneered by Statistics Canada building on work conducted by the ILO and the UNWTO designed to improve the measurement of employment in tourism industries and to identify the characteristics of employment. The approach recommended by Statistics Canada to identify tourism characteristic occupations mirror the criteria recommended by UNWTO to identify tourism characteristic products.
- 2.83. Following this approach, a tourism occupation can be defined as one that would cease to exist or continue to exist only at a significantly reduced level of employment, as a direct result of an absence of tourism. Assuming the availability of employment data in tourism industries, the ratio of tourism's significance for each occupation may be estimated by (i) using tourism industry value-added ratios to determine tourism's share of each occupation in each tourism industry; and (ii) estimating the proportion of employment dependent on tourism in each occupation within the tourism industries. Through the application of this method, Statistics Canada identified 46 tourism characteristic occupations and 16 other tourism occupations.

3. Accounting for the environmental dimension

3.1. Introduction

- 3.1. The connection between tourism activity and the environment is fundamental. In many cases, what attracts tourists to travel and leave their usual environment is the motivation to see and experience different locations and natural phenomena including countryside, beaches, mountains, islands and iconic species. These environmental assets form part of the tourism offer but are often not owned or managed by private operators. Also, in all cases, the activity of tourism requires the use of natural resources such as energy and water for its activities like transport and accommodation.
- 3.2. In addition, tourism activity has an impact on the natural and built environment. The IRTS2008 recognizes that tourism can contribute “to irreversible damage to the environment through pressure on fragile ecosystems, through construction of resorts or roads that destroy the natural sites and heritage, through the pressure that is exerted on land, water and air and through diverse processes of all kinds generating pollution, discharge of residuals, erosion deforestation, etc.” (IRTS2008, 8.35). Increasingly, the potential impact of climate change related effects, such as rising sea levels and more frequent natural disasters, on tourism activity is emerging. – and conversely, the climate is impacted by the emission of GHGs from tourism activity.
- 3.3. At the same time, visitors and tourism businesses can support work on environmental protection and the conservation of biodiversity and hence play a role as part of global efforts towards net zero and nature positive outcomes. In many contexts, tourism is regarded as an economic activity that has the potential to be compatible with achieving sustainability goals.
- 3.4. Since each tourism destination has its own environmental context, the connection between tourism and the environment will vary both across and within countries, reflecting the range of locations, climates and ecosystems which people visit. This variation is particularly evident at the sub-national level within a given country. Measurement must therefore allow different locations to record the information of relevance to them.
- 3.5. Overall, measurement of the relationship between tourism activity and the environment is essential to provide a meaningful information base that can support environmentally sustainable management of tourism locations and activities. Environmental sustainability of tourism will thus require information across four broad themes:
 - The use of natural resources such as water and energy as an input to the production of tourism industries.
 - The use of the environment more generally as the location in which tourism activity takes place.
 - The impacts and pressures that tourism activity places on the environment
 - The responses that tourism industries implement to reduce environmental pressures and improve environmental outcomes.
- 3.6. This chapter outlines a systematic approach to the measurement of the tourism-environment connection in each of these four themes by applying the principles of the System of Environmental-Economic Accounting (SEEA). Like the TSA as applied in measurement of the economic dimension, the SEEA is a system that adapts the accounting

concepts and definitions of the System of National Accounts. Measurement 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, through the use of consistent definitions and classification of economic units.

- 3.7. To cover all of the relevant aspects of measurement environmental sustainability in relation to tourism the following approach is applied. Section 3.2 discusses general considerations in measuring the environmental dimension of tourism, in particular considering how to identify the tourism contribution or share of relevant environmental flows. Then sections 3.3 – 3.6 discuss in turn approach to the organization of data concerning each of the four broad themes listed above: use of natural resources, use of the environment, impacts and pressures and responses of tourism industries.

3.2. General considerations in measuring the environmental dimension of tourism

- 3.8. This section discusses a number of general considerations in measuring the environmental dimension of tourism. These concern the geographical scale and frequency of compilation of data; the estimation of the tourism share of environmental flows; the distinction between the production and consumption perspective; the allocation of environmental flows associated with transport activity; and estimating indirect environmental flows.

3.2.1. Geographical scale and frequency of compilation

- 3.9. The measurement described in this chapter is presented in terms of compilation for annual frequencies and at national level. While this is a suitable basis for describing the general approach to measurement, it will be necessary in many instances to apply these measurement approaches at sub-national scales and for sub-annual frequencies. Conceptually, the same considerations will apply but there will be additional data and compilation issues to consider.
- 3.10. A focus on annual and national level measurement will likely suit the needs for national and international policy and reporting (for example, for annual reporting by government agencies or reporting on progress towards the Sustainable Development Goals (SDGs) indicators). However, for sustainable tourism management and analysis, this level of detail will usually not be sufficient. For example, at destination scale some important ecosystems may be under pressure that could be intensified by tourism – or indeed where visitors might provide finance resources that could fund ecosystem remediation¹. Ideally, all of these more specific local issues might be recorded following the measurement approaches described in the SF-MST but in other instances more bespoke recording is likely to be warranted such that the information is most useful for management, and hence complementary recording approaches may be needed.

¹ e.g. via Payments for Ecosystem Services; see <https://www.oecd.org/stories/ocean/payments-for-ecosystem-services-programmes-540de426> for example

- 3.11. Notwithstanding the above, a national level dataset will provide a base for the co-ordination of information at finer levels of detail and this will, in turn, support a more integrated understanding of tourism activity. In this sense, the SF-MST provides the basis for the recording and comparison 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 for all data users.

3.2.2. Estimating the tourism share of environmental flows

- 3.12. Generally environmental flows are recorded in relation to the total flow for a given activity, for example total water use by restaurants, irrespective of what share of that activity reflects tourism activity. Since not all of the output of a given industry is purchased by visitors, not all environmental flows for the tourism industries should be attributed to tourism. Thus, 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 may be attributable to tourism. This section discusses the relevant issues.
- 3.13. As with economic data, the available statistical data on environmental flows (such as flows of water, energy, GHG emissions and waste) does not make explicit estimates for tourism related flows, although environmental flows related to tourism activity are embedded in the estimates. In theory, data on environmental flows related to visitor activity 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. For example, it may be possible for a hotel to record the total water used by visitors. However, while some detailed information may be available in some cases (and should be used when possible), data may not be available on a broad and regular basis to support compilation of official statistics.
- 3.14. In the absence of directly collected data, the recommended approach is to calculate the total environmental flow at the industry level (e.g. restaurants) and then apply an appropriate tourism ratio to provide an estimate, for each industry, of the proportion of an environmental flow (water, energy, GHG emissions, solid waste, etc.) attributable to visitor activity. This provides an estimate of the tourism share of that environmental flow. 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 tourism ratio of the restaurant industry.
- 3.15. Three different tourism ratios may be applied:
- output ratios - calculated by dividing an industry's output sold to visitors by its total output
 - value added ratios - calculated by dividing an industry's value added attributable to sales of output to visitors by its total value added
 - intermediate consumption ratios - calculated by dividing an industry's intermediate consumption for the production of output sold to visitors by its total intermediate consumption.

- 3.16. In concept, all of these ratios can be derived from a TSA (TSA:RMF Table 6) and should be compiled based on the standards described in the TSA:RMF. If a TSA has not been compiled, the ratio may be derived using a combination of visitor expenditure data and national accounts industry data.²
- 3.17. Some care should be taken in the use of the different tourism ratios for different environmental flows. Output ratios 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 ratios are best applied for those environmental flows that are inputs to production (e.g. energy).
- 3.18. Value added ratios can be used when output or intermediate consumption ratios are not available. Using value added ratios may be relatively more affordable to compile, 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 ratio and the ratio concerning output or intermediate consumption. At the same time, where output and intermediate consumption ratios are quite high (such as for accommodation, where tourism represents a large share of the total industry) then it is likely that the value added ratio is also high. In this case, value added ratios may be good proxies for both output ratios or intermediate consumption ratios.
- 3.19. The more general assumption in estimating tourism shares is that the production function (i.e. the mix of outputs and inputs) for an industry is the same for visitors and non-visitors. For example, for the restaurant industry it would be assumed that the amount of water used to make a restaurant meal is invariant between visitors and non-visitors. In concept, this assumption is likely to be reasonable provided that information is available at a relatively fine level of industry detail. 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. This same challenge is equally evident in the measurement of economic variables. Thus, for MST compilation purposes it will be important for those involved in measuring economic and environmental domains to work collaboratively.

3.2.3. Distinguishing the production and consumption perspectives

- 3.20. The previous section focused on the measurement of environmental flows from the perspective of tourism industries in a given country or destination, i.e. a production perspective on the measurement of environmental flows related to tourism. A complementary approach is to consider the measurement of environmental flows from the perspective of visitors, i.e. a consumption perspective.
- 3.21. These two perspectives will overlap to the extent that visitors purchase goods and services from tourism industries located in a given country or destination, that is assuming that adjustments are made such that the production perspective reflects only flows related to

² See paper on compiling measures of Tourism Direct GDP in the absence of a TSA, available at: https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2022-12/Measuring_TDGDGP_2.pdf

visitors. However, a consumption perspective will be larger to the extent that visitors generate environmental flows either on their own account or by purchasing goods and services from outside the given country or destination.

- 3.22. Examples of additional flows that would be included in a consumption perspective of visitors to a given country or destination are:
- Environmental flows related to visitor's use of goods, including owned, leased and rented goods (e.g. energy and GHG emissions associated with the use of cars or recreation equipment)³
 - Environmental flows related to visitors staying with friends and relatives and using holiday homes and rented/leased dwellings (e.g. water use and fuel for heating)
 - Environmental flows of residuals (e.g. waste) related to visitor's consumption of goods or undertaking of activities. The residuals may be flows directly to the environment or where the collection and/or treatment of the residual flow is not undertaken by a business supplying goods or services directly to the visitor⁴
 - Environmental flows related to expenditure by a visitor on a trip that is not purchased from businesses resident in the country or destination being visited – i.e. in relation to pre- and post-trip expenditure.
- 3.23. The estimation of these additional flows related to visitors to a given country or destination will require the collection of data both directly from visitors and from businesses in other countries. The need to collect additional data will depend on the analytical and policy requirements. A specific example of significant importance to tourism is the recording of environmental flows associated with transport activity since this data will commonly relate to businesses outside the country or destination being visited and hence would not be captured in a production perspective. The allocation of environmental flows associated with transport activity is considered in the next section.

3.2.4. Allocating environmental flows associated with transport activity

- 3.24. 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, both within and between countries, the allocation of relevant environmental flows to specific countries and destinations is not as straightforward as for other types of activity.
- 3.25. 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 an economic accounting perspective in MST is to consider that these conventions apply in the case of environmental flows. In other words, the environmental flows recorded in the tables presented in this chapter attribute the flows to the residence of the business catering to visitors, not to the residence of the visitors consuming those services/goods.

³ Consistent with SEEA Central Framework 3.129.

⁴ Flows where the collection of the residual is part of a purchase by the visitor (e.g. waste collected by hotels) is included in the estimates concerning tourism and non-tourism industries)

- 3.26. To discuss the appropriate treatment with respect to transport activity, consider the example of the allocation of GHG emissions from a British Airways plane travelling between New York and Paris and carrying passengers residing in different countries. Applying the residence principle, the GHG emissions should be attributed to the country of residence of the aircraft operator, in this case assumed to be the United Kingdom. This reflects a production perspective and is useful in presenting a clear way of recording the relevant direct flows and systematically quantifying the level of, in this case, GHG emissions. It is particularly relevant where the focus of analysis is on domestic tourism industries and their environmental performance.
- 3.27. However, the consumption perspective introduced above suggests complementary approaches to measurement are required. Thus, a second step may be taken to allocate the total GHG emissions from the flight to the countries of residence of the passengers on the aircraft. This same complementary allocation approach may be applied for other environmental flows.
- 3.28. In practice, there may be substantial measurement challenges in applying this conceptual approach. In particular, it may be difficult to reconcile data about visitors (and by construction their residence) with data about the residence of the operator of the aircraft (or other transport vehicle). An ideal way forward, in the case of air transport, would be the development of international datasets⁵, which use an agreed approach to attributing environmental flows according to the residence of visitors.
- 3.29. A pragmatic interim solution, would be to assume an average environmental flow per passenger and combine this with information on the number of trips and/or distance travelled. Such an approach will not however capture differences in rates of environmental flows across operators, which might be a significant factor, depending for example on the age of the equipment/fleet, fuel efficiency and type of fuel used.

3.2.5. Estimating indirect environmental flows

- 3.30. The focus of measurement described in the SF-MST is on the measurement of direct flows. For the analysis of the economic dimension this involves a focus on the interaction between visitors and tourism businesses. The same principle is applied in the recording of data concerning environmental flows – i.e. the focus is on the direct link between the environment and visitors or between the environment and tourism businesses. The focus on direct flows helps to ensure that there is no double counting of data and to support comparability across locations and countries.
- 3.31. However, beyond the measurement and attribution of direct environmental flows as discussed so far, there may be strong analytical and policy interest in understanding the environmental connection between visitor activity and the associated supply chains that provide goods and services to visitors.⁶ In principle, by using the information on the relationships between inputs and outputs of goods and services reflected in standard

⁵ For example, the OECD has advanced work to produce global estimates of air emissions by country based on the SEEA and aligned to the residence principle explained here, using the international database of the ICAO

⁶ There is related interest in tourism supply chains from a purely economic perspective as well, for example the OECD work on trade in value added for tourism.

economic supply and use tables, it is possible to determine the links between the environmental flows of specific production processes along the whole supply chain and the outputs that are ultimately consumed by visitors.

