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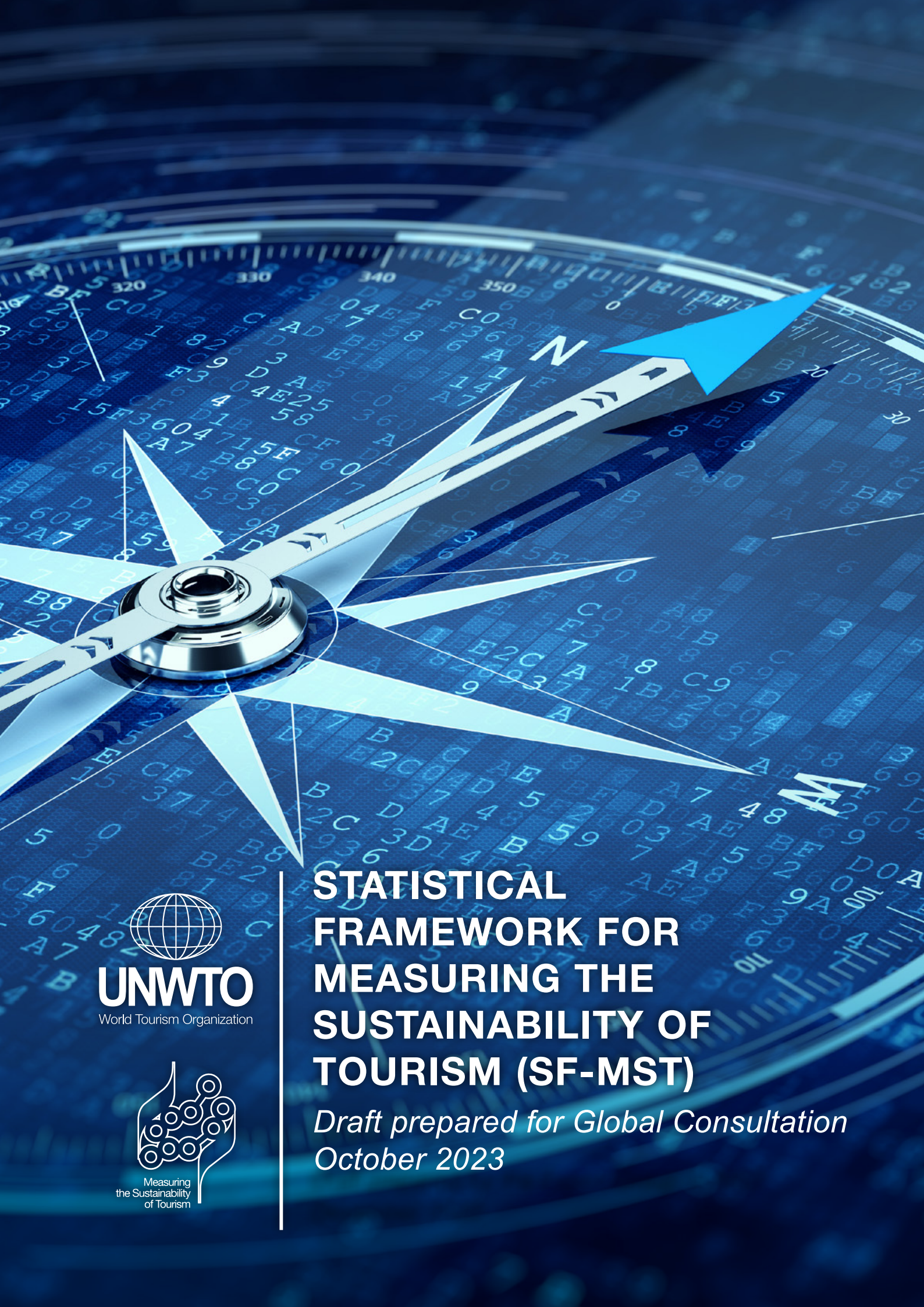
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STATISTICAL FRAMEWORK FOR MEASURING THE SUSTAINABILITY OF TOURISM (SF-MST)

*Draft prepared for Global Consultation
October 2023*

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List of abbreviations and acronyms

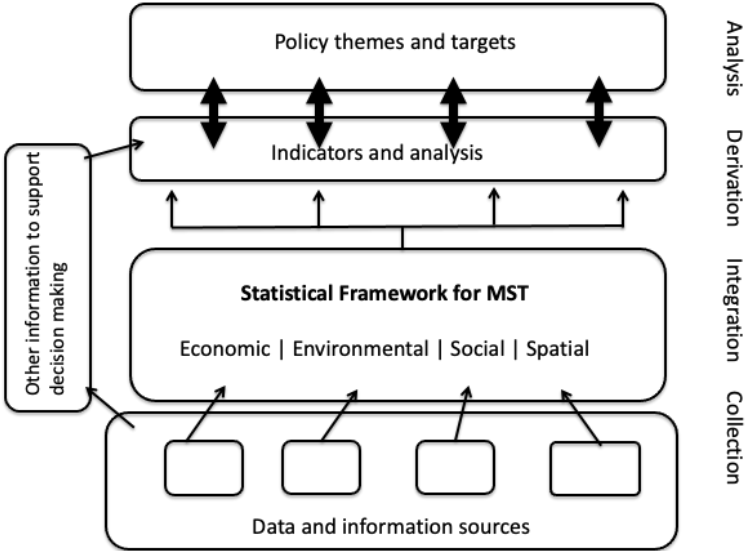
EG-MST	Expert Group on Measuring the Sustainability of Tourism
ILO	International Labour Organization
IRTS 2008	International Recommendations for Tourism Statistics 2008
MST	Measuring the Sustainability of Tourism
NSO	National Statistical Office
NTA	National Tourism Authority
SDGs	Sustainable Development Goals
SEEA	System of Environmental-Economic Accounting
SEEA EA	System of Environmental-Economic Accounting 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
UNEP	United Nations Environment Program
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 can have a range of effects on the economy, the natural and built environment, the local population at the places visited and the visitors themselves. Given the range of direct and indirect effects and the wide spectrum of stakeholders involved, there is a need for an integrated approach to tourism development, management and monitoring.
- 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. It aims to record data about tourism’s economic, environmental and social connections and effects in a holistic way and considering differences across geographic scales from local to national and international levels.
- 1.3. Statistical frameworks provide a structure for organizing data and statistics using common concepts, definitions, classifications and reporting rules. Collectively, this establishes a common language for measurement and the presentation of data. Statistical frameworks are applied 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 many aspects of decision making (Figure 1.1).

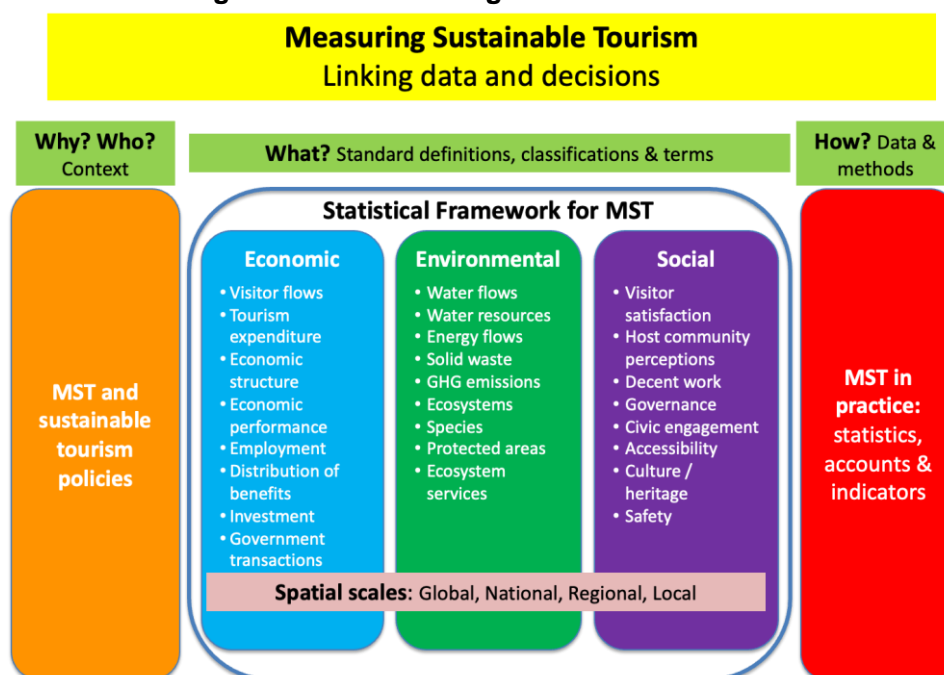
Figure 1.1: Using statistical frameworks to link data and policy



- 1.4. SF-MST does not provide a detailed description of methods and data sources for its implementation. It is intended that compilation guidance will be developed separately to provide details of alternative data sources and methods, and guidance on appropriate implementation processes and governance. In addition, SF-MST does not establish a standard set of indicators for reporting purposes. While a range of indicators can be derived using the data organized following the SF-MST, the determination of an agreed set of indicators is a complementary process that will consider the relevance of different indicators and the feasibility of measurement.

- 1.5. 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 provide a common language to support those discussions.