- 3.32. For example, it would be possible to estimate the quantity of water embodied in the growing of food that is ultimately consumed by visitors. The same logic could be applied for other environmental flows such as energy and GHG emissions. Such derived estimates are often referred to as environmental footprints.
- 3.33. The techniques of attributing environmental flows to categories of final demand are well established and widely applied. The SEEA Applications and Extensions introduces 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 is 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 to further differentiate by types of visitor.⁷ However, the recording of information about these indirect connections should be considered an analytical application of the SF-MST rather than a standard output of the statistical framework itself.

3.3. Measuring the use of resources in tourism activity

3.3.1. Introduction

- 3.34. As introduced in section 3.1, tourism will require inputs from the environment to produce the goods and services supplied to visitors. The focus in this section is describing the ways in which information about these inputs may be recorded in a standardized way that in turn can be used to support the derivation of aggregates and indicators showing the extent of dependence on natural resources.
- 3.35. The measurement of two natural resource inputs is described here, water resources and energy. In both cases, the measurement concerns the direct uses of water and energy by tourism businesses and visitors as an input to production processes. In the context of water this is commonly referred to as consumptive use of water and occurs as a result of water being abstracted from the environment 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, watering golf courses, etc.
- 3.36. Tourism 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.). The organization of data concerning passive uses of water are discussed in the following section. Issues concerning the quality of water are considered in the context of passive uses of water.

⁷ Eurostat makes available footprint calculation tools (<https://ec.europa.eu/eurostat/web/environment/methodology>).

3.3.2. Measuring water resources used in tourism

- 3.37. Water resources are an essential input to the operation of many tourism activities. For the assessment of environmental sustainability, two aspects are relevant (a) the level of water use by tourism activities; and (b) the availability of water. Since the level of water availability can vary significantly by destination it is recommended that measurement of water use and water availability be undertaken at the catchment or watershed scale. This allows the environmental context to be appropriately taken into account. Indeed, it is highlighted that high levels of water use (e.g. per visitor) may be sustainable if there are associated high levels of water availability. In the context of assessing the sustainability of tourism, it would be appropriate to focus only on those catchments where there is a significant connection to tourism activity.
- 3.38. In addition, both water use and water availability in a given catchment can vary significantly over the course of a year reflecting seasonal variation in both rainfall and visitor arrivals. Indeed, since much tourism activity will take place during summer months when water availability is commonly lower, considerable pressure may be placed on local water supplies if there is not sufficient rainfall or storage capacity to meet visitor demand.
- 3.39. Following the SEEA, two accounts are relevant for the measurement of water resources. 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 (commonly abstracted by water supply companies), and the distribution and use of this water by tourism activities. The account also allows tracking flows of water released by tourism activities including wastewater and return flows to the environment.
- 3.40. Table 3.1 presents an adapted version of the SEEA Table 3.6, the physical supply and use table for flows of water. The table records data on:
- The source of water abstracted for use either from inland water resources (lakes, rivers, groundwater) or other water resources (e.g. sea water for desalination)
 - Who is abstracting the water and then supplying it, most commonly water supply businesses but own-account abstraction and supply is also recorded
 - Who is using water across all industries
 - Who is generating wastewater across all industries and who is receiving and treating the wastewater
 - The return flows of water to the environment to ensure a balance in the table.
- 3.41. Ideally, Table 3.1 should be compiled at catchment level with multiple tables compiled to cover all catchments within a country as required. Where data are not available to provide this level of detail, a national level supply and use table for water may be compiled. If a national level SEEA account for water flows is available covering all industries, compilers should ensure that the tourism estimates are coherent with the economy wide estimates.
- 3.42. Generally, Table 3.1 would be compiled on an annual basis recording the total flows over a single year. However, as noted, seasonal variation in the use of water may be of particular interest in some locations. Although it would be conceptually possible to compile Table 3.1 on a monthly or quarterly basis, it is recommended that in contexts where water use and availability are significant issues that focus be placed on measuring only water use by tourism industries on a monthly or quarterly basis. A table for recording these data is shown below (Table 3.2).

- 3.43. The breakdown of economic activities identified in the tourism industries water flow account highlights the 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 above.
- 3.44. Key indicators concerning water use are average water use per visitor and visitor night, water use per unit of tourism value added and average water use per year relative to water supply at the beginning of each year.

Table 3.1: Tourism water flow account (cubic metres)

		Abstraction of water; Production of water; Generation of return flows										Flows from the Rest of the world	Flows from/to the Environment	Total supply	
		Tourism industries							Water collection, treatment and supply	Sewerage	Other industries	Households			
		Accommodation for visitors	Food & beverage serving	Passenger transport	Culture, sports & recreation	Other tourism ind.	Total tourism ind.								
		Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total				Tsm Total				
Physical supply table for water															
Sources of abstracted water	Inland water resources														
	Other water resources														
Water supply	Distribution of abstracted water														
	Own-use of abstracted water														
Wastewater generated	Wastewater to treatment														
	Other wastewater and re-used water														
Return flows of water generated*															
TOTAL SUPPLY															
Physical use table for water															
Water abstracting industries															
Water use	Use of distributed water														
	Own-use of abstracted water														
Wastewater received															
Return flows of water															
TOTAL USE															

NB: The set of tourism industries has been condensed for presentational purposes.

Table 3.2 Monthly recording of water use and availability (cubic metres)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water use by tourism industries												
Accommodation for visitors												
Food and beverage serving												
Passenger transport												
Culture, sports and recreation												
Other tourism industries												
Water use by all other economic units (incl. households)												
Water availability												
Actual water levels												
Maximum storage capacity												

NB: The set of tourism industries has been condensed for presentational purposes.

- 3.45. The second account for measuring water resources is the **water resources asset account**. As highlighted above, 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.
- 3.46. The appropriate account for this task is the water resources asset account – shown below in Table 3.3 which is an adaptation of SEEA Central Framework Table 5.25. 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.
- 3.47. The water resources asset account provides a structure to record standard hydrological, water balance data. The primary types of water resource of relevance to tourism will be artificial reservoirs, lakes, rivers and streams and groundwater. Depending on the catchment, one or more of these water resources will underpin the supply of water to tourism and other economic units. The entries in the account should relate to the entire catchment – i.e. there is no adjustment to isolate the part of the water resources that pertain to tourism. Thus, additions to the stock of water through precipitation, inflows from other water resources and returns (from economic units) to the hydrological system should be recorded in aggregate. Equivalently, reductions in the stock of water should be recorded in aggregate, in particular the total abstraction of water. It is this aggregate information for the catchment that enables an overall assessment to be made of the balance of water available for both tourism and non-tourism purposes.

Table 3.3: Water resources asset account: Tourism catchments (cubic meters)

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 tourism purposes							
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							

- 3.48. 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.
- 3.49. As noted above, a significant issue in some tourism areas will be the seasonality of tourism activity relative to water availability. 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. Table 3.2 shows a table for compiling the relevant data. In addition, information on the maximum capacity for water storage will be relevant information in assessing the future potential for tourism activity within a region. That is, lower levels of storage capacity may place a constraint on the level of visitor flows that are possible without placing significant pressure on the availability of water for other users (e.g. local residents and businesses). This may be particularly important as weather and climate patterns vary such that rainfall and peak visitor arrivals do not align well.

3.3.3. Measuring energy used in tourism activity

- 3.50. The second significant environmental input into tourism activity is energy. Depending on the tourism activity, this will primarily concern input of energy in the form of electricity or in the form of fuels to power transport equipment. From an environmental sustainability perspective, the focus is on the total energy used and also the source of that energy. Generally speaking, energy from renewable sources (including hydro, solar and wind) are

considered more environmentally sustainable than energy from fossil fuels. In this context, tourism industries can progress towards increased environmental sustainability by (a) becoming more energy efficient, i.e. using less energy per unit of output (e.g. per visitor); and (b) using a greater proportion of energy from renewable sources.

- 3.51. Following the SEEA, to record data on these two aspects of energy use the appropriate account is a **physical supply and use table for flows of energy**. This table contains information on the supply and use of energy by type of energy product including energy from renewable and non-renewable sources. Table 3.4 presents physical supply and use table for energy flows for tourism and is an adaptation of SEEA Central Framework Table 3.5. The table records data on:
- The source of energy from the environment and who is extracting/capturing that energy either as natural resource inputs (e.g. fossil fuels), inputs from renewable sources (e.g. solar, wind, hydro), or other natural inputs.
 - Who is producing energy products and who are the end users of those products, including natural gas, oil, biofuels and electricity
 - The return flows of energy and other residual flows to the environment to ensure a balance in the table.
- 3.52. 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.
- 3.53. In the supply table below, the inputs of energy from renewable sources are recorded in the first section and, since the common use of this energy is the generation of electricity, the use of this energy is recorded against the energy product electricity in the second section of the use table.
- 3.54. Generally, the source of energy used by many tourism businesses, particularly in the form of electricity, will not be within the control of the tourism businesses themselves and rather will be related to economy wide policy and planning concerning energy supply. At the same time, in some locations, it may be relevant to include estimates for the generation of electricity on own-account, for example through the installation of solar panels or the use of generators. Indeed, estimates of changes in the use of energy will be understated if such own-account production is excluded. Since there is a clear potential for energy from renewable sources to be captured at the site level (i.e. reflecting own account energy generation), there may be a need to combine information from different data sources to provide a comprehensive picture of the energy sources used by tourism industries.
- 3.55. For passenger transport activities, there are significant inputs of fuels that are often from non-renewable sources. For some transport activities, particularly rail transport, electrification has been a long-standing energy source and for road transport, technology is gradually being implemented to reduce direct dependence on non-renewable energy. For air and water transport, the transition to renewable energy sources is starting to commence either through electrification (batteries) or through the development of alternative fuels (e.g. through the use of sustainable aviation fuels).

- 3.56. Given this discussion, a key aspect of Table 3.4 is therefore distinguishing between the use of energy products between energy from renewable (e.g. solar energy) and non-renewable sources. The distinction between these sources is defined in the International Recommendations on Energy Statistics.

Table 3.4: Tourism energy flow account (joules⁸)

	Tourism industries							Electricity and gas supply	Other industries	Households	Accumulation	Flows from/to the rest of the world	Flows from/to the environment	TOTAL
	Accommodation for visitors	Food & beverage serving	Passenger transport	Culture, sports & recreation	Other tourism Ind.	Total tourism Ind.								
	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total								
Physical supply table for energy														
Energy from natural inputs														
Production of energy products														
Generation of energy residuals and other residual flows														
TOTAL SUPPLY														
Physical use table for energy														
Energy from natural inputs	Natural resource inputs													
	Inputs of energy from renewable sources of which: Solar,Wind,Hydro													
	Other natural Inputs													
Energy products														
Transformation of energy products - Total														
End-use of energy products by SIEC class														
	Natural gas													
	Oil													
	Biofuels													
	Electricity													
	Other energy products													
Energy residuals and other residual flows														
TOTAL USE														

NB: The set of tourism industries has been condensed for presentational purposes.

⁸ According to the International Recommendations for Energy Statistics (IRES), energy statistics are 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.

- 3.57. It may be relevant to disaggregate energy use by type of visitor to support analysis of varying rates of energy use. In this context, a specific area of interest may be visitors staying with friends and relatives whose energy use while travelling would generally not be captured through tourism industry data collections. For this purpose, data would need to be collected from visitors in relation to their energy use (e.g. what activities they undertook and where they had stayed) and then assumptions made about the likely levels of energy used.
- 3.58. Since energy products (mainly electricity) used by the tourism industry will often be generated at larger regional or national scales and then distributed, it may be of interest to also understand the location of the source of supply, either from another region in the country or to record cases where the tourism industry is dependent on energy supply from other countries, i.e. energy imports. Recording the energy dependence of tourism activity may be an important aspect in assessing sustainability. For this purpose, the supply columns in Table 3.4 may be extended to recognize energy obtained from other countries but it is not likely to be possible to separate out tourism specific flows.