Figure 1.2: The coverage and role of SF-MST



- 1.6. Broadly, SF-MST will be relevant to three groups of stakeholders each involved in different ways in relation to information for decision making about sustainable tourism. These groups are (i) data producers, including but not limited to national statistical offices (NSO), for whom SF-MST supports the compilation of comparable and robust statistics; (ii) data analysts who integrate data from various sources and provide information to decision makers, for whom SF-MST provides a common focal point for data and standard classifications that facilitate integration; and (iii) decision makers across public and private sectors, for whom SF-MST describes a common language for discussion of progress towards sustainable tourism.
- 1.7. SF-MST is primarily intended for use by national statistical offices (NSO) and related technical agencies whose role it is to collect data and compile statistics for all areas within a country for a range of statistical themes. In many countries, the collection and compilation of tourism statistics involves also the national tourism authority (NTA) who is able to both support data collection and to ensure a close link between tourism statistics on the one hand and tourism policy on the other. The broad coverage of statistical topics within the scope of SF-MST provide a wide range of opportunities to connect tourism statistics to tourism policy including concerning economic development, climate change, circular economy, disaster preparedness, employment and social and cultural heritage.

- 1.8. The SF-MST also has the potential to support measurement activities at a tourism destination level within a country. This is particularly relevant from a sustainable tourism perspective since destination management has often been a focus of the research and practice in improving the sustainability of tourism. The potential use of SF-MST at the destination level does not imply that an NSO must compile tourism statistics at that detailed geographic scale. Rather, there is the opportunity for the SF-MST to provide a common data language such that measurement work at different scales can be more readily connected and mutually reinforcing.
- 1.9. In addition, SF-MST will be relevant to experts and organizations involved in the analysis and dissemination of information about sustainable tourism at all geographic scales. Again, the use of a common language for the organization and presentation of tourism statistics should support more consistent and coherent analysis and reporting on performance.
- 1.10. Finally, SF-MST will be relevant to tourism decision makers across the public and private sectors. National level data on the sustainability of tourism should directly inform national policies on tourism and will also provide an overarching context within which specific tourism activities and destinations can make their decisions. Sub-national statistics, including destination level data, may be of more direct use for individual operators or destination managers but will also provide national level decision makers a richer understanding of the variations across destinations within their country that are likely to be of most interest in assessing questions of sustainability.
- 1.11. Depending on the decision making context, additional data and information may be required that is not filtered through statistical frameworks directly. For example, data on projected visitor arrivals, ecological thresholds or planning regulations will lie outside the scope of statistical frameworks. As well, in the case of tourism, the range of potential data sources including company reports, university research, big data, remote sensing and satellite data, environmental monitoring data, tourism observatories and others, will mean that not all data observations can be captured. Nonetheless, the SF-MST can provide a common starting point for measurement and for initiating discussion about data requirements and policy design noting that SF-MST does not prescribe a reporting structure for countries wishing to present information on their performance concerning tourism's sustainability.

1.2. What are the benefits of using SF-MST?

- 1.12. The importance of developing a common framework to support comparison is very high to secure progress towards more sustainable tourism. 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.

- 1.13. Further, given the range of stakeholders involved in the compilation, analysis and use of data on the sustainability of tourism, there may be considerable barriers to progress if different stakeholders have information based on varying definitions and measurement boundaries. The statistical approach described in the SF-MST works to overcome these information barriers and support more engaged and inclusive decision making.
- 1.14. Beyond support for comparison, the benefits of SF-MST include:
- Establishing a foundation for providing a single, coherent and comprehensive 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 and business, infrastructure, environment, social affairs, finance and central banks.
 - Comparing and monitoring 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.
 - Establishing a robust basis for the design of, and investment in, integrated data and technology solutions to support the compilation and dissemination of statistics on the sustainability of tourism across multiple agencies.
- 1.15. Statistical frameworks also embody and support the application of a range of qualities reflecting the UN principles of official statistics including independence, impartiality, transparency, confidentiality, and statistical quality. Collectively they support the production of credible statistics which is a pre-condition for having a reliable evidence base for determining appropriate policy measures.
- 1.16. With sufficient, timely and adequate data to generate credible statistics, it is possible to undertake different types of analysis of tourism consistently. In turn, consistent analysis is required to evaluate meaningfully the different social, economic and environmental aspects of tourism. By way of example, on the basis of credible statistics consistent application of analytical frameworks such as driving force-pressure-state-impact-response (DPSIR) frameworks (European Environment Agency, 1999) can be undertaken. As well, given that tourism activity involves movement across borders, there are direct benefits of comparability where different countries and regions apply common definitions, classifications and measurement boundaries and hence support analysis of cross-border effects.
- 1.17. Other areas of policy and analysis that can be supported by data organized following the SF-MST include those concerning changes in the labour market for tourism industries; the management of the use of energy and other natural resources; responses to climate change including minimizing GHG emissions; developments in host communities including small and medium enterprises, local culture, economic prospects and general quality of life; and assessing the vulnerability and resilience of tourism industries and associated locations to potential systemic effects (e.g. water shortages, energy crises, pandemics).

- 1.18. Overall, the science-based and consensus-backed approach of statistical data provides credibility, raises awareness and fosters dialogue among different stakeholders, feeds more effective and coherent policy, supports evaluation and review of outcomes, and promotes transparency and stronger institutions. Most directly, it supports a more informed assessment of the opportunities and risks facing tourism.
- 1.19. At the same time, there will be limits to the potential of SF-MST to immediately and directly support tourism decision makers. In providing a focus on the integration of data across dimensions of sustainability, SF-MST will also not necessarily drive the development of high frequency, real time data or the development of data at a micro scale, e.g. with respect to specific tourism businesses. These will be important areas for data development but are not directly addressed in the SF-MST. Finally, it is noted that the SF-MST does not describe a range of analytical and other applications of data that will be relevant in supporting decision making on tourism’s sustainability. For example, analysis of the effects of environmental disasters, the longer term effects of climate change, or the implications of investments in technology are not discussed. Furthermore, SF-MST does not provide details about how various statistics is compiled; this is the focus of a companion compilation guide to be developed.
- 1.20. The concepts and definitions described in the SF-MST are expected to remain relatively stable over time. At the same time, 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, 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.
- 1.21. Finally, the presence of a statistical framework provides a focal point for the wide array of measurement work on the sustainability of tourism that has developed over recent decades. Indeed, in many respects, SF-MST can be considered a culmination of developments in measurement efforts seeking to assess the wide range of positive and negative effects of tourism activity. By synthesising the key lessons from past work and benefitting from other statistical developments in the measurement of sustainability, SF-MST can lower the barrier to entry for both data producers and policy makers who are often confronted with too many measurement choices. At the same time, this version of SF-MST should not be regarded as a final statement but rather as a common starting point for future developments in the measurement of the sustainability of tourism.

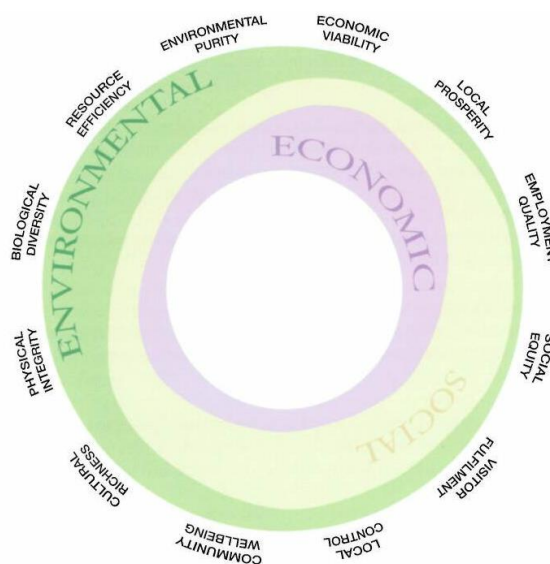
1.3. Defining sustainable tourism

- 1.22. Tourism is a social, cultural and economic phenomenon related to the movement of people outside their usual place of residence. It has an impact on the economy, the natural and built environment, the local population at the places visited and the visitors themselves¹.

¹ International Recommendations for Tourism Statistics 2008 (para. 1.1)

- 1.23. **Sustainable tourism** is tourism that takes full account of its current and future economic, social and environmental impacts whilst addressing the needs of visitors, the industry, the environment and host communities².
- 1.24. Sustainable tourism is a multi-faceted concept that involves (i) making optimal use of environmental resources, including maintaining essential ecological processes and helping to conserve natural resources and biodiversity; (ii) respecting the socio-cultural authenticity of host communities, by conserving their living cultural heritage and traditional values and contributing to intercultural understanding and tolerance; and (iii) ensuring viable, long-term economic operations that provide 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 alleviation³.
- 1.25. Depending on one's perspective, different aspects and areas of focus of sustainable tourism will be relevant. To support understanding of the different potential entry points, UNWTO described the connections between 12 policy areas and the three key dimensions of sustainable tourism (Figure 1.3).

Figure 1.3 –Relationship between policy areas and the key dimensions of sustainability



Source: UNEP/UNWTO (2005)

- 1.26. Further, to support application of sustainable tourism concepts, UNWTO and other partners have developed guidelines for the sustainable management of tourism⁴ covering all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. These guidelines embody sustainability principles concerning the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee tourism's long-term sustainability.

² <https://www.unwto.org/sustainable-development>

³ UNEP/UNWTO 2005, Making Tourism More Sustainable: A Guide for Policy Makers.

⁴ UNEP/UNWTO 2005, Making Tourism More Sustainable: A Guide for Policy Makers.

- 1.27. Thus, sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Sustainable tourism is best considered as a continuous process rather than a target state and, as such, its practice requires constant monitoring of impacts and 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.
- 1.28. The concepts, principles and practices of sustainable tourism⁵ have been a topic of discussion in tourism circles for many decades⁶. 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”.
- 1.29. These ideas have been embraced in the United Nations 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDG) adopted in 2015. Tourism’s connection to the SDGs has been an ongoing focus for UNWTO and given additional impetus to the long-standing work on the sustainability of tourism described above. Examples of UNWTO work in relation to the SDGs include a report to the UN General Assembly⁷ and the joint UNWTO-JICA publication “Tourism and the Sustainable Development Goals: A Toolkit of Indicators for Tourism Projects”⁸.
- 1.30. The second key factor has been the tremendous growth in tourism activity over the past decades reflecting ongoing increases in household income and the long-term decline in relative prices of travel. 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 negative 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 including through 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.

⁵ Here we include the development of ‘sustainable tourism’ products and the discussion around the sustainability of tourism more holistically.

⁶ See for example Wagar (1964); Wenkam (1975); and Cohen (1978).

⁷ The UNGA Report A/77/219, Promotion of sustainable tourism, including ecotourism, for poverty eradication and environment protection is available at: <https://undocs.org/en/A/77/219>

⁸ World Tourism Organization (2023), Achieving the Sustainable Development Goals through Tourism – Toolkit of Indicators for Projects (TIPs), UNWTO, Madrid, <https://doi.org/10.18111/9789284424344>

- 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.
- 1.31. The response of UNWTO to these 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).
- 1.32. 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.
- 1.33. Finally, sustainable tourism has taken on new perspectives as a result of the effects on travel and tourism from the Covid-19 pandemic. This event highlighted the dependence of many communities on the ability for people to travel, identified the significant ambition to travel among many people while at the same time ensuring to a greater extent that their travel embodied a wider range of considerations including social and environmental impacts. Both the downturn in travel and the return of tourism post Covid-19 have highlighted the importance of data on all aspects of tourism and its connection to economic, environmental and social contexts.

1.4. Measuring the sustainability of tourism

- 1.34. A key contribution of UNWTO in measuring the sustainability of tourism has been the description of 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 40 issue areas covering all dimensions of sustainable development. 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.
- 1.35. Implementation of these ideas has been promoted through the UNWTO Network of Tourism Observatories initiative⁹ 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. From a statistical perspective, the IRTS 2008 also recognized the relevance of measuring tourism's sustainability describing in broad terms the connections between tourism and environmental and social issues and explicitly recommending "that linking tourism and sustainability be considered a priority" (IRTS 2008, 8.45).

⁹ See <http://insto.unwto.org>

- 1.36. A range of additional indicator work has taken place in parallel, particularly in Europe (see Box 1.1). These indicator initiatives have been important in highlighting the relevance of measuring the performance of countries and destinations as part of implementing sustainable tourism objectives; recognizing the need to consider all three dimensions of sustainable tourism; and identifying the primary measurement themes within the three dimensions.

Box 1.1. Selected sustainable tourism indicator initiatives

Eurostat¹⁰ 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 framework¹¹. The indicator set was intended to be applied at regional/sub-national level. In 2022, Eurostat, jointly with the Member States, started working on a set of indicators on the sustainability of tourism that can be compiled from existing official statistics. As new data sources or better disaggregation techniques become available, the set will be deepened and widened. The main headings identified are i. economy, ii. labour market, iii. social and cultural (other than labour market), iv. environmental and v. digitalisation.

The OECD¹² 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. OECD's work on Indicators for Measuring Competitiveness in Tourism (2013)¹³ created a limited set of meaningful and robust indicators useful for governments to evaluate and measure tourism competitiveness in their country over time and to guide them in their policy choices. OECD review of statistical initiatives measuring tourism at subnational level¹⁴ (2016) gathered work undertaken at sub-national level on tourism statistics covers a wide range of issues and is usually supported by general indicators focusing on demographic, GDP, labour force, environmental, land cover or innovation.

The European Commission launched a European Tourism Indicators System (ETIS) for sustainable destination management¹⁵. This initiative commenced in 2013 and has defined 43 core indicators and has been trialed in a number of destinations. The work aims to also support global initiatives such as the UN 2030 Development Agenda and the related 10FYP on Sustainable Production and Consumption Patterns and the shift towards Sustainable Consumption and Production (SCP)¹⁶. The European Commission developed an EU Tourism Dashboard¹⁷ in 2022. It is an online knowledge tool aimed at promoting and monitoring the green and digital transitions, and the socio-economic resilience factors of EU tourism. The indicators are grouped in three policy-related pillars: i. environmental impacts, ii. digitalization, iii. socio-economic vulnerability.

Since 2021 EPA Network (<https://epanet.eea.europa.eu/>) is continuing to work on tourism and environment, through its new Interest Group Environment and Tourism (IGET) (<https://epanet.eea.europa.eu/reports-letters/epa-network-interest-group-on-citizen-science/epa-network-interest-group-on-environment-and-tourism>). The EPA Network has undertaken to share its environmental expertise and environmental data deriving from environmental monitoring activities to support the process of selecting indicators relating to the environmental dimension of tourism sustainability. The desired direction is to help provide a more complete picture of tourism in the context of monitoring above all the environmental pressures and impacts inevitably generated by the demographic pressure that tourism determines.

¹⁰ See "Methodological work on measuring the sustainable development of tourism", available at:

<http://ec.europa.eu/eurostat/web/tourism/methodology/projects-and-studies>.

¹¹ 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>

¹² 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>)

¹³ Dupeyras, A. and N. MacCallum (2013), "Indicators for Measuring Competitiveness in Tourism: A Guidance Document", OECD Tourism Papers, 2013/02, OECD Publishing. <http://dx.doi.org/10.1787/5k47t9q2t923-en>

¹⁴ OECD (2016-11-18), "An OECD Review of Statistical Initiatives Measuring Tourism at Subnational Level", OECD Tourism Papers, 2016/01, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jln3b32hq7h-en>

¹⁵ See: http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en.

¹⁶ The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate the shift towards SCP

¹⁷<https://tourism-dashboard.ec.europa.eu/>

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 and is engaging in a variety of initiatives.

- 1.37. A particular feature of 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”¹⁸.
- 1.38. Some of the indicators that have been used in the various sustainable tourism indicator sets can be derived from data collected following the definitions and standards for tourism statistics presented in the IRTS and TSA: RMF. Examples include international visitor numbers and expenditure and tourism contribution to GDP. However, since there are relatively few tourism statistics produced for sub-national areas and the range of themes covered by tourism statistics is limited, there tends to be a lack of overlap between the data required to support derivation of the various sustainable tourism indicators and the standard set of tourism statistics. The SF-MST aims to reduce this gap by broadening the scope of tourism statistics and hence supporting the derivation of sustainable tourism indicators across a range of relevant themes.
- 1.39. 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.
- 1.40. 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 needs¹⁹. However, while this concept may be generally agreed, converting this concept into a measurable definition for statistical purposes has proved very challenging.
- 1.41. As reflected in the extensive discussion on the measurement of sustainability from a statistical perspective in the work of the Conference of European Statisticians²⁰, there is common 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.

¹⁸ Abstract, 2014 UNWTO workshop report on Improving evidence-based decision making in the tourism sector

¹⁹ Brundtland, 1987

²⁰ UNECE, 2014

- 1.42. 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 across 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 be relevant in an assessment of the sustainability of tourism wherever an assessment is undertaken. Describing such a consistent framing is the primary objective of SF-MST.

1.5. Building SF-MST using existing statistical frameworks

- 1.43. The development of the SF-MST builds directly on well-established statistical frameworks for tourism statistics and forms the next part of the system of tourism statistics. Within the UN system, UNWTO has a 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.
- 1.44. A feature in the development of tourism statistics has been the role of international conferences in providing platforms to launch each stage of development²¹. 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 participants²². 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.
- 1.45. Prior to the development of the the SF-MST, the most recent advances in tourism statistics were reflected in the complementary standards, the International Recommendations for Tourism Statistics 2008 (IRTS 2008) (UNWTO & UN, 2010) and the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA:RMF 2008) (UNWTO, UN, Eurostat and OECD, 2010). The IRTS 2008 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.

²¹ IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of tourism statistics.

²² <https://www.e-unwto.org/doi/pdf/10.18111/unwtodeclarations.2017.26.01>

- 1.46. The design of the SF-MST, explained in detail in Chapter 2, uses a multiple capitals framing as a conceptual structure for the discussion of sustainability and as the starting point for the organization of a wide range of monetary and non-monetary data across the economic, environmental and social dimensions. The use of a multiple capitals framing leads to the integration of data from existing statistical frameworks, in particular accounting frameworks, and SF-MST thus reflects the results of tailoring these various frameworks to the tourism context. The following paragraphs summarize the key connections to non-tourism statistical frameworks that are brought together in the SF-MST.
- 1.47. First, the TSA:RMF 2008 reflects the application to tourism of the accounting approach of the United Nations' System of National Accounts (SNA). The SNA 2008 (UN et al, 2010) is the most recent version of this international standard and provides the basis for the measurement of economic activity and economic wealth, including for example measures of GDP. 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.
- 1.48. In tailoring the SNA to the measurement of tourism activity, the TSA:RMF 2008 describes in detail the accounting framework for describing tourism's role in economic activity using a set of 10 interlinked tables. The TSA:RMF 2008 provides the detail required for the assessment of the economic dimension within the SF-MST and additional economic themes are incorporated by extending the TSA: RMF through the adaptation of the wider SNA framework.
- 1.49. Second, the System of Environmental-Economic Accounting (SEEA) Central Framework 2012 (UN et al, 2014) is the overall international statistical standard for the measurement of the environment and its relationship to the economy. The SEEA, like the TSA:RMF 2008, is an accounting-based framework that uses and adapts the accounting concepts and rules of the SNA. In 2021, the SEEA was extended to consider finer, sub-national, spatial scales through the development of standards for ecosystem accounting as described in SEEA Ecosystem Accounting (UN et al, 2021). 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.
- 1.50. The SF-MST takes advantage of the common origin of the SEEA and the TSA:RMF 2008 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 2008 is an important component of the SF-MST.
- 1.51. Third, while some aspects of tourism employment are included in the TSA:RMF 2008 as relevant to the measurement of the economic dimension, SF-MST extends the set of data by integrating other statistical standards and guidelines developed by the ILO covering for example data on characteristics of employed persons and decent work. These data allow assessment of both the input of labour into the production of tourism goods and services and the characteristics of the underlying labour force.
- 1.52. Collectively, through these core statistical frameworks and others described through this document, the SF-MST demonstrates how 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.