3.4. Measuring the passive use of the environment in tourism activity

3.4.1. Introduction

- 3.59. In addition to the direct use of natural resources as inputs to tourism production processes, the environment plays a fundamental role in providing the locations and associated features to which visitors travel. This “passive” role of the environment can have a significant bearing on many aspects of visitor behaviour and the associated supply of tourism goods and services. As a small example, an attractive river setting may be a key location for visitors for camping, kayaking and swimming and, in turn, may support local businesses that cater to these activities and other businesses, such as camping stores, that supply relevant goods to visitors before they travel.
- 3.60. Following the SEEA, measurement of the environment in these types of contexts involves accounting for environmental assets. The SEEA Central Framework defines environmental assets as “the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.” (SEEA Central Framework, 2.17).
- 3.61. For the purposes of SF-MST, the focus in this section is therefore on organizing data about the environmental assets which
- directly underpin the provision of goods and services to visitors (e.g. land) in the sense that they are owned and/or managed by tourism industries
 - are locations (e.g. national parks, beaches, lakes, rivers, mountain areas including ski resorts) with their associated features (e.g. significant species – gorillas, pandas, fish) where visitors undertake tourist activity
- 3.62. In addition, there will be (i) environmental assets whose quality is impacted negatively by tourist activity, for example through excess visitation or the release of pollutants or wastewater; and (ii) environmental assets that are the focus of restoration or similar activity by tourism businesses. Measurement of these aspects of environmental assets is discussed

in section 3.5 and 3.6. Note that the measurement of environmental assets that provide direct inputs to tourism production processes (e.g. water resources) are discussed in section 3.3.

- 3.63. In some cases, it may be of interest to assess stocks and changes in stocks of resources that indirectly support tourism activity (e.g. soil resources that support agricultural production for food, mineral resources used as inputs to the construction of tourism infrastructure) but these indirect links are better analyzed separately noting that the data organized following the SF-MST is designed to connect directly to the other information required for such analysis to be completed.
- 3.64. In most cases, the services and benefits supplied by environmental assets will be jointly used by visitors and non-visitors. However, the SF-MST does not recommend partitioning environmental assets – for example, by allocating some portion of water resources in a catchment to be “tourism” water resources. Rather, it is recommended to assess the stocks and change in stocks of the environmental asset as a whole and to record data on the tourism and non-tourism uses. In this way a much clearer sense will emerge of the changing capacity of the environmental asset to supply services and benefits into the future.
- 3.65. For local communities, there may be important effects on their health and well-being in cases where tourism activity releases pollutants and wastewater into local ecosystems. The monitoring of environmental assets described here provides an appropriate framework for recording changes in the quality of ecosystems and hence providing a basis for connecting to relevant information on health and well-being outcomes for local communities. These social outcomes are discussed further in the following chapter on the measurement of the social dimension.
- 3.66. The remaining parts of this section describe three aspects in the measurement of environmental assets considered of specific relevance for tourism, namely
 - a. Land
 - b. Ecosystems
 - c. Wildlife and key species

3.4.2. Land accounts for tourism

- 3.67. Following the SEEA, 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.
- 3.68. 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.

- 3.69. 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.
- 3.70. 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 can convey the actual configuration of an area in ways not apparent when looking at a set of accounts in tabular form.
- 3.71. Both land cover and land use accounts are likely to be of interest in measuring the sustainability of tourism, and relevant data may be adaptable to suit tourism purposes. For a given territory (country, region, local 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.
- 3.72. Ideally, accounts for land use will be able to highlight the relative size 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.
- 3.73. 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 cover⁹ 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 identifying various tourism “characteristic” uses of land. 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, protected areas. Table 3.5 presents a tourism land account with proposed land classes in line with these thoughts. The classes represent a melding and adaptation of the interim land use and land cover classifications described in the SEEA Central Framework. A map of these various classes, produced on a regular basis, would provide substantive input to planning and other tourism related discussions.

⁹ Land use reflects both (a) the activities undertaken and (b) the institutional arrangements put in place for a given area for the purpose of economic production or the maintenance and restoration of environmental functions. (SEEA Central Framework 5.246) Land cover refers to the observed physical and biological cover of the Earth’s surface and includes natural vegetation and abiotic (non-living) surfaces. (SEEA Central Framework 5.257)

Table 3.5: 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 (hebeaceous, woody, other)					
Grassland					
Tree-covered areas					
Mangroves					
Shrub-covered areas					
Shurbs 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					
Total area					

NOTE: Proposed that land classes to be refined to highlight tourism specific classes such as beaches, golf courses, camping sites, etc.

- 3.74. Land accounts can be compiled at different spatial scales: global, national, for subnational regions or local destinations, etc. Their compilation will commonly involve the use of satellite data but on-the-ground verification of boundaries between different land classes will be important. 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.

3.4.3. Accounting for ecosystem assets

Introduction

- 3.75. A key type of environmental asset to consider is ecosystem assets. While ecosystems are not new concepts, the logic of fully incorporating ecosystems into an asset and accounting framing is quite recent. In a statistical context, this was first presented in the SEEA Experimental Ecosystem Accounting in 2013 and subsequently adopted as a statistical standard SEEA Ecosystem Accounting in 2021. The ecosystem accounting 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 assets include, but are not limited to forests,

wetlands, mangroves, coastal dunes and beaches, grasslands and savannahs, marine ecosystems (e.g. coral reefs, seagrass), rivers and lakes, urban areas, cropland and pasture, and plantations.¹⁰

- 3.76. Ecosystem accounts organize a wide array of data about ecosystems. This includes data about their extent (or size), their condition (or health), flows of ecosystem services and the monetary value of these services. Each of these elements are summarized in this section. In the context of tourism, organization of these data allows information on visitor activity to be linked to specific ecosystems and in turn to the condition of those ecosystems. The use of ecosystem accounting techniques can also support analysis of the extent to which ecosystems underpin visitor flows and associated measures of tourism activity.

Ecosystem extent

- 3.77. 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 to 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 accounts discussed in the previous section.
- 3.78. 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

- 3.79. 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. In the context of climate change, monitoring changes in condition may be particularly important in tourism areas to have a better understand of whether the current ecosystem context is likely to persist into the future and hence continue to support tourism activity.

¹⁰ The reference classification used for ecosystem types in the SEEA EA is the IUCN Global Ecosystem Typology.

Ecosystem services

- 3.80. 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.
- 3.81. 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.
- 3.82. 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, so-called cultural and recreational opportunities including wildlife watching, hiking, camping, visits to national parks, swimming and other outdoor recreation.

Application of ecosystem accounting to tourism

- 3.83. 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 support analysis of the extent to which the change in condition is a result of tourism activity
 - This could be negative, for example where tourism activity leads to poor quality water due to lack of sewage treatment, or where there is a 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.
 - Record the flows of visitors to ecosystems and assess the dependence of tourism activity on specific ecosystems or features within those ecosystems (e.g. waterfalls, rock formations).
 - Assess the capacity of ecosystems to continue to support visitation while maintaining the ecosystem's condition.
- 3.84. Overall, the ecosystem accounts that might be developed would provide a framework for organising information on the following topics and themes that are commonly of policy interest in the context of tourism

- protected areas
 - biodiversity and iconic species
 - water quality
 - beach, seas water and reef quality/condition
 - air quality.
- 3.85. 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).
- 3.86. 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.
- 3.87. 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.
- 3.88. 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.
- 3.89. In the first instance, ecosystem accounting in physical terms would be a likely focus. However, there may be interest in estimating the monetary values of ecosystem services and related ecosystem assets. This can be done using various non-market valuation techniques as described in SEEA EA Chapter 9. The fact that much information on tourism can be attributed to specific destinations may provide data to support direct valuation of ecosystem services. This can also help to connect and embed the monetary value of tourism in environmental conservation efforts. There is a rapidly growing body of work in ecosystem accounting with more than 50 countries involved in ecosystem accounting projects or initiatives.¹¹
- 3.90. Finally, it is noted that the spatial accounting for ecosystem assets envisaged in the SEEA EA, 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

¹¹ 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

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.

3.4.4. Accounting for wildlife and key species

- 3.91. Asset accounts may be adapted or developed for selected species of wild animals that are relevant or related to tourism activity. For example, animal species that provide the focus for wildlife watching and related activities in national parks (non-consumptive uses), and species that are a focus for recreational hunting and fishing (consumptive uses) may be relevant and underpin an important share of tourism activity. Asset accounts may also be considered for species that are considered emblematic to the territory or otherwise considered a priority, and for which tourism might either pose a threat or an opportunity for their conservation and protection.
- 3.92. Recording changes in the stock of such key species over time supports an understanding of the environmental assets supporting tourism activities, as well as the effects of tourism activity. Related areas of measurement such as measurement of biodiversity and protected areas are considered under the topic of ecosystem accounting.
- 3.93. A basic, but potentially useful, asset account would focus on numbers (abundance) of selected 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 3.6 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 3.6: Stylized 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										
:										

- 3.94. Information of this type for key species may well be readily available and accessible to managers of national parks and protected areas or from active research programs. The relevance of this type of information in the context of tourism activity has been highlighted in a recent UNWTO briefing paper Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa (UNWTO, 2015).
- 3.95. 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. Consequently, for a more complete recording of information it will be appropriate to compile both species accounts and ecosystem accounts for a given location or country.

3.5. Measuring pressures and impacts on the environment due to tourism

3.5.1. Introduction

- 3.96. An important discussion point concerning the environmental sustainability of all economic activity is the negative impact that the activity has on the environment. Limiting or mitigating these impacts is a common policy focus that emerges through, for example, policies to limit greenhouse gas emissions, regulate land development and develop the circular economy.
- 3.97. From a tourism measurement perspective, the focus is on two aspects. First, measurement of the pressures exerted on the environment by tourism. Second, measurement of the actual changes in the quality of the environment that arise as a result of these pressures. To organize the relevant data the following groupings are relevant:
- Pollution and emissions as a result of the activity of tourism businesses in supplying goods and services to visitors
 - Pollution and emissions by visitors direct to the environment
 - Changes in land use due to the expansion of tourism activity resulting in a loss of natural ecosystems
 - Changes in the quality of natural ecosystems including losses in species and biodiversity.
- 3.98. This section discusses the first two groupings of information, i.e. having a focus on recording flows of pollution and emissions, specifically GHG emissions and flows of solid waste. Data concerning changes in land use are organized following the land accounts described in the previous section. Data concerning changes in the quality of natural ecosystems are organized following the ecosystem condition accounts described in the previous section.

3.5.2. Measuring GHG emissions for tourism

- 3.99. To record GHG emissions for tourism a physical supply and use table is used (Table 3.7). It presents information on the generation of GHG emissions by tourism industries by type of GHG emissions and is adapted from the air emissions account in the SEEA Central Framework (Table 3.7). It records both total GHG emissions for the tourism industries and also the share that is attributable to tourism based on the use of tourism ratios as discussed in section 3.2.

- 3.100. In general, the generation of GHG emissions will be “used” (received) by the atmosphere directly. Of particular interest will be the GHG emissions associated with transport. In this regard the method for attributing emissions to individual countries, particularly in the case of air transport is of interest. This is discussed in more detail in section 3.2. In this account, households are recorded as generating emissions in the case of their use of their own vehicles or rental vehicles for tourism activity (following the treatment in the SEEA Central Framework (para 3.129).
- 3.101. In general, progress towards environmental sustainability would be indicated by lower total GHG emissions and hence this will be a key indicator. In addition, to support an understanding of the trends in GHG emissions indicators of GHG per visitor and GHG per unit of tourism direct GDP will also be important. The understanding of trends in GHG emissions will relate directly to the sources of energy used by tourism industries. To the extent that there is a movement towards using energy from renewable sources as recorded in the energy physical flow account, this should help support progress towards lower aggregate GHG emissions.
- 3.102. As described in section 3.2, there may be particular interest in the derivation of aggregates and indicators from both production and consumption perspectives concerning GHG emissions. The relevance of each perspective will depend on the context for the indicator. Thus, from a destination perspective there may be interest in both (i) understanding the GHG emissions of tourism businesses operating at the destination; and (ii) understanding the total GHG emissions of visitors to that destination, i.e. including emissions generated pre- and post trip and while travelling.

Table 3.7: Tourism industries GHG emissions account (tonnes)

Tourism industries GHG emissions (Mass units - '000 tonnes)															
Supply table for GHG emissions															
Type of substance	Generation of emissions										Accumulation Emissions from landfill	Flows from the Environment	Total supply of emissions		
	Tourism industries						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			
Carbon dioxide															
Methane															
Dinitrogen oxide															
Nitrous oxides															
Total CO2 equivalent															
Use table for GHG emissions															
GHG Emissions released to the environment (CO2 equivalent)													Flows to the Environment	Total use of emissions	

NB: The set of tourism industries has been condensed for presentational purposes.

3.5.3. Account for solid waste for tourism

- 3.103. To record flows of solid waste for tourism a physical supply and use table is used – Table 3.8. This table contains information on the generation, collection and disposal of solid waste by type of waste following the general structure of the physical supply and use table for solid waste presented in the SEEA Central Framework Table 3.9.¹²

¹² Note that Table 3.8 does not include a recording for solid waste products, i.e. solid waste that is subsequently sold.