- 1.53. SF-MST is the first statistical framework to demonstrate the potential to integrate across economic, environmental and social dimensions. At the same time, this development builds on significant contributions over many years in both the statistical domain and in other sustainability measurement initiatives. Further, it responds to the wider calls for measurement systems that record performance beyond the economic dimension, “beyond GDP”. The demand for such systems has been growing ever louder including especially through the adoption and promotion of the UN Sustainable Development Goals. Thus, while the SF-MST may be considered a unique statistical framework, its technical content builds on a strong history and its motivation responds to an increasing demand.

1.6. Structure of the SF-MST document

- 1.54. After the introduction (chapter 1), chapter 2 provides a comprehensive description of the key features of the SF-MST including its conceptual design, its statistical foundations, its approach to measurement at the sub-national level and its measurement themes and indicators. Chapters 3, 4 and 5 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.
- 1.55. As for all statistical frameworks, SF-MST is not intended to provide compilation guidance or implementation advice. Nonetheless, to support initial discussion and ahead of the preparation of relevant additional documentation, Chapter 6 provides a general introduction to a range of implementation and compilation topics. Annexes provide supporting information on classifications, a glossary of key terms, references and a research agenda.

2. Key features of the SF-MST

2.1. Conceptual design of the SF-MST

- 2.1. The primary intent in the design of the SF-MST is to describe an integrated statistical framework that operationalizes measurement within the scope of the UNWTO/UNEP broad definition 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.
- 2.2. 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.
- 2.3. The development of the SF-MST has used a multiple capitals framing to provide both a comprehensive and consistent measurement scope and a basic narrative for the consideration of the sustainability of tourism. Thus, the SF-MST reflects a measurement scope that encompasses measurement of the stocks of produced, natural, human and social capital and the various flows and changes in those stocks that arise in relation to tourism. The inclusion of a comprehensive set of stocks and flows allows data to be integrated to support analysis of the quantity and quality of stocks underpinning tourism including produced assets and infrastructure (e.g. hotels, roads), environmental assets (e.g. beaches, forests, water resources) and human and social capitals (e.g. labour force, institutional networks). In turn, this scope of stocks supports integrated measurement of flows of benefits accruing from those stocks (e.g. earnings of tourism employees, tourism value added, visitor satisfaction) and negative pressures and effects of tourism activity (e.g. GHG emissions, declines in water quality). The broad measurement scope that emerges from a multiple capitals framing can also be extended to link to data on the societal responses to sustainability challenges for example environmental protection expenditure, investments in accessibility and changes in energy use.
- 2.4. 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 1.5). However, accounting frameworks have not yet been sufficiently developed in some areas, particularly concerning social capital, and the full integration of measurement across multiple capitals remains a work in progress²³. Consequently, SF-MST has applied a multiple capitals framing using accounting approaches where relevant and complementing

²³ Steps towards integrated multiple capitals based measurement approaches are evident in the work on measuring sustainability by UNECE (UNECE, 2015), in the implementation of wealth accounting approaches by the World Bank (2021) and UNEP (2018) and in the forthcoming update of the SNA 2008 which will include new chapters on the measurement of wellbeing and sustainability that start from a multiple capitals framing.

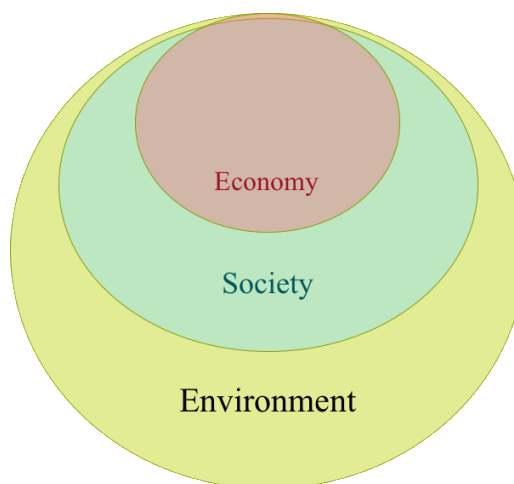
this with statistics and data on measurement themes with scope of a broad multiple capitals framing. Section 2.2 provides a longer discussion on the use of a multiple capitals framing within SF-MST.

- 2.5. 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 2.1b in contrast the more traditional conception of the relationship between the three dimensions in Figure 2.1a where the economy, the environment and society are distinct systems, even if slightly overlapping. Using a nested-systems framing to consider the 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.

Figure 2.1a: Traditional view of systems



Figure 2.1b: Nested view of systems



2.2. SF-MST's role in the analysis of sustainability, resilience and risk

- 2.6. One consequence of applying a systems framing is that SF-MST does not establish a “single” measure of sustainable tourism nor does it establish the rules by which a specific context should be considered sustainable. These would require determining the appropriate thresholds and preferences across all of the dimensions of sustainability such that the outcomes observed were considered sustainable. Establishing such thresholds and preferences is not an appropriate statistical task. By way of example, it is appropriate for statisticians to measure water quality but not to establish the thresholds that reflect the suitability of water for human consumption. 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 an integrated and well-informed way.
- 2.7. The assessment of the concept of sustainability is one of a number of different types of system-related assessments. Other system-related concepts that are commonly the focus of assessment and analysis include resilience and risk and, in relation to tourism, carrying

capacity is a system-related concept that is commonly mentioned. For example, measurement of water use by tourism industries relative to water availability will provide insights into the dependence of tourism activity on a given water supply and the associated potential vulnerability of tourism activity to the effects of drought. Data on the age and skills of employees in tourism activities can provide insights into the risks that may arise if there is limited staff development and opportunity within the sector or there is increasing competition for people with similar skills sets in other industries. Measurement of the condition of ecosystems commonly used by visitors and associated patterns of use may support assessment of the risks associated with loss of biodiversity. Recording information on the location of tourism activity and the quality of tourism related infrastructure (including roads, rail lines, etc) will support analysis of the potential effects of natural disasters and long term effects of climate change such as sea level rise.

- 2.8. More generally, tourism is a particularly vulnerable industry which is reliant on intact ecosystems, global transport and business activity as well as socio-cultural exchange. Resilience is thus increasingly recognized as a prerequisite for sustainable development and the increasing occurrence of crises has triggered a shift from reactive crisis management towards proactive risk management. The measurement aim then is to provide data that help identify potential areas of risk and vulnerability if contexts change, and recognizing that context change may be both driven by tourism activity itself or result from non-tourism related events and changes.
- 2.9. The overarching principles of resilience thinking and risk-informed management directly influence sustainable development endeavours. While the concept of resilience is still subject to a variety of definitions and interpretations depending on the context in which it is studied, there are a number of general resilience principles and indicators that allow for an operationalization of the concept. Basic principles of resilience that can be considered using SF-MST data include diversification (of source markets, products, activities, avoiding overdependency on tourism, review of marketing the destination internationally and / or regionally), education (training on risk-management and risk-assessment), social networks (building strong stakeholder cooperation, risk-sharing initiatives, promotion of cross-sectoral teams) and reflexivity (evaluation of lessons learned from past crises, set-up of emergency funds, recovery plans).
- 2.10. Overall, the intention in the development of the SF-MST is not to provide direct answers to each of these systems-related topics. Rather, the intended role of SF-MST in relation to all of these types of system-related assessments and analyses is limited to providing a coherent baseline description of tourism, including changes over time. From this set of baseline information, a wide range of assessments and analyses can be performed including of sustainability, but SF-MST does not, of itself evaluate the sustainability, resilience or carrying capacity of a given system. The development of a common information set for those analysts tasked with undertaking such assessments should enable decision makers to recognize the connections within and across systems more readily and hence design and implement more integrated solutions and responses. For example, there may be cross-cutting benefits across all of the concerns noted above through the increased investment in ecosystem restoration, for example, planting mangroves, in relevant locations; benefits which may include improved retention and attraction of staff.

- 2.11. It is not expected that in the early implementation of SF-MST there will be sufficient resources to organize all of the data required to support all of the assessments that might be imagined. In that sense, the role of the current version of the SF-MST and inherent in its design, is describing a pathway for the development of more integrated data in relation to tourism activity and establishing a common language for the concepts and definitions that are used to describe the systems to which tourism is connected. With regard to implementation of the SF-MST this implies that the approach that must be adopted should be flexible and modular. That is, for different countries and different locations the emphasis should be on organizing data that are most relevant to the decision making context and progressively build a richer data set over time.