- 3.104. Physical supply and use tables for solid waste would generally be compiled at a national level and at annual frequency. However, accounts for specific municipal areas in which tourism is a significant activity will be of relevance in many contexts. As well, measurement at sub-annual frequencies to monitor peaks in waste generated by tourism activity may be relevant. Where municipal level or sub-annual accounts are compiled, the structure of the table to record the data is the same as for Table 3.8.
- 3.105. 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 included in Table 3.8 are those deemed most relevant for tourism industries and for the activities of other industries that meet visitors' demand.¹³ It may be of interest to compile estimates of the total quantity of solid waste, irrespective of type.
- 3.106. The focus in Table 3.8 is on situations in which the solid waste generated is collected by tourism industries (e.g. hotels and restaurants) and hence, following the SEEA Central Framework, is deemed to be generated by these industries. There will also be solid waste generated by visitors that is not collected by these industries – for example the collection of solid waste in public parks will include waste generated by visitors. This waste should be recorded in columns for other industries depending on who collects the waste.
- 3.107. Since the collection and treatment of solid waste, including its storage in landfill, is a spatially specific activity, it would be relevant to record information on the generation of waste within tourism relevant regions and locations as well as recording the areas to which this waste is sent and stored.

Table 3.8: Tourism solid waste account (tonnes)

Physical supply table for solid waste										Flows from the rest of the world	Flows from the environment	Total supply
Generation of solid waste										Imports of solid waste	Recovered residuals	
Tourism industries							Other industries	Households				
Accommodation for visitors	Food & beverage serving	Passenger transport	Culture, sports & recreation	Other tourism ind.	Total tourism ind.							
Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total					
A. Generation of solid waste residuals												
Metallic waste and other recyclables												
Discarded equipment and vehicles												
Mixed residential and commercial wastes of which: Food waste												
Other wastes												
Total solid waste												
Physical use table for solid waste										Flows to the rest of the world	Flows to the Environment	Total use
Intermediate consumption; Collection of residuals										Exports of solid waste		
Waste collection, treatment and disposal Industry							Other industries	Households				
Landfill - local	Landfill - other national	Incineration	Recycling and reuse	Other treatment	Total							
Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total	Tsm Total					
C. Collection and disposal of solid waste residuals												
Total solid waste												

- 3.108. In general, progress towards environmental sustainability would be indicated by lower total flows of solid waste and hence this will be a key indicator. In addition, to support an understanding of the trends in solid waste, indicators of solid waste generated per visitor

¹³ The general, economy-wide categories of solid waste are described in Annex 1 of the SEEA Central Framework.

and solid waste generated per unit of tourism direct GDP will also be relevant. Depending on the focus of analysis, indicators concerning specific types of waste may be derived for example concerning food waste. As there is an increasing trend towards recycling and reuse, including for food waste, through the use of alternative waste collection approaches (e.g. special bins, deposit schemes on glass bottles), another indicator that could be compiled is the ratio of recycling and reuse to total waste generated.

3.5.4. Other environmental flows

- 3.109. Beyond the accounts for GHG emissions and solid waste described here there may be other residual flows of interest in particular countries or locations. For example, flows of pollutants to water and air might be of importance in some contexts. The general principles of accounting for these types of flows as described in the SEEA Central Framework and as applied here for MST can be readily applied.
- 3.110. In the case of accounts for various pollutants, it is likely to be of relevance to combine measurement of these flows with measurement of the changing quality of associated ecosystems, for example coastal and marine areas, rivers, and local airsheds. These changes in quality can be recorded using the ecosystem condition account introduced above. A further extension may be considered in terms of collating data on pollution and emissions by other industries that have a detrimental effect on the quality of ecosystems on which tourism activity is dependent. Again, the ecosystem accounting framework provides the means to consistently record the relevant information.
- 3.111. Overall, the combination of data on stocks (i.e. quality of ecosystem assets) and flows (i.e. pollutants and emissions) is likely to provide a more complete information base for assessment and monitoring of the policy responses. It is further noted that there is no requirement that such measurement be undertaken across the whole country but rather that measurement in different locations within a country where pollution issues are apparent is appropriate.

3.6. Measuring activities of tourism industries aimed at improving environmental outcomes

3.6.1. Introduction

- 3.112. The final area of measurement concerning tourism's link to the environment concerns the activities and responses that tourism industries and visitors undertake to improve environmental outcomes. The SEEA Central Framework outlines a range of concepts, definitions and treatments related to identifying the relevant information within the scope of standard national accounting system. There are two key aspects of relevance to measuring the environmental sustainability of tourism activity.
- 3.113. The first aspect concerns recording environmental *transactions* which includes (i) expenditures on environmental activities, i.e. those activities whose primary purpose is environmental protection or resource management; (ii) environmental taxes; (iii) environmental subsidies and similar transfers and (iv) payments for the use of natural resources.

3.114. The second aspect concerns *employment* in environmental activities which covers measures of employment (e.g. jobs or full time equivalent) in tourism industries where people are employed to undertake environmental protection or resource management activity. The following sections discuss the measurement of these two aspects.

3.6.2. Environmental transactions related to tourism

3.115. 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 can be developed that show the response of tourism industries to environmental challenges both in absolute terms and relative to other sectors. Economy wide definitions for environment transactions are provided in the SEEA Central Framework (Chapter 4).

3.116. Following the details of the SEEA Central Framework, the SF-MST identifies environmental transactions where they involve tourism industries. Such information can support an improved understanding of responses to environmental issues from a tourism perspective. For the purposes of MST, it is appropriate to consider extensions to TSA:RMF Table 5 (Production accounts of tourism industries) to record the entries shown in Table 3.9 below.

3.117. The first row of the table records data on total expenditure on environmental goods and services, i.e. products that are produced, designed and manufactured for the purposes of environmental protection or resource management. The total expenditure will include both (i) amounts paid to other businesses for the supply of environmental goods and services and (ii) expenditure to produce environmental goods and services within a tourism business, i.e. own account production. This expenditure will include, for example, wages and salaries paid to employees who undertake environmental activities.

3.118. There is a range of environmental taxes that may be paid by tourism industries and these should be recorded in the table following the definitions in the SEEA. Payments for permission to use environmental assets generally concern payments for the rights to extract resources (e.g. minerals, timber, fish) but may be payable in relation to some tourism activities, for example payments to be able to have access to travel within and across restricted or private property.

Table 3.9: Environmental transactions related to tourism (to be finalized)

3.6.3. Employment in environmental activities

3.119. Building on the framing of employment in tourism provided in Chapter 2, the focus in this section is on the description of approaches to the measurement of employment specifically in environmental activities in tourism characteristic industries. The relevant underlying statistical guidance is provided in the *Guidelines concerning a statistical definition of employment in the environmental sector and green jobs* (ILO, 2013c) endorsed by the 19th International Conference of Labour Statistician (ICLS) in 2013. These guidelines provide definitions of the main concepts, measurement methods and potential data sources.

Following the adoption of the guidelines, the ILO has developed two modules and supporting material for collection information on employment in the production of environment outputs and in environment processes, for the inclusion in the ongoing Labour Force Survey and Establishment surveys (ILO, 2017).

Figure 3.1: Employment data for assessing the three dimensions of sustainability of tourism – to be developed building on table from Stoevska, 2019

- 3.120. The guidelines define the environmental sector as comprising all economic units that carry out environmental activities, where those activities are defined following the SEEA Central Framework as economic activities whose primary purpose is to reduce or eliminate pressures on the environment (environmental protection-EP) or to make more efficient use of natural resources (resource management-RM). (ILO, 2013c). Using this scoping, employment in environmental activities comprises all employment activities in the production of environmental goods and services.
- 3.121. The measurement scope includes workers whose duties involve making their establishment's production processes more environmentally friendly or to make more efficient use of natural resources. A distinction can thus be made between employment in the production of environmental goods and services for consumption by other economic units, i.e. employment in production of environmental outputs, and for own-consumption by the economic unit in which the activity is performed.
- 3.122. The concept of employment in environmental activities is closely associated with the concept of green jobs. Following the ILO guidelines, green jobs are defined as a subset of employment in environmental activities that also meets the requirements of decent work (e.g. offer adequate wages, safe conditions, workers' rights, social dialogue and social protection). This definition includes jobs held by persons in an establishment during a given reference period, whether or not it was their main or a secondary job. The measurement of decent work is discussed in Chapter 4 on the measurement of the social dimension.
- 3.123. To record data on employment in environmental activities, it is recommended that extensions be applied to TSA:RMF table 7 to identify the total number of jobs in each tourism industry that are considered to be primarily for the purpose of either environmental protection or resource management. An adjustment may further be made to recognize a tourism share of the employment level.
- 3.124. In practice, and based on experience in the measurement of economy-wide employment in environmental activities, it is likely that the number of jobs of this type in tourism industries is relatively small. A similar conclusion would apply to the measurement of green jobs. Thus, notwithstanding the conceptual merit, compilers should carefully consider the situation in their context before undertaking measurement activity.
- 3.125. Consequently, in understanding the response of tourism industries to environmental challenges, it may be of greater interest to collate data on expenditure made by tourism industries on environmental goods and services as described in the previous section. These expenditures will implicitly capture the employment associated with the supply of environmental protection and resource management activities by other economic units who are likely specialists in the supply of such services.

4. Measuring the social dimension

4.1. Introduction

- 4.1. The social importance and effects of tourism are key to assessing its overall sustainability. Tourism involves engagement between visitors and other people and their communities and culture. While this reveals the potential for intercultural exchange, inclusion, and empowerment it also highlights the need to safeguard communities' cultural heritage and ensure awareness of the potential negative effects of tourism on day-to-day life. As well, the supply of tourism goods and services commonly requires direct participation of local people in their roles as employees and business owners and hence tourism can provide many opportunities and support livelihoods at the community level. Finally, governance of tourism at local, regional and national levels will be critical to the success of tourism and its sustainability.
- 4.2. In a society wide setting, measurement of different themes of the social dimension has been long standing practice, covering measures of, among many things, health, education, income distribution and poverty, housing, crime and safety and overall well-being. Further, this measurement is often undertaken for a range of population groups (including children, the elderly, women, indigenous peoples, ethnic and religious minorities and people with disabilities). Unfortunately, however, the level of harmonization and co-ordination of data across these various social themes is much lower compared to the economic and environmental dimensions. Indeed, there is no agreed overarching framework that places these social themes in a single context or, more importantly for the SF-MST, in a single context which combines the social, economic and environmental dimensions of human activities and conditions, providing a conceptual basis for organizing suitable data to support assessment of sustainability.
- 4.3. Consequently, determining the scope of any assessment of the social dimension has been a matter of expert judgement for those involved in any given measurement project. This may be appropriate for each assessment but, without an overarching framework, there is limited potential to compare the state and trends in the social dimension between different assessments, in different destinations. Further, for an individual project, there is much less potential to understand what should be incorporated and what might be missing.
- 4.4. Given the lower level of harmonization and co-ordination of measurement across these various social data, SF-MST cannot use the same approach as used for the economic and environmental dimensions where existing statistical and accounting frameworks have been integrated. Thus, to provide a conceptual framing for the organization and presentation of data on the social dimension, this chapter combines and adapts a number of existing perspectives on measurement of the social dimension. The framing is not based on a strict application of a multiple-capitals approach. However, it retains other features of such an approach by using a narrative of stocks and flows, as appropriate, ensuring links to other dimensions can be described coherently and providing a comprehensive coverage of relevant themes.

4.2. Statistical framing for the measurement of the social dimension

4.2.1. Introduction

- 4.5. The primary purpose of providing a statistical framing, as outlined in Chapter 1, is to support comparability of data and indicators, in essence establishing a common language among data compilers and users. The main challenge in the social dimension is determining the appropriate scope of measurement, i.e. which measurement themes should be included in scope and how should they be considered in relation to each other. The purpose of this section is to describe the key components that can underpin a statistical framing for the social dimension and then show how these components can be combined to provide a practical measurement framework that support assessment of tourism's sustainability.
- 4.6. Traditionally, the main approach that has been used for the development of indicators of the social dimension has been process driven rather than conceptual in nature. It involves groups of stakeholders, at local, national or international level, convening to discuss the most relevant themes for an assessment at that level. The selection of themes and indicators within these processes will consider the relevance of the tourism policies in place, tourism planning requirements, host community's concerns, data availability, and other issues. Positively, there is often a reasonable commonality in the themes that emerge from these different processes. However, while there is often commonality in themes, there is usually significant variation in the selection and definition of indicators. Consequently, assessment exercises that seem to be comparable in terms of themes are often not comparable.
- 4.7. The ideal approach from a statistical perspective is to have an agreed conceptual scope and then proceed to measure the components within that scope in a systematic way. However, because at present there is no overarching statistical framework for the social dimension that can be applied in the case of tourism, a combination of the process-based approach and conceptual approach is adopted here. That is, a general conceptual framing is described and, within that framing, a wider discussion with relevant stakeholders has been undertaken to establish an agreed set of measurement themes.
- 4.8. To commence the design of the general conceptual framing, two conceptual components of the social dimension are combined:
 - i. The different *perspectives* on the social dimension of tourism, primarily that of visitors, the host communities, tourism businesses and government.
 - ii. The different *concepts* used in the description of the social dimension, including social capital, social inclusion and exclusion, social equity and welfare, workers' rights, social cohesion, empowerment and wellbeing.
- 4.9. Having integrated these two conceptual components, the general conceptual framing is applied by considering three measurement components namely; the relevant spatial scale, the different population groups and the various measurement themes. Ultimately, the combination of these conceptual and measurement components aims to place relevant data into a common context, thus assisting compilers to make decisions on the data to be collected and organized and for users to interpret the range of indicators.