2.3. Applying a multiple capitals framing in the SF-MST

- 2.12. The concept of sustainability has been framed in a number of different ways but a common understanding is that it embodies consideration of economic, environmental and social dimensions. For the purposes of SF-MST, an enduring starting point for measuring sustainability is the definition of sustainable development of the 1987 Brundtland Commission report. That report defines sustainable development as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN World Commission on Environment and Development, 1987, p423). This starting point links the measurement of sustainability to the measurement of wellbeing, i.e. sustainability requires wellbeing to be present in the future.
- 2.13. To establish coherent measurement among the elements of wellbeing and sustainability as well as providing data that can link to the narrative of the sustainable development definition just presented, a multiple capitals framing has often been applied. It has been applied in the context of the selection and interpretation of sustainability indicators and in the context of integrated monetary valuation across multiple capitals following the economic theory of wealth accounting²⁴. The use of a multiple capital approach to underpin the measurement of sustainability has been reflected in a range of statistical work including in the Conference of European Statisticians Recommendations on Measuring Sustainable Development²⁵.
- 2.14. At the core of a multiple capital framing is the relationship between (i) the underlying stocks or endowments of capital encompassing four types of capital namely produced, natural, human and social capital; and (ii) the flows of benefits including monetary and non-monetary benefits from those stocks. In respect of the Brundtland Commission definition of sustainable development, the aim is thus to understand whether the flow of benefits can be sustained in the future. While this is the core framing, measurement of the stocks and associated benefits is readily connected to data concerning impacts on the stocks of capital (e.g. the effects of climate change on local ecosystems), the drivers and pressures that generate those impacts (e.g. population growth, GHG emissions, air pollution) and the responses to the changes in the stocks and flows (e.g. regulations, environmental protection expenditure, investments in infrastructure).

²⁴ Wealth accounting has been the subject of increasing interest, for example in the IHDP-UNU and UNEP work on Inclusive Wealth Accounting (http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDM_2014.pdf) and the World Bank's Changing Wealth of Nations (<https://www.worldbank.org/en/publication/changing-wealth-of-nations>).

²⁵ UNECE (2014) https://unece.org/fileadmin/DAM/stats/publications/2013/CES_SD_web.pdf

- 2.15. The data used to reflect a multiple capital framing is most readily organized using accounting frameworks, although generally accounting frameworks encompass measurement of one or two capitals. Among the set of statistical frameworks focused on national level data, the accounting frameworks of the System of National Accounts²⁶ (with a primary focus on produced capital) and the System of Environmental-Economic Accounting²⁷ (with a primary focus on natural capital) support the organization of data for a multiple capitals framing. A range of thematic accounting frameworks have also been developed covering tourism (e.g. the Tourism Satellite Account²⁸ has consideration of produced capital), education, health and culture, each having links to the measurement of stocks of capital and associated benefits to varying degrees.
- 2.16. The use of accounting frameworks to organize data for a multiple capitals framing works well since accounting rules provide a sound theoretical framing for recording data, in both monetary and non-monetary terms, on stocks and flows and can 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.
- 2.17. Multiple capitals framings do have 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 organizing data concerning produced, natural and human capital. Further, since most work on multiple capitals has considered each type of capital separately, there is an ongoing requirement to develop better approaches to integration across the different capitals.
- 2.18. A common misunderstanding is that the use of a multiple capitals framing implies a full monetization of all stocks and flows. For example, in the context of the environment, measurement of the concept of natural capital may be understood to require estimation of a total value of the environment in monetary terms. However, this is not the intent or necessary application of multiple capitals framing. Rather, the intent is to place all relevant information in an appropriate context whether expressed in monetary or non-monetary terms and distinguish clearly between stocks and flows to support analysis in line with the definition of sustainable development. This application of a multiple capitals framing can thus be used to organize information to support discussion of multiple value perspectives²⁹.
- 2.19. 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 framing thus provides a way of consistently organizing the discussion of sustainability, and related topics of capacity and resilience while allowing flexibility in the choice of indicators used to summarize performance and progress.

²⁶ EC et al (2009) System of National Accounts 2008

²⁷ UN et al (2014) System of Environmental-Economic Accounting 2012 Central Framework

²⁸ Tourism Satellite Account: Recommended Methodological Framework 2008

²⁹ See SEEA Ecosystem Accounting (UN, et al, 2021) section 2.4 for a discussion of this issue in the context of ecosystems.

- 2.20. The use of a multiple capitals framing 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 sustainable tourism 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.
- 2.21. 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 different indicators may be chosen for a single measurement theme, it is usually difficult to compare trends across locations. Further, it may be difficult to reach an overall assessment of sustainability since the connections among the indicators may not be evident. 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.
- 2.22. 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 income³⁰. A clear advantage of this approach is that a simple and easy-to-communicate message can be conveyed using a single number.
- 2.23. However, in the context of sustainability assessment, the interpretation of these composite 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, there has been little wide scale progress in using these indexes in decision making contexts.

2.4. Conceptual coverage of SF-MST

- 2.24. The conceptual coverage of the SF-MST supports the integration of information on the three primary dimensions of sustainability – economic, environmental and social - and across different spatial scales from local to global scales. All forms of tourism are within scope including domestic and international trips, and both tourists and same-day visitors. The breadth of data brought together in the SF-MST should enable multiple perspectives

³⁰ <http://hdr.undp.org/en/content/human-development-index-hdi>

on sustainability to be considered, including the perspective of tourism establishments (supply side), the perspective of visitors (demand side) and the perspectives of host communities and governments.

- 2.25. The following short descriptions are intended to provide a general sense of the coverage with details provided in the following three chapters each covering one of the dimensions. At the same time, it is important to recognize that 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 establishments and host communities. Thus the separation of discussion into three themes is intended as simply a means to present the range of relevant themes and data and does not imply that each dimension should be analyzed separately.
- 2.26. 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.
- 2.27. The **environmental dimension** concerns the stocks and changes in stock of environmental assets, often referred to as natural capital, that either 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 (i) measurement of the flows of natural inputs into tourism production processes, such as flows of water and energy, (ii) 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; and (iii) activities of tourism establishments to improve environmental outcomes (including green jobs).
- 2.28. The **social dimension** covers a range of social aspects related to tourism activity. The data about the social dimension is organized to encompass four perspectives: (i) the visitor perspective covering visitor flows, visitor engagement with and appreciation of host communities, visitor satisfaction and visitor access to and participation in tourism; (ii) the host community perspective covering the effect of tourism on host communities and their perceptions of tourism; (iii) the tourism suppliers perspective covering the characteristics of employed persons, entrepreneurship and decent work; and (iv) the governance perspective covering tourism strategy, plans and regulations about sustainability, cultural assets, accessibility, health, safety, etc. and civic engagement and stakeholder participation.
- 2.29. In applying the conceptual coverage for measurement just described, it is necessary to establish a geographic scope for measurement. The primary focus for SF-MST applies the concept of economic territory of a country as defined in the System of National Accounts and as applied in the IRTS and TSA:RMF. The associated concept of residence, and the fundamental tourism concept of usual environment, are described in the following section.

- 2.30. In principle, the concepts encompassed in SF-MST can also be applied at a sub-national level, reflecting the observation that countries can be of many different sizes. However, there are many practical challenges in attempting a complete translation and focus must therefore be placed on measurement that is both feasible and relevant. Thus, for countries that have a small area, sub-national statistics on tourism may be of less relevance while for larger countries, where tourism activity is concentrated in specific areas, analysis of tourism may require some degree of sub-national measurement. As well, since the measurement of sustainability requires consideration of economic, environmental and social dimensions, it is the case that meaningful connection among these dimensions is commonly best described at a relatively small geographical scale. Reflecting this, much research and measurement of sustainable tourism has focused on the destination level.
- 2.31. Given these considerations, while the statistical descriptions in SF-MST relate most directly to measurement at the national level, there is also a substantive description of measurement of tourism's sustainability at sub-national levels. Section 2.4 provides an introduction and general principles and sections in chapters 3, 4 and 5 provides more specificity on sub-national measurement for each of the dimensions.

2.5. Core statistical concepts and treatments

2.5.1. Concepts and definitions concerning visitors

- 2.32. Tourism is a demand-driven phenomenon. That is, the same economic activity providing the same goods and services may be considered tourism, or not tourism, depending on the status of the consumer, i.e. whether they are a visitor or not. This makes the concept of "visitor" central to understanding whether economic activities qualify as tourism. 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.
- 2.33. The international standard for tourism statistics is the *International Recommendations on Tourism Statistics 2008* (IRTS 2008) 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.
- 2.34. The framing of the visitor that is at the heart of tourism statistics and at the heart of the SF-MST, and is clearly defined in IRTS 2008. The key definitions 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.
 - A person's **usual environment** 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).

- **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 categorized as domestic, inbound or outbound trip depending on the residency of the visitor and the main destination. **Domestic tourism** is the activity of visitors on trips within their country of residence, **inbound tourism** is the activity on trips within a reference country by non-residents and **outbound tourism** is the activity on trips outside a reference country by residents. These three categories constitute the different **forms of tourism**.
 - From the perspective of a reference country, an important for focus for sustainability measurement is **internal tourism** being the sum of domestic and inbound tourism.
- 2.35. Distinguishing the different forms of tourism requires application of the concepts of economic territory and residence. To support consistency and comparability with other statistics, these two concepts are defined following the System of National Accounts and the Balance of Payments. The **economic territory** of a country is the area under effective control of a single government. It includes the land area, airspace, territorial waters and territorial enclaves³¹ in the rest of the world. (SNA 2008 4.11 & 12). The **residence** of each institutional unit (including households and enterprises) is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest (SNA 2008 4.10).
- 2.36. Additional details on the definitions of visitors, trips and usual environment are provided in IRTS 2008 Chapter 2 together with description of relevant inclusions, exclusions and recommended treatments. These same definitions and treatments apply in the SF-MST.

2.5.2. Concepts and definitions concerning tourism production and consumption

- 2.37. In principle, the concepts of production, consumption and other economic variables that are used in the measurement of the economic activity of tourism are the same as applied for the measurement of other economic activities. However, the standard descriptions and classifications of economic activities do not explicitly identify “tourism” as a stand-alone economic activity and thus special efforts have been required to consistently identify and measure the relevant flows. The issue arises because, as noted above, tourism is defined from a demand perspective, and hence encompasses production activity across a range of industries within the standard industrial classification 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.
- 2.38. The relevant definitions, boundaries and classifications for the measurement of tourism economic activity are presented in the *Tourism Satellite Account: Recommended Methodological Framework 2008* (TSA:RMF 2008) published by the UN, Eurostat and the

³¹ Territorial enclaves include embassies, consulates and military bases and the operations of international organizations. For more details see 2008 SNA, paras, 26.24-26.45.