4.2.2. Perspectives on the social dimension in tourism

- 4.10. In order to appropriately capture the various aspects of the social dimensions, it is important to consider the different perspectives of those involved in tourism. Four perspectives are relevant in the measurement of sustainability: the visitor, the host community, tourism businesses and government. Each represents a different way in which people engage with tourism, either directly or indirectly and a complete framing of relevant indicators will require each of these perspectives is considered. In addition to these core perspectives, it is important to consider the views of both current and future generations.
- 4.11. The **visitor perspective** can be separated into the social dimension at the place/s visited and within their usual environment at home. Key features of the social dimension will include visitor expectations, perceptions, experiences and engagement in relation to a destination (e.g. expectations and experiences of local culture, consumption of local products, health, crime, congestion, poverty, issues of accessibility).
- 4.12. Within their usual environment, it will 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, i.e. the extent to which potential visitors experience limited access to tourism products (e.g. due to income/cost constraints, ethnicity, accessibility, age group, gender, restrictions imposed upon LGBTIQ+).
- 4.13. 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, uses of resources, such as water, land, access to health care, education, housing, etc.) due to tourism development. As well, host communities are usually the primary source of inputs to the production of tourism goods and services, particularly labour inputs, but also local food and business services. Generally, it is difficult to separate out the host community perspective from the general starting point for the assessment of tourism's sustainability being the places visited. However, the intention here is that the host community perspective reflects the expectations and experience of tourism for those people living in and for those (tourism and non-tourism) businesses operating in the host communities visited.
- 4.14. The **tourism businesses' perspective** is relevant to understanding the context in which the production of tourism goods and services takes place. This perspective should be considered broadly to also encompass the extent to which the economic benefits of tourism are shared locally and the extent to which vulnerable and disadvantaged groups are included in the tourism value chain. In addition, depending on the context, tourism businesses may include small and large businesses, and both for-profit and community-based organisations that support the supply of tourism goods and services. A wide conception of tourism business should be applied.
- 4.15. It is noted that the engagement of tourism businesses in societal advancement should go beyond the Corporate Social Responsibility that we have known so far. The SF-MST framework can provide support for the private sector to take a leadership role in measuring its social impacts within the communities in which businesses operate. For example, measurement of job and enterprise creation (SMEs), community grants, infrastructure and facilities may help tourism businesses improve their CSR and ESG related strategies.

4.16. The **government perspective** is relevant in understanding the role of policy-makers at local, regional and national scale in setting the enabling context for sustainable tourism. Specific themes that emerge in this perspective concern the extent to which local communities participate in tourism decision making, the management of infrastructure, the setting of regulations concerning visitor activity and tourism business operation, and the role of public-private-community partnerships in destination management.¹

4.2.3. Concepts for the measurement of the social dimension of tourism

4.17. Given the multiple capitals approach used in the SF-MST, the conceptual focus is the concept of social capital. Social capital is generally conceived as the network of institutions and norms (both formal (e.g. public institutions and local associations) and informal (e.g. family and community relationships)) that “glue” society together (UNECE, 2015)². Social capital is also defined by the OECD as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups”³.

4.18. For assessing sustainability using the concept of social capital, two primary measurement questions emerge concerning the stocks and flows of the social dimension:

1. To what extent does stock of social capital support tourism?
2. What are the social effects of tourism?

4.19. The first question provides a focus on the dependence of tourism on the society in which it operates. The relevant aspects of social capital in terms of assessing tourism’s sustainability are:

- a. The strength of informal community networks and their participation in, and support for, tourism
- b. The nature of regulations, guidelines and information (e.g. concerning accessibility, tourism business operations, destination features) and the quality (in terms of stability, effectiveness, levels of trust, participation, equality) of formal institutions and governance systems within tourism destinations.
- c. The presence of cultural resources, including local culture and related cultural expressions, heritage sites, as well as creative economy⁴.

4.20. The second question provides a focus on the positive and negative effects that tourism activity can have. A very wide range of different effects will need to be considered to answer this question, often depending on the perspective of interest (i.e. visitor, host community, tourism business, government). The range of different effects considered within SF-MST is discussed under the topic of measurement themes.

¹ See relevant UNWTO criteria for Destination Management Organizations <https://www.e-unwto.org/doi/book/10.18111/9789284420841> and for more detail see the criteria of UNWTO QUEST <https://www.unwto.org/UNWTO-quest>

² UNECE (2015) Conference of European Statisticians: Recommendations on measuring sustainable development https://www.unece.org/publications/ces_sust_development.html

³ OECD Glossary of Statistical Terms <https://stats.oecd.org/glossary/detail.asp?ID=3560>

⁴ A number of cultural aspects of social capital may be identified in the measurement of other capitals (e.g. produced assets of heritage buildings and art galleries or the natural assets of iconic waterfalls and beaches), or in the economic measurement (e.g. the economic activity associated with festivals or employment in businesses focused on heritage). These aspects are also part of the social underpinning elements of the tourism sector.

- 4.21. In the measurement of the social dimension, there will be commonly a close link between social capital and human capital with regard to employment related measures. For the purposes of the SF-MST, the measurement related to tourism labour force and its levels of skills and education is discussed in Chapter 2, in the discussion of the economic dimension, since labour input is essential in the production of tourism goods and services. In the present chapter, the focus is on other employment related themes including decent work, local norms, health and livelihoods.
- 4.22. Conceptually, the description of stocks of social capital and positive and negative social effects applied here relate to other concepts applied in the measurement and analysis of the social dimension such as social inclusion & empowerment, social cohesion, social equity, and wellbeing. While these other concepts are not discussed further, it is anticipated that the information organized through the SF-MST can be used to measure and analyse these concepts.
- 4.23. A general challenge in the application of these concepts is to measure the changes in social capital and benefits. The assessment of whether one social situation is better than another will vary from place to place and will require references to existing social choices. These may include, for example, legislation, charters of human rights and customary laws. The measurement questions outlined above provide a starting point for framing the discussion in this content and the associated social choices but it is fundamental that measurement reflects the social perspectives of the place being assessed.

4.2.4. Combined conceptual framing for measurement of the social dimension of tourism

- 4.24. Based on the discussion above, Figure 4.1 brings together the two conceptual components of the conceptual framing into a single view. In the rows are shown the different parts of the social capital framing encompassing the stocks of social capital and social effects. In the columns are shown the four different perspectives on tourism described above. The application of the framework is demonstrated through the inclusion of a selection of measurement themes. Thus, for example, from a visitor perspective measurement of social effects will encompass data on visitor satisfaction and experience. It is anticipated that all potential measurement themes can be placed within this matrix. In applying this conceptual framing, it will be necessary to select an appropriate spatial scale, (e.g. national, local tourism destination), to determine the relevant population groups of interest, and to select the relevant measurement themes. These measurement components are discussed in the next section.

Figure 4.1: Conceptual framing for measurement of the social dimension, with indicative measurement themes

			SUSTAINABILITY PERSPECTIVE			
			Visitor	Host community	Tourism businesses	Government
CONCEPT	Stock of Social capital	Social networks (informal)	Relationships with host communities	Social networks and levels of trust (within community); Relationship with visitors		
		Institutions and governance (formal)	Availability of information about destination; Visas and related processes	Civic engagement and participation, Information and transparency, Local ownership of projects	Civic engagement, Policy and regulation, Information and transparency	Quality of tourism-related institutions
		Culture	Festivals and events, Cultural tourism products and services; Building understanding/ respect	Protection of heritage, Respect for traditional values	Festivals and events, Cultural tourism products and services	Management of cultural and heritage sites
	Social effects	Satisfaction and experience, Well-being, Accessibility (of facilities), Safety, Access to tourism experiences	Income and wealth distribution, Job creation, Health and housing, Personal security, Child exploitation, Well-being, Perceptions of tourism, Accessibility of infrastructure, Tourism intensity/density	Decent work (working conditions, wages, workplace safety, etc); Gender equality; Accessibility and use of infrastructure by local businesses	Policies and processes to manage negative social effects of tourism (crime, traffic congestion, etc)	

4.25. The conceptual framing described in here is not considered to reflect a general conceptual framework for describing the social dimension of sustainability in all contexts. Rather, it is a practical synthesis of current measurement knowledge designed to promote increased harmonization and comparability in the measurement and discussion of the sustainability of tourism. At the same time, it is expected that the relevance of an integrated conceptual framework to support measurement across social, economic and environmental dimensions will continue to grow through the ongoing development of indicators for the measurement of progress towards the UN SDGs and building on work on sustainability measurement through the United Nations Economic Commission for Europe (UNECE)⁵.

4.3. Spatial scale and population groups for the social dimension of tourism

4.3.1. Introduction

4.26. Applying the conceptual framing described in the previous section requires consideration of three measurement components. This section considers the components of spatial scale and population groups. The third measurement component concerning measurement themes is discussed in section 4.4.

⁵ UNECE (2015) Conference of European Statisticians: Recommendations on measuring sustainable development https://www.unece.org/publications/ces_sust_development.html

4.3.2. Spatial scale

- 4.27. The fact that the sustainability of tourism must be considered with respect to specific locations requires determination of the spatial scale at which data will be collected and organized. An extensive discussion on this issue is provided in Chapter 5 in relation to all dimensions of measurement. Here it is noted that incorporation of data on the social dimension will often focus on the local tourism destination level, a scale that will commonly align closely with the spatial scope of host communities. In general, the discussion in this chapters is presented with respect to the location tourism destination level.
- 4.28. Not all social themes will be relevant in all destinations and hence it will be necessary to apply the conceptual framing here in a targeted way but in each case working from the same general principles and logic. In this way, increased levels of comparability and understanding of assessments can be achieved.

4.3.3. Population groups

- 4.29. To describe the scope of the statistical framing for the social dimension, the different population groups to be reflected in measures of sustainability need to be defined. A list of core population groups is provided below. This does not represent a classification of the population since individuals may be a member of more than one group. The organization of data about selected population groups simply provides different views with which to consider and analyse social information.

<<NB: Discussion and research is required to finalise the core set of population groups to be included in SF-MST, the definitions of each group, and the standard classes to be reported on – e.g. age ranges, income ranges, etc. Wherever possible, existing international statistical guidance will be applied. >>

SF-MST core population groups

- Age
- Income
- Educational status
- Gender
- Children and Youth
- Persons with disabilities
- Indigenous peoples and groups
- Ethnic and religious minorities
- Migrant workers
- LBGTQI+ communities

4.4. Measurement themes for the social dimension of tourism

4.4.1. Introduction

- 4.30. This section describes the measurement themes considered of most relevance in the measurement of the sustainability of tourism. Seven broad categories of social themes are described: social context of host communities, decent work, institutions and governance, perception and experience, accessibility, gender equality and culture tourism.

- 4.31. Within each theme a range of variables may be measured. For example, measures of the number of people, presence or absence of services, quality of assets, ratings and perceptions, government expenditure, income, or number of occurrences may be useful in different situations. Notwithstanding this variation, the chapter describes a core set of variables that should be the focus of measurement within each of the seven broad categories. At the same time, it is expected that in any given context, it will be relevant to consider additional variables to appropriately measure the social dimension. Thus, the core set of variables should not be considered exhaustive.
- 4.32. It is also observed that for a number of themes and variables the allocation to one of the seven broad categories may be the subject of discussion. For example, the category “Perception and experience” includes the theme of host community perception of tourism but this might also be considered relevant within the category “Social context of host communities”. The intention is to ensure that each relevant theme is included once in one of the seven categories and, in that respect, the precise allocation to a category is not critical since these categories are primarily intended to provide a framing for the selection of measurement themes to assess the social dimension, rather than to establish a definitive set of themes for each category.

<<NB: The following seven broad categories and the associated measurement themes and variables require further research and discussion ahead of finalization. With further progress on this finalization process, it is planned to incorporate relevant definitions for core variables and present tables for the organization and presentation of data.>>

4.4.2. Social context of host communities

- 4.33. Of high importance in assessing the sustainability of tourism is the social context of host communities in which tourism takes place. Monitoring changes in social context across different topics and themes can provide a clear picture of the effects of tourism.
- 4.34. In addition, improving the social context around themes such as income distribution and poverty may be specific targets of tourism policy and sustainable development policy more generally. Consequently, it is expected that there would be a close alignment between the types of themes noted here and the Sustainable Development Goals.
- 4.35. The main themes concerning social context for the SF-MST are:
- Population demographics
 - Income and wealth distribution;
 - Household income and livelihoods, cost of living, poverty
 - Health; Nutrition
 - Housing and access to services such as water, sewerage and energy
 - Education and literacy
 - Personal security, safety, crime, peace
 - Human rights – participation, discrimination, empowerment, social equity
 - Subjective well-being / Life satisfaction.
- 4.36. While the measurement of these themes will be most relevant in respect to host communities and the effects of tourism, some themes, particularly related to income and wealth, are also of specific relevance from a visitor perspective. Levels of income and wealth and their

distribution will have a direct effect on the potential for people to participate in tourism and monitoring these aspects will be of particular relevance in assessing the sustainability of tourism demand.