OECD in 2010³². The TSA:RMF is the international standard for compiling tourism satellite accounts (TSA) and provides a conceptual framework for understanding tourism from a macroeconomic perspective. It builds directly on the concepts and definitions of the IRTS2008 and complements that system of statistics by providing the link to the System of 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 measures such as Tourism Direct GDP, and presenting corresponding accounts and analytical tables. The use of 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.

- 2.39. Key definitions used in the TSA:RMF beyond those from the IRTS2008 mentioned above are:
- **Tourism expenditure** is the amount paid for the acquisition of consumption goods and services, as well as valuables, for own use or to give away, for and during tourism trips. It includes expenditure by visitors themselves as well as expenses that are paid for or reimbursed by others (see IRTS 2008, para. 4.2).
 - **Tourism consumption** expands the measurement boundary of tourism expenditure to include consumption that does not involve monetary transactions such as services associated with vacation accommodation on own-account, tourism social transfers in kind and other imputed transactions. (Details are provided in TSA: RMF section B.2).
 - **Tourism characteristic products** are those consumption products that satisfy one or both of the following criteria: (i) tourism expenditure on the product should represent a significant share of total tourism expenditure; (ii) tourism expenditure on the product should represent a significant share of the supply of the product in the economy. (IRTS 2008, 5.10).
 - **Tourism characteristic activities** are the activities that typically produce tourism characteristic products.
 - **Tourism industry** is the grouping of those establishments whose main activity is the same tourism characteristic activity. An **establishment** is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (SNA 2008, 5.14).
- 2.40. The majority of tourism expenditure is on tourism characteristic products and the majority of the supply is provided by tourism characteristic activities. Thus, the primary focus in the TSA:RMF is recording the production, income and value added of tourism industries and reconciling this information with data on tourism expenditure.
- 2.41. Box 2.1 presents the top-level categories for tourism characteristic products and tourism characteristic activities. In an economy wide setting, products comprise both goods and services. However, in tourism the focus in defining products is almost exclusively on services, with the exception of country-specific tourism characteristic goods such as souvenirs). Although there is an apparently close match between the set of products and activities as shown in Box 2.1, there is not a one to one relationship. In practice, a single tourism establishment may produce a range of products even though it will be classified to

³² Related to TSA, two further manuals have been published by OECD in 2000 (“Measuring the Role of Tourism in OECD Economies. The OECD Manual on Tourism Satellite Accounts and Employment”; https://www.oecd-ilibrary.org/industry-and-services/measuring-the-role-of-tourism-in-oecd-economies_9789264182318-en) and by Eurostat (“European Implementation Manual on Tourism Satellite Accounts (TSA)”) in 2002.

its main or primary product. For example, many hotels will be categorized to the activity “Accommodation for visitors” and will supply the product “Accommodation services for visitors”. However, a single hotel will usually produce a range of products including accommodation services and food and beverage serving services with the latter considered non-characteristic for the hotel.

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
<i>Source: IRTS 2008, Annex 3 and 4.</i>	

- 2.42. 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).
- 2.43. In order to ensure a complete measurement coverage there are a range of additional concepts that are described at length in the IRTS and the TSA-RMF, including tourism connected products, non-tourism related consumption products, non-consumption products such as valuables, tourism gross fixed capital formation and tourism collective consumption and employment in the tourism industries. 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.
- 2.44. Tourism characteristic products refer to outputs from processes of production as defined in the SNA and applied generally in economic statistics. However, the term “tourism product” is also applied in tourism circles to refer to a combination of different aspects around a specific centre of interest, such as nature tours, life on farms, visits to historical and cultural sites, visits to a particular city, the practice of specific sports, the beach, etc. Specific types of tourism product thus emerge such as culinary tourism, ecotourism, city tourism, sun-and-sand tourism, agro-tourism, health tourism, etc with different products often emerging as professionals in the tourism business look to market specific packages or destinations.

- 2.45. From a measurement perspective, all of the activity associated with these types of tourism products is encompassed by the measurement themes and associated concepts and definitions described in SF-MST. Where considered appropriate, the SF-MST might be applied in relation to a single tourism product to consider its sustainability. However, a focus on a single or selection of tourism products, for example on ecotourism, will not provide an appropriate measure of the sustainability of tourism for a given location or country.
- 2.46. At this stage of development of the SF-MST, the primary focus of measurement is on visitors and on those establishments in tourism industries, i.e. those undertaking tourism characteristic activities. This is the same pragmatic primary focus recommended for implementation of the IRTS and TSA:RMF in a number of areas of measurement. Conceptually, the measurement focus should be broadened to provide a complete coverage of the environmental and social connections linked to all visitor expenditure (i.e. beyond tourism industries). In some cases, where relevant data covering the whole economy are available measurement using a broader coverage will be appropriate. However, in general, given the practical measurement challenges in covering the additional economic, social and environmental aspects of SF-MST in a comprehensive fashion across all measurement themes, and recognizing the relevance of statistics on the core of tourism activity, this primary focus of SF-MST on tourism industries is considered appropriate.
- 2.47. Note that, beyond the production and consumption of tourism products, there are some specific additional areas of measurement described in the TSA:RMF that are incorporated into SF-MST. These concern employment in the tourism industries, tourism gross fixed capital formation and tourism collective consumption. Content on each of these topics is included in SF-MST in chapters 3, 4 and 5 including relevant concepts, definitions and treatments.

2.5.3. Other relevant recording treatments

- 2.48. The use of the TSA:RMF to organize data on the economic aspects of tourism underpins the recording of the economic dimension within SF-MST and also provides the basis for building a more complete framework incorporating environmental and social dimensions. From a measurement perspective, in addition to the conceptual building blocks described above, there are a number of other accounting-based recording rules that are applied in the SF-MST to support the compilation of coherent data across the various dimensions. There are no altered or additional recording treatments applied in SF-MST than those that are present in the statistical frameworks on which it is based, predominantly the IRTS, TSA:RMF, SNA, BPM, SEEA and various ILO labour statistics standards. Three specific aspects are highlighted here.
- 2.49. *Time of recording.* To ensure that data about different variables in different dimensions can be meaningfully compared, it is important that data are recorded consistently in relation to agreed periods of time, e.g. a year, a month. When recording data in monetary terms, the general rule is that transactions are recorded when ownership changes and the corresponding claims and obligations arise, or are transformed or cancelled. Transactions internal to one economic unit are recorded when economic value is created, transformed or extinguished. This approach is called an accrual approach.

- 2.50. Ideally, when recording data in non-monetary terms, for example, numbers of visitors, cubic metres of water used, the time of recording should align with the time of recording of any corresponding flows recorded in monetary terms. Depending on the data sources available, implementing this alignment may be challenging but nonetheless, it is important to seek as much coherence as possible such that data for different variables pertaining to a reference year (e.g. 2024) can be appropriately interpreted.
- 2.51. Data concerning stocks, for example, the area of land used for tourism, number of hotels, should be recorded in relation to the beginning or end of a given reference year.
- 2.52. *Units of measurement.* For measurement in monetary terms, all entries must be measured in terms of money, usually in the currency of the reference country. In most cases, the entries are the monetary values of the actual transactions. For measurement in non-monetary terms, the unit of measurement will vary depending on the variable being measured. Thus, for example, visitor flows are generally measured in terms of numbers of visitors; flows of energy are generally measured in terms of energy content, such as joules; labour input may be measured in terms of numbers of people or hours worked. Units of measurement that are applied should be clearly defined in any presentations of statistical outputs.
- 2.53. *Gross and net recording.* The terms “gross” and “net” are used in a wide range of measurement contexts, in particular concerning accounting. In the SNA, the term “net” is generally used to indicate whether an accounting aggregate has been adjusted for consumption of fixed capital (depreciation). In other situations, the term “net” is used simply to refer to the difference between two entries. In SF-MST, as far as possible the terms gross and net are avoided. This is intended to limit the potential for confusion in the use of these terms. At the same time, the general goal through SF-MST is to describe the relevant concepts in what might be considered “gross” terms so that all assumptions and relationships can be fully articulated.
- 2.54. Further, compilers are encouraged to record data in gross terms as much as possible and then explain any subsequent calculations that may be required to derive estimates and indicators that are often the focus of analysis and reporting. For example, analytically it may be of interest to understand the contribution of a tourism destination to climate change using an indicator of net GHG emissions. In this case, SF-MST recommends recording information on both the GHG emissions and the carbon sequestered as inputs to the derivation of the indicator.

2.5.4. Cross-cutting measurement topics

- 2.55. The consistent application of concepts, definitions, measurement boundaries and recording rules is intended to support the organization of data in a coherent manner across the different dimensions. In turn this is intended to support integrated analysis across the economic, environmental and social dimensions and provide an appropriate level of credibility to assessments of sustainability. Within this general framing of recording that is described across chapters 3, 4 and 5, there are three additional topics of general relevance across all dimensions. In this section the topics of seasonality and tourism shares are discussed. The third topic concerns measurement at sub-national levels which is discussed in detail in Section 2.5.

- 2.56. Seasonality. In many locations, tourism is a seasonal phenomenon with the level of activity affected by regular changes in climate (summer, winter) and long-standing patterns of religious, educational and other holidays. As a result of these sub-annual patterns, the analysis of annual data can miss important within year variation. Particularly with respect to sustainability, challenges for particular destinations may emerge predominantly at those times where there are peaks in visitor activity – for example in managing demand for transport or water. The challenges may also concern the ongoing capacity to supply tourism products in cases where ongoing employment in tourism cannot be assured to those living locally.
- 2.57. While the analytical relevance of sub-annual data is clear in many cases, the collection and organization of data across all areas of sustainability on a quarterly or monthly basis will likely be far beyond the capacity of compiling agencies. As well, at a national level, variations within a year, may be of less relevance for decision making which might focus on overall infrastructure requirements, for example.
- 2.58. Consequently, it is recommended that sub-annual data be collected for a limited selection of variables such that the potential concerns about capacity, and emerging changes in seasonal patterns, can be monitored effectively and additional data collected for specific topics. At a minimum it is recommended that sub-annual data on a quarterly basis be collected on visitor flows, visitor expenditure and employment in tourism. For sub-national areas, quarterly or monthly data on these topics may be of high relevance together with information on pressures on local environments, for example water use.
- 2.59. Tourism shares. Assessing the contribution and impact of tourism relies on making clear connections between the activity of visitors and the surrounding economic, environmental and social context. In most contexts, changes in economic, environmental and social contexts in aggregate (i.e. due to all factors) will be potentially observable but the contribution and impact of tourism – tourism’s share - will be far less observable.
- 2.60. In the economic dimension, the approach that has been developed through the TSA:RMF to identifying the contribution of tourism to economic activity involves reconciling measures of tourism expenditure with measures of the production of goods and services for visitors at a detailed level and hence determining to what extent tourism expenditure contributes to the output and value added of industries across the economy, particularly tourism industries. In this context, the proportion of output or value added attributable to tourism is referred to as the tourism ratio for a given industry. The most high profile indicator that applies this approach is Tourism Direct GDP.
- 2.61. There is less experience in determining the tourism share in the environmental and social dimensions. At destination levels, where there is a relatively high level of visitor activity, making associations and assumptions concerning changes in context and visitors might be more readily achieved but at national level such assumptions are likely to be more difficult to make.
- 2.62. Notwithstanding the measurement challenges, approaches to determining tourism shares have been developed for a number of themes within the environmental dimension and these approaches are described in Chapter 4. The descriptions include the related question

of whether assessment of the impact of tourism should be considered from the perspective of the visitor (a consumption perspective) or the supplier of tourism products (a production perspective)³³.

- 2.63. A closely related topic concerns the measurement of indirect and induced effects which relate to flow-on effects of tourism beyond the direct effects that are recorded in the SF-MST. The measurement of indirect and induced effects requires the organization of additional information on other (non-tourism) industries, and the wider environmental and social contexts. For example, the measurement of the indirect effects of tourism on agriculture due to food consumption by visitors will require information on the agriculture industry and its economic, environmental and social context.
- 2.64. The SF-MST does not encompass the full range of information that would be required to measure all indirect and induced effects, noting particularly that this would also require a single reference location to have information on all of the other locations that are connected. In this respect a clear distinction is made in SF-MST between the organization of economic, environmental and social data concerning tourism and the analysis and modelling that would be required to assess indirect and induced effects. Nonetheless, at relevant places in Chapters 3, 4 and 5, there is discussion of the types of indirect and induced effects that might be considered as part of a wider analysis.

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

2.6.1. Introduction

- 2.65. 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 2019 report for EU regions and other countries in the Mediterranean: “Ensuring an effective monitoring of tourism sustainability in the Mediterranean region”³⁴.
- 2.66. 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 section 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.

³³ See TSA:RMF 2008, para. 4.50 related to “tourism ratio” and para. 4.51-4.53 related to “tourism share.

³⁴ <https://az659834.vo.msecnd.net/eventsairwesteuprod/production-kuonicongress-public/59d20c2a75ba419a883ce7694be030c1>

- 2.67. 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.
- 2.68. In recognising the significance of territory, territorial entities will be best served by having a measurement framework and associated data that can underpin evidenced-based decision making concerning the sustainability of tourism. 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 the impacts of tourism on them, for example in terms of employment opportunities, traffic congestion or higher prices.
 - 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.
- 2.69. To support this measurement challenge, the SF-MST provides a structured approach to the organization of data at sub-national level to support decision making at relevant scales. This does not imply that all economic, environmental and social tourism data must be available at every spatial scale or for every area within a country. 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.
- 2.70. Further, since there will be differences in the data sources and the decision-making contexts at sub-national levels, it means that the organization of data at sub-national level is not a simple replication of national level methods and practices. Nonetheless, the longer-

term statistical ambition is to develop and integrate both sub-national 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.

- 2.71. The framing described for SF-MST 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.

2.6.2. Defining spatial areas for measurement

- 2.72. Discussion of sub-national statistics requires consistent use of terms and definitions with respect to different spatial areas for measurement operating at different geographic scales. A common entry point for the compilation of sub-national statistics is the use of administratively defined areas. The following five types of administratively defined spatial areas are applied in the SF-MST, noting that the term **sub-national** is used to refer to spatial areas below the national level.

Global (or international) encompassing both all countries and all marine areas.

Supra-national referring 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).

National being the most common level of statistical measurement and the level of government that sets the overarching legislative and policy frameworks and engages with other countries.

Regional referring to any level of administrative unit between the national and the municipal level. Countries may use terms such as state, region, province, county, etc to refer to these spatial areas. The term regional does not refer to aggregations of countries.

Municipal or **city** referring to the level of administrative units corresponding to local 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, 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 spatial area and local spatial areas.

- 2.73. In addition to administratively defined spatial areas, it is also necessary to recognize that for many purposes more targeted, tourism specific spatial areas may need to be defined, that are often not coinciding with administratively defined areas. A general term that may be used for such spatial areas is **tourism destination**. A destination might relate to a supra-national area (e.g. the Pacific), a country, a region, a municipality or a more specific local area (e.g. an area within a city). Further, in some cases it will be relevant to combine different spatial areas (i.e. combinations of local areas, municipalities or regions) to establish a spatial scope that is of analytical interest. Examples of such combinations include the Costa del Sol (as a combination of municipalities along the Spanish coast) and

the Alps (as a combination of regions across several countries in Europe). SF-MST can be applied for these different combinations and compilers are encouraged to clearly document how combinations of spatial areas have been formed.

- 2.74. In the discussion of sustainable tourism, the concept of a tourism destination is most commonly associated with spatial areas defined at the local level, i.e. contiguous areas or zones (a) within a given municipality or (b) across multiple municipalities, that have a relationship to tourism. To provide a structured approach to the organization of data at this scale, the SF-MST defines two types of local tourism areas: **local tourism destinations** and **local tourism connected areas**. These definitions provide a common basis for measurement and implementation of SF-MST at these scales in cases where there are resources available and there is high relevance from a destination management perspective.
- 2.75. For statistical purposes, **local tourism destinations** are those spatial areas satisfying the following demand or supply criteria:
- *Demand criteria: areas where a significant share of consumers are visitors and which attract a significant share of visitors to the wider region or country;*
 - *Supply criteria: areas where the tourism industry represents a significant share of the economy of that spatial area and which have a significant share of the tourism industry of the wider region or country.*

Local tourism destinations should include supply of a wide range of tourism characteristic products (including accommodations, restaurants and attractions) and are delineated primarily based on economic factors as described in the criteria.

- 2.76. In addition to local tourism destinations, in some cases it may be relevant to identify **local tourism connected areas** referring to areas that have connections to tourism and are relevant for the measurement of the sustainability of tourism but which do not have high concentrations of tourism activity. These areas would therefore be delineated primarily on the basis of environmental and social criteria. Examples could include areas where a high number of residents are employed in tourism and areas of high biodiversity (such as protected areas) which may be impacted by or may support tourism activity (such as beaches).

2.6.3. Delineating local tourism destinations for statistical purposes

- 2.77. To best support coherence and interpretation in measuring the sustainability of tourism, an overarching system of spatial boundaries is required that supports the integration of data across measurement themes. That is, relevant areas must be defined such that available data for all relevant themes can be meaningfully attributed to them. Consequently, for each type of spatial area, the relevant spatial boundaries must be mutually exclusive. In some cases, the spatial areas will be nested, for example municipalities will be within regions, and regions within countries. Although relatively small, the spatial areas of local tourism destinations and local tourism connected areas, may cross municipal or regional boundaries. However, it is recommended that local tourism destinations are mutually exclusive and all local tourism connected areas are both mutually exclusive among themselves and also not overlap with local tourism destinations.

- 2.78. Each distinct occurrence of a type of spatial area should be registered as tourism specific spatial units by the national statistical office and made publicly available such that all compilers and users of tourism related data can reference the same spatial boundaries. This process should include ensuring reconciliation and alignment with spatial boundaries applied in other statistical contexts for each of the different types of spatial areas. As noted above, from this register of spatial units, it may be of interest to combine spatial areas to create aggregate of specific interest. For example, for municipal areas it would be possible to create a combination of those municipalities that are considered more tourism related. Where groups of tourism areas are made, it should be possible to make a valid comparison to the rest of the territory, i.e. non-tourism, for the same type of spatial area.
- 2.79. 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. In the EU it is recommended to apply spatial boundaries consistent with the Nomenclature of territorial units for statistics (NUTS) and local administrative units (LAU). Organization and release of data for these areas will be highly relevant since the jurisdiction of decision-makers is likely to be defined by these boundaries.
- 2.80. 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 (i.e. tourism activity is not evenly distributed across administrative units) and also that tourism dynamics do not respect administrative boundaries. Hence, delineation of local tourism destinations and local tourism connected areas will require the use of additional factors and criteria considering approaches that underpin the delineation of social-ecological systems (see, for example, Leslie et al., 2015³⁵) and the way that spatial areas for tourism have been identified in the tourism research literature (see, for example, Hernandez-Martin, et. al., 2016³⁶).
- 2.81. It is recommended to use the following criteria in delineating local tourism destinations:
- Non-overlapping: These areas should not overlap and it is recommended that each area is territorially contiguous, noting the possibility of justified exceptions.
 - High concentrations of tourism supply or demand: Measured using relevant tourism concentration indicators, such as number of visitors per resident population. It is recommended to focus on measuring tourism supply as this is considered the most feasible pathway to delineating local tourism destinations.
 - Internal homogeneity: Tourism within a single spatial area should share similar features such as the type of tourist, products offered, type of accommodation, sustainability issues. If there is large heterogeneity, splitting the spatial area should be considered.
 - Stability and flexibility: These areas should be relatively stable over time with changes to spatial boundaries made infrequently on the basis of considering significant changes in context.