- 4.37. In addition to these themes, an important general indicator of the relative pressure of tourism on a host community is the measurement of tourism intensity, such as total visitor arrivals per 100 residents. The measurement of this indicator on an ongoing basis would provide an important baseline to interpret the measures of social context in relation to tourism.

4.4.3. Decent work

- 4.38. Chapter 2 provides a broad discussion of the measurement of tourism employment from an economic perspective. From a social perspective, there are also many relevant issues concerning employment which are collectively placed under the heading of decent work.

- 4.39. According to the International Labour Organization ⁶ (ILO), decent work involves opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives, as well as equality of opportunities for all people.

- 4.40. The ILO provides a range of guidance on measurement definitions and approaches that can be applied in the implementation of the SF-MST. The eleven substantive themes of the ILO Decent Work Agenda are listed below. For each of these themes, variables and indicators to focus measurement can be defined⁷.

- Employment opportunities
- Adequate earnings and productive work
- Decent working time
- Combining work, family and personal life
- Work that should be abolished (including child and forced labour)
- Stability and security of work
- Equal opportunity and treatment in employment
- Safe work environment
- Social security
- Social dialogue, workers' and employers' representation
- Economic and social context for decent work (including education/literacy and health indicators)

- 4.41. In considering decent work with respect to tourism two perspectives are relevant. First, some themes within the concept of decent work might be considered from the perspective of social context. This suggests that measures of decent work for a country, region or host community might be tracked over time and compared to levels of visitation to consider any associations.

- 4.42. Second, some themes might be considered directly in relation to tourism industries, for example, measuring whether tourism industries provide decent working time and equal remuneration, offer safe working environments and do not employ child labour. In this

⁷ 2013, ILO, DECENT WORK INDICATORS GUIDELINES FOR PRODUCERS AND USERS OF STATISTICAL AND LEGAL FRAMEWORK INDICATORS ILO MANUAL Second version

perspective, measures of the decent work outcomes of tourism industries can be benchmarked to expectations with respect to national laws or international rights or, compared, for example, to the outcomes of other industries or in other locations.

- 4.43. It is also noted that there may be specific tourism specific sub-themes of interest in relation to decent work, for example, concerning precarious employment and the seasonality of employment. Both of these examples would be considered under the theme “Stability and security of work” in the list above.

4.4.4. Institutions and governance

- 4.44. The assessment of tourism sustainability has long been associated with the quality of institutions and governance. In short, to what extent the regulations and processes support the effective management of visitor flows. Thus, indicators of institutions and governance are commonly included in sustainable tourism indicator sets. More broadly, institutions and governance are a standard feature in the measurement of social capital where both formal and informal arrangements are within scope.

- 4.45. Given this background, the following themes are of most relevance in the measurement of tourism’s social sustainability. It is envisaged that, most commonly, the measurement of these themes would be applied from the perspective of host communities.

- Tourism policy and regulation, including planning and development processes
- Tourism related government fees, levies and taxes and expenditures on tourism management and promotion
- Structure and performance of tourism-related institutions (e.g. Destination Management Organizations (DMO))
- Compliance with tourism regulations and standards (including measurement of the effects of tourism)
- Community and individual levels of trust in tourism-related institutions
- Civic engagement and participation in tourism policy design and evaluation
- Availability of information for visitors and residents

- 4.46. A wide range of indicators can be applied in relation to these themes and data collection techniques are well documented. It is noted that from the perspective of a host community, there may be a relationship between the measurement under this aspect and the measurement under the aspect of perception and experience. A host community’s perception and experience of tourism may be directly related to the quality of the institutions and governance.

4.4.5. Perception and experience

- 4.47. People’s perception and experience of tourism, either as visitor or host community, may be considered an ultimate guide to tourism performance. Measurement of visitor attitudes and satisfaction and host community perceptions is an area of work with well-established methods. Historically, the collection of these data would be undertaken largely through surveys (face to face interviews or electronic questionnaires for example). However, in recent years various internet sites and social media platforms have provided a rich body of big data to support measurement and analysis for this theme.

4.48. In addition to direct measurement of perceptions and experience from visitors and host communities, it is also possible to infer such information from the collection of data about themes which may relate to positive or negative perceptions or experience about tourism in a given destination.

4.49. For visitors relevant themes include:

- Numbers of repeat visitors
- Crime rates/Reports to police
- Transport infrastructure quality, connectivity, traffic congestion
- Quality of public infrastructure and services
- Environmental quality and waste
- Availability, participation and satisfaction on cultural venues and experiences⁸

4.50. For host communities relevant themes include

- Extent of locally based employment and use of locally produced inputs
- Real estate, housing and consumer prices
- Crime and safety
- Environmental quality and waste
- Access to community facilities and quality of public infrastructure and services (including housing, water, energy, health, education)
- Transport infrastructure quality, connectivity, traffic congestion
- Noise levels
- Benefits of tourism in the culture sector
- Participation in decision making

4.4.6. Accessibility

4.51. While the benefits of engaging in tourism should be available to all, people with disabilities are sometimes unable to enjoy the full tourism experiences as all other citizens. The definition of accessible tourism has developed progressively over recent years. Significantly, it should be seen as going well beyond the physical accessibility of tourism destinations and related infrastructure and services, and should also encompass the accessibility in cognitive, sensorial and intellectual aspects. According to UNWTO, accessible tourism “*is a form of tourism that involves a collaborative process among stakeholders that enables people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments*”.⁹

4.52. Indicators of accessibility can cover a range of themes and variables as proposed below across the different elements of the accessible tourism value chain.

⁸ Montalto, V., Tacao Moura, C., Panella, F., Alberti, V., Becker, W. and Saisana, M., The Cultural and Creative Cities Monitor: 2019 Edition, EUR 29797 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-08807-3 (online). The cultural tourism offer is progressively including the concept of cultural and creative industries.⁸

⁹ UNWTO Recommendations on Accessible Tourism for All <https://webunwto.s3-eu-west-1.amazonaws.com/2019-08/recommendationsaccesstourismforallenok.pdf>

1. Planning

- Number of official tourist information websites featuring destination's accessibility¹⁰
- Number of websites meeting the W3C¹¹ requirements within the country
- Existence/Number of websites with accessible booking engines

2. Transport

- Existence/type of accessible facilities and service at the country's airports
- Existence/type of platforms providing passengers' information in accessible formats
- Number of taxis/accessible taxis within the destination

3. Accommodation

- Existence of minimum accessibility requirements for the accommodation sector
- Existence/No of accessible accommodation establishments within the country
- Existence/No of employees trained on service provision to customers with disabilities

4. Food and beverage services

- Number of restaurants facilitating information on allergens
- Number of accessible restaurants adapted for clients with physical disabilities
- Number of restaurants providing menus in Braille

5. Tourism resources

- Number of cultural and natural resources providing accessible facilities and services
- Existence of accessible transportation to access cultural and natural heritage areas

6. Public tourism administrations and DMOs

- Existence of a designated official or department covering accessibility in tourism
- Existence of allocated budget for accessibility improvements within the destination
- Number of official complaints on destinations' accessibility

4.53. Requirements for accessibility for visitors are likely to overlap considerably with the needs of the local community. There may therefore be a strong potential to join forces on data collection to understand the accessibility needs of both visitors and residents. Data collection approaches and sources are likely to be different in each case. A mix of qualitative and quantitative data is inevitable in case of accessible tourism measurement¹².

4.4.7. Gender equality

4.54. According to the *Global Report on Women in Tourism – Second Edition (UNWTO, 2019)*¹³ there is an urgent need for regular collection and reporting on employment data disaggregated by sex in tourism, also including formal and informal tourism employment, gender pay gaps, entrepreneurship, education and training, leadership and decision-making, time use and work-life balance. A representative data collection should encompass both the competent public entities and private businesses operating in tourism.

¹⁰ *UNWTO Recommendations on Accessible Information in Tourism* <https://webunwto.s3-eu-west-1.amazonaws.com/2019-08/recommendationsaccesstourismforallenok.pdf>

¹¹ For more information please visit World Wide Web Consortium, Web Content Accessibility Guidelines, <https://www.w3.org/TR/WCAG20/>

¹² Indicators based on *Tourism and related services — Accessible tourism for all — Requirements and recommendations* at <https://www.iso.org/standard/72126.html> and UNWTO's technical manuals available at <https://www.unwto.org/es/accessibility>. ISO standards on accessible tourism will be published once the ISO 21902 has been adopted (expected in 2020).

¹³ *Global Report on Women in Tourism – Second Edition (UNWTO, 2019)*

- 4.55. Potential core variables for the measurement of tourism employment data disaggregated by sex (male/female, applicable to all variables) include:
1. Number employees in the tourism industries
 2. Number of employees in formal and informal tourism employment
 3. Number of self-employed workers in the tourism sector
 4. Number of low-skilled, semi-skilled and professional workers in the tourism sector
 5. Number of officials at managerial positions in public tourism administrations (incl. DMOs) /Number of employees at managerial positions employed in the tourism industries
 6. Number of part-time workers in the tourism industries
 7. Median hourly remuneration of employees in the tourism industries
 8. Mean hourly remuneration of employees in the tourism industries
 9. Median duration of employment contract in the tourism industries
 10. Number of employees with completed vocational training in the tourism industries
 11. Number of registered tourism businesses disaggregated by the sex of the owner and the size of the business (micro, small, medium etc)
- 4.56. These variables may be further extended to measuring for example, (a) % of women who faced gender discrimination in career prospects or who faced sexual harassment, (b) % of tourism operators with formal commitments to gender equality, (c) tourism businesses providing day-care for employees' children and (d) median and mean monthly remuneration of employees disaggregated by sex. A more complete list of indicators is available in the UNWTO Indicators of Sustainable Development for Destinations which provide a further breakdown of gender-related concepts.
- 4.57. In line with the pledge to 'leave no one behind' in the context of the 2030 Agenda for Sustainable Development, destinations capable of measuring more sophisticated data should consider ensuring that as well as disaggregating the data collected for the above referenced indicators by sex, it is also disaggregated by income level, age, ethnicity, ability/disability and other relevant factors that may cause discrimination in a local context (religion, geographical location, caste etc.)

4.4.8. Culture tourism

- 4.58. One of the motivations for travel is to experience different cultures and their equally diverse expressions. For policymakers, cultural heritage and creative industries are valuable elements in the promotion of tourism destinations. The identification and monitoring of the effects of tourism on safeguarding heritage and the production of cultural goods allow for informed action to preserve the same cultural values that motivate the traveler to visit the destination.
- 4.59. Culture and its associated expressions are largely influenced by the context where they develop. Hence, the measurement of culture implemented in a global scale creates a complexity that is addressed in the efforts of international organizations in culture and other sectors. In tourism, UNWTO, acting as a specialized agency of the United Nations, promotes an inclusive understanding of cultural tourism.
- 4.60. UNWTO defines cultural tourism as a type of tourism activity in which the visitor's essential motivation is to learn, discover, experience and consume the tangible and intangible cultural attractions/products in a tourism destination¹⁴. The measurement of cultural tourism should

¹⁴ Available at <https://www.e-unwto.org/doi/pdf/10.18111/9789284420858>

consider different perspectives. From the visitor's perspective, it is possible to consider motivations for travel related to cultural venues, activities and goods. These could include information on perceptions and experiences, tourism flows, and preferences for cultural experiences in the destination.

- 4.61. For suppliers in a local tourism destination, the focus may rest on measuring the participation of visitors in cultural facilities and experiences, and the consumption of cultural goods. The uses of new technologies in this regard allows retrieving timely information not only to measure flows but also to profile cultural visitors and support informed decision making.
- 4.62. In practice, as shown in previous research,¹⁵ UNWTO Member States define and measure cultural tourism differently. This finding is related to the diverse conceptions of culture and the numerous expressions that each destination shares with the traveler. The challenge relies in creating a baseline that is adaptable to the numerous cultural contexts of the destination and, therefore, the resulting cultural tourism. One consequence of current practice is that there are extensive sets of indicators that address different approaches of tourism in culture and vice versa.
- 4.63. As mentioned previously, the perceptions of the local communities are imperative if measurement is aimed at gathering the necessary data in order to have the full picture. In cultural tourism, communities are the local inhabitants as well as the heritage guardians and bearers, creatives, cultural institutions and their professionals, among others. One aim in measurement is to give these various stakeholders a voice, integrate their needs in the measurement and monitoring of culture in tourism. They are key to understanding the cultural identity of a tourism destination.
- 4.64. Common variables that may be measured to provide initial insight into the importance of culture and heritage for international tourism include measures of the following elements¹⁶ (disaggregated by country origin/gender/age/income and education level):
 - Number of tourists whose principal travel motivation is culture
 - Number of tourists whose principal travel motivation is religion
 - Number of visitors on cultural day trips (without overnight stay)
 - Number of tourists visiting cultural sights/participating in cultural events (incl. festivals)
 - Number of designated cultural sights under local/ regional/national /international protection
 - Number of cultural routes /tourists using the routes
 - Median expenditure of cultural tourists
 - Median length of stay of cultural tourists
 - Total number of tourists per square km in key sites
 - Percentage of local population's participation in cultural activities
 - Number of employees in cultural sector (by categories)
 - Existence of heritage protection legislation/official guide certification/congestion management practices
 - Overall earnings from cultural tourism

¹⁵ UNWTO, Culture and Tourism Synergies, 2018.

¹⁶ Proposal based on the 2004, *UNWTO Guidebook for Indicators of Sustainable Development for Tourism Destinations*. UNWTO is currently working to incorporate more sophisticated indicators on measuring cultural tourism, which does not exclude the need of Member States to discuss the application of this basic list of suggested indicators, to be updated in future.

- 4.65. One statistical tool that may be used to support the organization of data related to cultural tourism is a culture satellite account. A culture satellite account aims to record the interactions of people concerning exchanges of goods and services and engagement in cultural experiences/practices. This encompasses data on the use of labour and capital, and the generation of added value in those activities. Organizing these data makes possible the analysis of the cultural sector.
- 4.66. Given its national accounting origins, this may be readily integrated with data from a tourism satellite account.¹⁷ And hence provide a connection between the social and economic aspects of cultural tourism. Examples of where this connection might be most evident is tourism activity associated with festivals, public parties, concerts, fairs and archaeological and historical places that have a cultural significance. This activity can benefit both visitors and host communities.

¹⁷ Culture satellite accounts have been developed and compiled in a number of countries including, for example, Mexico, which had adapted the system to its own geographical and cultural peculiarities.

5. Measuring the sustainability of tourism at sub-national levels

5.1 Introduction

5.1.1. The demand for sub-national data

- 5.1. 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 sub-national and local destination levels. In 2008 in Cebu, the Philippines, within the Resolution of the Sixth International Tourism Forum for Parliamentarians and Local Authorities there was an explicit “request to deliver general guidelines on measuring tourism at the regional and local levels”. This request has been reinforced by the Mediterranean Community in their policy recommendation for EU regions and other countries in the Mediterranean: “Designing & Implementing A Common Methodological Framework to Measure Tourism Sustainability”.
- 5.2. Notwithstanding these examples of calls for action at the sub-national level, in contrast, from a statistical perspective, the development of standards and measurement guidance is generally focused on the development of national statistics to support national governments and international comparisons. In tourism statistics, the IRTS 2008 and the TSA: RMF are both focused on national level data although they both recognize the relevance of sub-national measurement and many concepts and definitions are universally applicable in principle. This chapter describes an approach to building harmonized data at the sub-national level to support the analysis of tourism activity and its sustainability at all scales.
- 5.3. The rationale for better understanding and analysing tourism at different territorial levels lies in the fact that tourism is strongly territory-contingent, with flows of visitors occurring unevenly across countries, regions, municipalities, or any other territorial entity. Tourism and territory are closely intertwined not only because the natural or built territory is often the main tourism attraction (e.g. an exotic beach, a vibrant city), but also because the characteristics of a territory directly affect the design of tourism trips and itineraries, the nature of the supply that caters to visitor consumption, the capacity to influence tourism activity by means of policy and, consequently, the relationship between tourism and sustainability outcomes.
- 5.4. In recognising the significance of territory, it is then relevant to conclude that territorial entities would be best served by having a measurement framework that can be used to underpin a data-driven decision-making approach to the sustainability of tourism. Without this, territorial entities may lack information that genuinely reflects the situation in their local area - for example, needing to rely on unrepresentative national data or data limited in scope.
- 5.5. More specifically, sub-national tourism statistics are needed to:
 - Reflect the importance of specific features of territorial entities as tourism destinations;
 - Recognise that visitor characteristics and their expenditure patterns can vary markedly among territorial entities;
 - Analyse tourist behaviour and satisfaction in the destination, including activities undertaken, itineraries and places visited, mobility, and places of expenditure;
 - Understand the attitudes of host communities to tourism and issues such as congestion and over-tourism;

- Design policies and make appropriate investments (such as the infrastructure that needs to be put in place) that are specific to the objectives and the environmental and social context of each territorial entity;
 - Make comparisons of tourism and its sustainability, in terms of economic, environmental and social outcomes, among territorial entities and from sub-national to national and broader scales for supporting benchmarking among destinations and ensuring action on the ground is consistent with national and international policy aims;
 - Provide inputs to the wide variety of analysis of drivers of change in tourism activity and potential risks and constraints, including identification of seasonal patterns, recognition of main types of tourism and market segments, early warning indicators of future demand and changes in environmental context.
- 5.6. The host community or grassroots perspective is a high-profile focus of tourism discussions (Ref#). 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. For example, through increased traffic congestion or rising prices for goods and services. At the same time however, this must be balanced by consideration of the potential to improve the quality of life of local populations through tourism (e.g. through employment opportunities) and also the potential for tourism to support improved protection of the natural environment and local bio-diversity.
- 5.7. A general feature of developing sub-national tourism statistics is that it supports making meaningful distinctions between different environments and landscapes within a country. Thus, it is important to distinguish between, for example, coastal areas, cities and mountain areas, since each type of location will have different environmental features and capacities. Understanding these different features and capacities for different territorial entities is fundamental to assessing sustainability and enacting appropriate solutions.

5.1.2. A statistical approach to sub-national measurement

- 5.8. In responding to this challenge from a measurement perspective, the SF-MST provides a structured approach to the organization of data at sub-national level to support decision making at relevant scales. This approach extends the statistical framing provided in earlier chapters around the economic, environmental and social dimensions. At the same time, it is recognized that there will be differences in the data available and the decision-making contexts which means the organization of data at sub-national level is not a simple replication of national level methods and practices. Overall, the longer-term statistical ambition is to develop and integrate both detailed spatial data and national level data to provide a coherent picture of tourism activity that is of most use to decision makers and other stakeholders at different scales.
- 5.9. Compiling a coherent picture does not imply that all economic, environmental and social tourism information must be available at every spatial scale or for every area within a country. Indeed, it is likely that some data are more relevant at sub-national scale and that other data are most meaningful at national scale. Thus, the general ambition should be that the data compiled at the sub-national level is
- appropriate for the spatial context allowing some flexibility in the selection of measurement themes and
 - for a given theme, data are compiled using agreed definitions and classifications that support comparability with other spatial areas and scales. For example, data on visitor overnights at sub-national levels should be coherent with data on visitor expenditure on accommodation at national level.

- 5.10. The importance of comparability emerges from a policy perspective since there are connections among the outcomes of decisions made at each spatial scale – local, regional, national, global.¹ That is, choices made and actions taken 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 by all stakeholders when the data organized at each level tells a consistent and coherent picture of the structure of tourism activity and the changes over time.
- 5.11. The 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 Ecosystem Accounting (SEEA EA) (UN et al, 2021), and work on sub-national and sustainable tourism of UNWTO, including the UNWTO International Network of Sustainable Tourism Observatories (INSTO), and the INRouTe network, among a number of other materials.
- 5.12. This chapter presents in section 5.2 a discussion of defining scales of measurement at the sub-national measurement and provides a rationale for delineating spatial boundaries from a statistical perspective. The conclusion is that sub-national measurement should be targeted at two levels: the regional level and the local tourism destination level.
- 5.13. Sections 5.3 and 5.4 then describe statistical approaches to measurement at those two levels. Section 5.3 introduces relevant measurement themes and data sources at the regional level and section 5.4 describes relevant measurement themes and data sources at the local tourism destination level. Throughout, the use of common concepts and definitions at different scales is the essence of a statistical approach to the organization of data.

5.2 Defining scales of measurement

5.2.1. Terminology

- 5.14 Discussion of sub-national statistics requires consistent use of terms and definitions with respect to different scales. The following six scales are described in the SF-MST:
- The **global** (or international) 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 the term region 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. 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 and some municipalities may be sufficiently large such that sub-municipal areas can be defined (e.g. districts, arrondissements, boroughs) In some cases,

¹ See for example the discussion in Hein et al (2006)

the municipal scale may encompass a combination of land uses including, for example, urban, agricultural and natural areas. There will be close connections between this scale and the local scale.

- The **local** scale is used to refer to the contiguous areas or zones (a) within a given municipality or (b) across multiple municipalities, that exhibit particularly concentrations, agglomerations or clusters of commonly purposed or aligned activities and businesses. In the context of the SF-MST, the focus is on concentrations of tourism activity but other activities may also be of particular interest. It is not expected that the local scale would coincide with administrative units at this spatial level.

5.15 The term sub-national is used to refer to the three spatial scales below the national level (i.e. regional, municipal/city-region, local).

5.16 The term tourism destination might refer to any of these scales. Thus, a destination might be a supra-national area (e.g. the Pacific), 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 hence the term **local tourism destination** will be applied here to refer to spatial areas at this micro scale.

5.2.2. The need for coherent spatial boundaries²

5.17 From a statistical perspective, the methodological challenge is to develop the structure and tools to support providing relevant and comparable information for policy and analysis at the appropriate spatial scale. While both national and regional 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 single set of data, a national level aggregate must be consistent with the results obtained for the component regions or municipalities. There are two primary challenges to consider:

- i. Ensuring that for each individual set of data the spatial boundaries are internally coherent. 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
- ii. Determining which spatial boundaries should be used to facilitate comparison and integration across data sets. 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 compared to the situation in which measurement is being designed for a single region, municipality or location.

5.18 Thus, for the purpose of official statistics, it is important that spatial boundaries are delineated and applied for different datasets. Since there are many different types of data, these boundaries may vary for different measurement themes. For example, for water related data the relevant boundaries will concern water catchments. This would be ideally implemented through the adoption of a national spatial data infrastructure (NSDI).

² 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.

- 5.19 For the purposes of measuring the sustainability of tourism, an overarching single layer of spatial boundaries is required that supports the integration of data across measurement themes. That is, relevant tourism areas must be defined to which data for all relevant themes can be attributed. In establishing the set of tourism areas, it will be essential that those working at the local tourism destination scale are involved in the discussion and their insights into how spatial areas are defined can generate information that is suitable for analysis and policy at those sub-national scales.

5.2.3. Applying statistical practice at different scales

- 5.20 From a statistical perspective, it will generally be relatively straightforward to envisage the development of regional scale statistics for the various, generally larger, administrative areas within a country. Indeed, often there is a requirement to produce statistics at this scale and, in some cases, all national data may be the aggregation of data from regionally collected administrative areas. The combination of national and regional data is therefore appropriate, notwithstanding the fact that compilation of statistics at a regional scale will raise some measurement issues not faced at national level.
- 5.21 However, measurement at this scale is not sufficient for measurement of the sustainability of tourism and measurement at municipal and location tourism destination scale will be required. This presents additional challenges because
- there are potentially a large number of local tourism destinations,
 - issues of statistical significance and confidentiality are likely to emerge when using traditional survey-based approaches
 - defining the boundaries of local tourism destinations will be challenging.
- 5.22 While measurement undertaken by national statistical systems may be more limited at the municipal and location tourism destination scales, this should not be interpreted as meaning that there is little measurement activity more generally since many local tourism destinations will collect and utilize information specific to their area. Indeed, the allocation of resources to this task is likely to be significant and gains may be observed using a coordinated approach to compiling statistics for local tourism destinations. Public administration at different levels, national and regional statistical institutes, universities and other stakeholders may be involved. By way of example, in such an approach, national statistical institutes may provide methodological guidance while agencies in local tourism destinations collect and compile data. The framing of an approach to measurement for local tourism destinations is discussed further in section 5.4.

5.3 Measuring sustainability for regional tourism destinations

5.3.1. Introduction

- 5.23 The development of data at the regional level is designed to provide a practical step towards recognizing the value of sub-national data more generally as well as providing useful information for decision making at the regional level. The primary focus of organizing information at a regional level is to understand the trends in tourism as an economic sector at the regional level. This information will in turn support the local level assessment of potential pressures on environmental and social dimensions of sustainability. Examples of

this connection include measures of visitor flows and numbers of tourism establishments which will likely drive outcomes concerning environmental quality, water use, waste generation and traffic congestion. In addition, there will be some environmental and social themes that are relevant to assessing sustainability that may be usefully analyzed at regional level. Examples include energy use, GHG emissions and employment.

- 5.24 For the purposes of SF-MST, it is assumed that the spatial delineation of an R-TIS would be based on large administrative areas of a country. To support the development of integrated approaches to sustainability, the ambition is that all regions within a country compile a common core set of tourism data recognizing that, for some regions, additional data on certain themes will be included to recognize regionally relevant issues.
- 5.25 However, initially, it is not expected that all regions would be the focus of an R-TIS, that is, compilation of tourism statistics should be focused on those regions
- in which tourism activity is a significant proportion of the national total (e.g. based on the share of visitor flows);
 - (ii) where tourism activity is a significant proportion of the region's economy (e.g. based on the number of accommodation beds per resident population);
 - (iii) where there are specific environmental and/or social concerns (e.g. high environmental risks due to the presence of tourism activity).
- 5.26 For example, initially it may be appropriate to compile regional tourism statistics for six out of 10 regions within a country with the remaining four regions aggregated to form a single grouping of non-tourism regions.

5.3.2. Core measurement themes at regional level

- 5.27 The core themes of interest at a regional level will be:
- Visitor flows including both international and domestic visitors
 - Accommodation
 - Characteristics of tourism businesses in the region
 - Visitor expenditure
 - Employment and jobs in tourism industries
 - Decent work
 - Resident population and their characteristics
 - Household income (average and distribution)
 - Environmental flows: water use, energy use, GHG emissions, solid waste
 - Land use and land cover
- 5.28 In all cases, the statistical definitions and measurement guidance for these themes is described in other SF-MST chapters. Table 5.1 provides a structure for recording the core statistical data at the regional level.
- 5.29 These core themes provide a strong starting point for the assessment of sustainability in any region and enable comparisons among regions. Beyond these themes, individual regions may wish to incorporate additional themes as proposed in the chapters concerning measurement of the economic, environmental and social dimensions. It is also recognized

that within regions, at the local tourism destination level, other themes might be of particular interest. Further discussion on measurement for local tourism destinations is provided in section 5.4.

Table 5.1: Outputs from a Regional – Tourism Information System (to be further developed pending determination of themes and indicators)

		Total Country	Tourism region #1	Tourism region #2	Tourism region #3	Tourism region #4	Tourism region #5	Tourism region #6	Tourism region #...
A. Tourism establishments									
	Total								
	Accommodation								
	Food and beverage								
	Passenger transport								
	Travel agencies								
	Other tourism industries								
B. Resident population									
	Total								
C. Visitor movements									
	Total								
	Same-day								
	Overnight								
	Visitors / resident population								
D. Visitor expenditure									
	Total								
E. Employment									
	Total								
	Accommodation								
	Food and beverage								
	Other tourism								
F. Decent work indicators									
G. Household income									
	Total								
H. Land cover/use									
	Total area								
	Forest								
	Agricultural land								
	Urban areas								
	Surface water								
	Beach / coastal areas								
	Other areas								
I. Environmental flows for tourism industries									
	Water use								
	Energy use								
	GHG emissions								
	Solid waste								

5.3.3. Approaches to compilation

- 5.30 There are a number of ways in which this data set may be compiled. Some information may already be available at a regional level, e.g. on employment, population and accommodation, either as regional estimates from national surveys and statistical collections or from regionally specific data collections. In this situation, data can be readily recorded with the only caveat being to ensure a reconciliation with national level totals and consistency in the use of concepts and definitions.
- 5.31 Other information such as on the characteristics of tourism businesses would ideally be sourced from a national level database – such as a business register – which allowed for allocation of businesses to each region. Where allocation of national totals is being undertaken, it will be important to document the allocation techniques and ensure consistency in the allocation methods used within a country.

- 5.32 For data related to visitors – visitor flows and tourism expenditure – it is likely that significant care will be needed in determining regional allocations, particularly in situations where visitors travel to multiple regions in a single trip (for example related to the GHG emissions of inter-regional transport, which may be operated and owned by a company in the origin, destination or a third region). Conceptually, this same challenge confronts the compilation of national level aggregates but it is likely to be more difficult to resolve at regional level if there is less data available concerning within-country travel.
- 5.33 In all situations, it will be beneficial to develop maps showing the spatial distribution for each variable of interest. Such maps will help to clarify and focus attention for policy purposes, especially for those decision makers at national level.
- 5.34 Ideally, the integrated measurement of regional level data would incorporate the compilation of regional TSA. Compilation of these accounts would provide a rich set of information to support the assessment of sustainability. However, the compilation of regional TSA can be a challenging and costly task. It is therefore recommended that initial focus be placed on using a common core list of tourism products and industries across all regions and ensuring alignment with national aggregates as relevant. This work will provide a strong basis for regional indicator systems.
- 5.35 At the same time, it should be recognized that through the compilation of regional level data, there is likely to be an important feedback loop to the compilation of national data, including national TSA. Collaborative models of statistical production between regional and national authorities should be encouraged. The use of common statistical concepts, definitions, classifications, accounting rules and principles of recording facilitates such collaboration.

5.4 Measuring sustainability for local tourism destinations

5.4.1. Introduction

- 5.36 The measurement of tourism sustainability for local tourism destinations is a very common area of focus. In many ways, it is at this scale that the interactions between the different dimensions (economic, environmental and social) are most evident and it is the scale at which management actions take effect. The section considers the two key conceptual steps to support measurement of sustainability for local tourism destinations. These steps involve delineating spatial areas to represent local tourism destinations and selecting and measuring relevant themes.

5.4.2. Delineating local tourism destinations for statistical purposes

- 5.37 Traditional statistical approaches to the delineation of small spatial areas involve the use of administrative units, for example, municipalities. In turn, these areas are commonly delineated based on concentrations of people and the households they comprise. For certain types of information and in certain contexts it might be relevant to use fine-scale administrative units to delineate local tourism destinations. Organization and release of data for these areas may also be highly relevant since the jurisdiction of decision-makers is likely to be defined by these boundaries.

- 5.38 However, using administrative units for understanding the sustainability of tourism (including analyzing the behaviour of visitors, the productive activities of tourism industries and associated environmental stocks and flows) is likely to be analytically limiting given the likelihood that tourism and visitor activity will commonly be concentrated in specific areas within an administrative unit and also have connections across administrative units. Hence, delineation will require the use of additional factors.
- 5.39 From the literature the clearest approach is to define areas on the basis of criteria, functions or characteristics. This reflects (i) the type of approach that underpins the delineation of social-ecological systems (see, for example, Leslie et al., 2015); (ii) the way in which ecosystem accounting delineates between different ecosystem types (described in the SEEA EA); and (iii) the way that spatial areas for tourism have been identified (see, for example, Hernandez-Martin, et. al., 2016³).
- 5.40 Given the multi-faceted nature of tourism that is encompassed by tourism statistics there are three perspectives to be considered – (i) a tourism supply perspective, in which—for the purposes of subnational measurement—the focus is on the location and concentration of tourism industries; (ii) a visitor demand perspective in which the focus is on the places visited in terms of location and time spent; and (iii) the area of influence of tourism activity. These perspectives are considered below.
- 5.41 The supply perspective is the most tractable and recommended pathway to delineating local tourism destinations. This involves using information on the location of tourism businesses and determining a boundary around particular concentrations of these businesses. In many cases it is likely that such areas are relatively well known and evidenced by known concentrations of accommodation establishments and associated restaurants, together with popular tourism attractions (e.g. museums, beaches, parks).
- 5.42 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, concentrations of tourism businesses. Particular examples will include national parks, beaches, reefs and cultural sites.
- 5.43 A third perspective to consider is the area of influence of tourism activity which refers to the locations that are affected by or support tourism activity, usually beyond the boundaries of the local tourism destination. Examples include communities where a substantial number of employees of tourism businesses reside and water catchment areas.
- 5.44 Depending on the context, the following four criteria should be applied to delineate a local tourism destination. These concentrations should be mapped and compared. Then, through stakeholder discussion, local tourism destination boundaries can be drawn. It is likely that these boundaries will change gradually over time, or new local tourism destinations will emerge, and hence ongoing review (say every five years) is recommended.
- Industry concentration – e.g. location of tourism businesses
 - Visitor concentration – e.g. location of visitor overnights

³ Hernández-Martín, R. et. al. (2016). Identifying micro-destinations and providing statistical information: A pilot study in the Canary Islands. *Current Issues in Tourism*, 19(8), 771–790.

- Employment concentration – e.g. location of tourism jobs
 - Expenditure concentration – e.g. location of visitor expenditure
- 5.45 It will be appropriate to set thresholds for the concentrations listed above recognizing that only a selection of areas within a country will be the focus of targeted, tourism focused measurement.
- 5.46 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.
- 5.47 Once a set of local tourism destinations is established, for analytical purposes, it may be of interest to group together destinations that have common topographical and geographical characteristics. Examples of possible groupings include: coastline and small island destinations, mountain destinations and urban destinations. The use of common measurement themes and indicators within such groupings may be of considerable benefit in comparing alternative policy solutions. It is anticipated that on the basis of the principles provided in the SF-MST it will be possible to develop more specific guidance for specific types of destinations.

5.4.3. Measurement themes for local tourism destinations

- 5.48 Based on the principles above, the core data that can be used to delineate local tourism destinations include: visitor overnights, the number of tourism establishments, accommodation capacity (rooms/beds), the area of the local tourism destination (in hectares) and the resident population and associated demographics.
- 5.49 Data on these topics can also be used to provide a general sense of tourism intensity and tourism density and how it is changing over time. Tracking such changes on a daily, monthly or quarterly basis can provide meaningful indicators of pressures on the local area and its environmental, social and economic context.
- 5.50 To determine the core themes that may be of relevance at the local tourism destination level, the 10 themes identified for the regional level in Section 5.3 should be used as a starting point as well as consideration of the 11 “core issue areas” identified in the UNWTO-led INSTO initiative which are:
- Local satisfaction with tourism
 - Destination economic benefits
 - Employment
 - Tourism seasonality
 - Energy management
 - Water management
 - Wastewater (sewage) management
 - Solid waste management
 - Governance
 - Accessibility
 - Climate action

- 5.51 In addition, and to ensure that unique aspects of each local tourism destination are reflected, the following measurement themes may be included as relevant, to provide a broader and locally relevant set of measures and to support decision making at the local level.
- Air quality (including associated measures of pollution)
 - Water quality (river, marine) (including associated measures of pollution)
 - Biodiversity and ecosystem condition (e.g. indicators of species diversity, beach condition, coral cover, protected area statistics)
 - Heritage conservation
 - Congestion and noise
 - Tourism related infrastructure
 - Safety and crime
 - Social inclusion
 - Visitor satisfaction
- 5.52 The ambition is to ensure that where the same theme is being incorporated by multiple local tourism destinations and within associated regional level data, all compilers use the same variables, statistical definitions and indicators, starting from the existing statistical standards and recommendations. The use of common language and metrics supports the sharing of experience, comparison of performance, discussion of policy options, and may identify opportunities to reduce the costs of data collection. National statistical institutes and national tourism administrations can play a leading role in establishing and sharing appropriate guidance and supporting compilation work at different levels.

5.4.4. Compilation approaches and considerations

- 5.53 In common with the measurement of regional statistics, measurement at the local tourism destination level will require consideration of a wide range of data sources. Possibilities include:
- Fine scale national data, for example from population census
 - Locally based surveys concerning community perceptions of tourism and visitor perceptions of/satisfaction with destinations
 - Registers of tourism businesses at local, regional and/or national levels
 - Data from local utilities concerning water, electricity and waste
 - Data from local authorities and registers on land use, transport, accessibility, governance arrangements
 - Data from local business groups on tourism industries and their employment
 - Remote sensing data (including from satellites and sensors)
 - Big data collected from, for example, mobile phones and credit cards
- 5.54 Wherever possible the data should be geo-referenced to facilitate meaningful connections across datasets and increased applicability to local decision making. The potential for compiling geo-referenced data is increasing steadily, including for visitor surveys. A range of digital survey tools may be applied that output data in geo-referenced form.
- 5.55 In the initial phases, the challenge from a measurement perspective is likely to be finding the resources to analyse and investigate the range of potential data sources and to work towards understanding the data quality and the extent of coverage, access and time series. At this scale of measurement there may also be important issues of confidentiality to be considered.

- 5.56 The key role of SF-MST concerning measurement is to provide a standard set of concepts and definitions such that available data can be assessed in relation to an agreed benchmark. Since it is likely that data sources will change over time, it is fundamental to the process of statistics to ensure a stable measurement definition otherwise assessment of change over time – a fundamental aspect of measuring sustainability – can be rendered meaningless.
- 5.57 One of the significant benefits in the application of the SF-MST should also be that different local tourism destination can compare approaches to the measurement of the same concepts and progressively improve and refine these approaches. For example, it may be possible to develop and use similar questionnaires and related technology; and in the use of remote sensing data it will also be more cost effective to measure the same variable for different locations via a single approach with the data supplier.

5.4.5. Linkages with accounting for ecosystems

- 5.58 Chapter 3 introduced the approach to accounting for ecosystems developed in the context of the broader SEEA. Ecosystem accounting provides a spatially based approach to delineating ecosystem assets (e.g. forests, wetlands, etc) in the landscape and recording over time the extent of these assets, their condition and the flows of ecosystem services they supply. Ecosystem accounting retains the fundamental link between stocks and flows that is common to all accounting approaches but extends and applies this link to finer spatial scales.
- 5.59 Since spatial context is a very important aspect of assessing sustainability, particularly at the local tourism destination level, there are statistical practices that have developed in the context of ecosystem accounting that can be adapted to support the development of tourism data at this small spatial scale.
- 5.60 In addition, it may be relevant to apply some ecosystem accounting terminology to frame the discussion of measurement at the local tourism destination level. For example, it may be possible to consider the changing extent of different features/areas within a local tourism destination, to assess the changing condition of these areas and to record the flows of ecosystem services and benefits supplied by different areas within and potentially outside a local tourism destination.
- 5.61 Finally, the concept of carrying capacity which is common in the discussion of tourism sustainability, mirrors in many respects the concept of ecosystem capacity that has developed in the context of ecosystem accounting. Overall, the integrated spatial accounting approach of ecosystem accounting in the SEEA may support advances in measurement at the local tourism destination level.