³⁵ Leslie, H.M et al (2015). Operationalizing the social-ecological systems framework to assess sustainability. PNAS Vol 112 No 19

³⁶ 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.

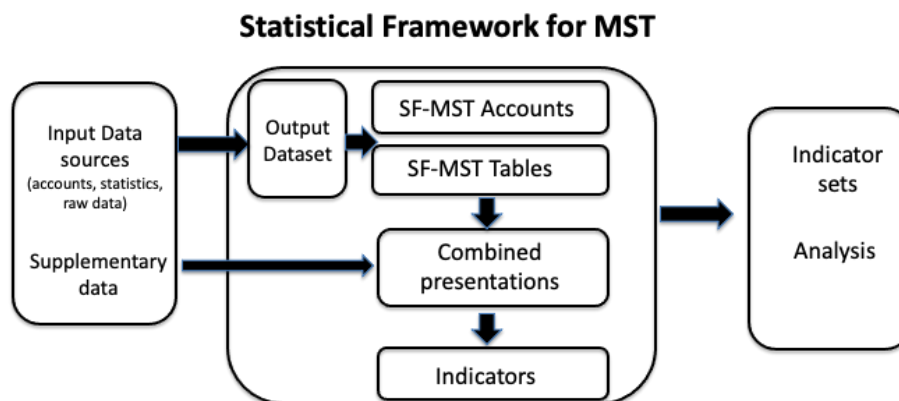
- Confidentiality: These areas must be of sufficient size to respect statistical confidentiality.
 - Feasibility of measurement: These areas should be delineated with consideration for the type and range of data that are likely to be available or may reasonably be expected to be collected.
 - Public and private support: Stakeholders in local tourism destinations must be involved in the discussion to ensure the data are aligned with the needs of decision makers.
- 2.82. In establishing the set of spatial areas for tourism, it is essential that those working in local tourism destinations are involved in the discussion to ensure that their insights into how spatial areas are defined are considered and that information is generated that is suitable for analysis and policy for sub-national spatial areas. In particular, the spatial boundaries should take into consideration historical context, physical barriers and local neighbourhoods. Generation of boundaries based solely on algorithms is not recommended.
- 2.83. 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: cities, coastal and small island destinations, mountain destinations and urban destinations. The use of common measurement themes and indicators (e.g. tourism concentration 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.
- 2.84. Different types of local tourism destinations may have different sustainability challenges and consequently, the determination of spatial boundaries in different places may need to consider additional criteria. For example, in cities, places of accommodation may differ from the places visited in which case it may be appropriate to distinguish the city center as a distinct local tourism destination. And for rural destinations the definition of local tourism destinations is only relevant where there is a concentration of visitors at a level that generates sustainability challenges.
- 2.85. Local tourism connected areas should be delineated as necessary to support tourism sustainability analysis. They should not overlap with local tourism destinations and, if an area satisfies the criteria for a local tourism destination then it should be treated as such rather than treated as a local tourism connected area.
- 2.86. In practice, a range of spatial data sources will be relevant in delineating local tourism destinations and local tourism connected areas. Relevant data will include: population census zones/areas; zip code boundaries; national grid cell boundaries; vegetation cover data, and administrative boundaries. It is expected that ongoing developments in the management of spatial data and the compilation of sub-national statistics will facilitate ongoing extension of the range of tourism statistics that can be compiled and disseminated at these finer scales, in particular very granular grids (e.g. <100m grids).

2.7. SF-MST indicators and statistical outputs

2.7.1. Types of statistical outputs

- 2.87. 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.
- 2.88. 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).
- 2.89. 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 inbound 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. This section lists the set of themes covered by SF-MST and notes some indicators that are commonly considered in the measurement of those themes. Then, through chapters 3, 4 and 5, as each measurement theme is discussed, relevant indicators are described in more detail. No composite indexes, involving the weighting and aggregation of a selection of indicators, are described in the SF-MST. The links among all of these different components are presented in Figure 2.2.

Figure 2.2: The role of SF-MST in linking data inputs to indicators and analysis



- 2.90. 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.

- 2.91. **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) and changes in the stocks of those assets over an accounting period (e.g. one year). Changes in stocks of assets will include those due to investment, depreciation and degradation.
- 2.92. 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. However, a general note is made that where measurement in monetary terms is undertaken, compilers should be aware of the relevant valuation concepts and methods particular in relation to non-market valuation, for example concerning ecosystem services. Generally, compilers are encouraged to read the relevant sections of the accounting documents listed above.
- 2.93. 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 and visitor movements, including a range of disaggregations about characteristics of each of these themes. 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.
- 2.94. 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.
- 2.95. 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.

2.7.2. Summary of SF-MST Measurement themes and indicators

- 2.96. Table 2.1 provides a summary of the different themes and potential indicators covered by SF-MST. They are grouped according to their strength of association with the economic, environmental or social dimensions. To ensure consistency and comparability of data, all SF-MST output data are grouped and classified using the consistent classifications.

- 2.97. 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.
- 2.98. The potential indicators included in Table 2.1 does not represent an agreed set of core indicators that could be the focus of national or international reporting on the sustainability of tourism. Rather, it reflects the range of different indicators that can be derived from an SF-MST based data set. A complementary process will be completed to establish a set of MST indicators for international reporting. It is noted as well that for each of the indicators listed in Table 2.1 there are often variations in scope that can be applied (e.g. covering all visitors or only inbound visitors) and alternative denominators that can be used (e.g. visitor nights, value added). Not all of these variations have been described in the table.

Table 2.1: Themes and potential indicators covered by SF-MST

Dimension	Measurement theme	Potential Indicators
General indicators	Visitor length of stay	Average length of stay of inbound and domestic visitors
	Tourism concentration	Number of visitors per 100 residents; Number of visitors per hectare of habitable land
	Tourism visitor dependency	Number of inbound visitors (total/tourist/same day) relative to total internal visitors (total/tourist/same day)
	Tourism seasonality	Variations in visitor arrivals (total/inbound/tourist/same day) on a regular time horizon and in regular frequencies.
Economic	Visitor expenditure	Average internal tourism expenditure per visitor ((total/inbound/domestic/tourist/same day)
	Tourism economic structure	Share of large and SME tourism establishments, Share of resident owned tourism establishments relative to all tourism establishments
	Tourism economic performance	Tourism direct GDP; Tourism share of total output for each tourism industry
	Distribution of economic benefits	Share of compensation of employees relative to tourism direct value added in the tourism industries
	Employment in tourism	Total employment in tourism industries (# jobs, # person employed & # employees); Share of employed persons in tourism industries relative to total economy; Number of jobs held by women in the tourism industries; Labour productivity of tourism industries
	Tourism investment	Total gross fixed capital formation (GFCF) in tourism specific fixed assets relative to total GFCF of tourism industries; Total GFCF in tourism industries relative to total economy GFCF
	Government tourism-related transactions	Total tourism related government final consumption expenditure
Environmental	GHG emissions	Internal GHG emissions per visitor; Internal GHG emissions per unit of tourism direct GDP

	Solid waste flows	Solid waste generated per visitor; solid waste generated per unit of tourism direct GDP; Share of solid waste generated by tourism industries relative to total solid waste
	Water flows	Tourism water use per visitor and per visitor overnight; Tourism water use per unit of tourism value added
	Wastewater	Tourism wastewater per visitor overnight
	Water resources	Annual tourism water use as a proportion of the net change in stock of water resources.
	Energy flows	Total end-use of energy products by tourism industries
	Ecosystem extent for tourism related areas	Share of tourism-related ecosystem assets to the total area of the tourism region; Percentage of protected areas (marine and terrestrial) to total area
	Ecosystem services flows for tourism related areas	Total recreation related services in a region
Social	Visitor satisfaction	Share of visitors satisfied with overall experience at destination; Number of repeat visitors, Extent to which visitors would recommend a destination
	Host community perception	Overall perception of host communities of visitors
	Decent work	Share of compensation of employed persons relative to tourism direct value added in the tourism industries; Share of persons employed in tourism industries who are informally employed;
	Governance	Implementation of standard accounting tools to monitor the economic and environmental aspects of tourism sustainability (see SDG indicator 12b.1)

- 2.99. The potential indicators listed in Table 2.1 are described in more detail in Chapters 3, 4 and 5 as part of the description of the various measurement themes and the associated accounts and tables for the organization of data. Thus, these indicators should not be considered to reflect the complete range of data that is organized within the SF-MST.
- 2.100. For international reporting purposes a selection of these indicators will be identified as the focus for data collection by UNWTO. At the same time, the SF-MST can also be used to support reporting to other international processes including the SDGs. Within the core SDG indicator set there are two indicators specifically related to tourism namely Tourism Direct GDP and the number of countries who have implemented SF-MST. The compilation of data for SF-MST may also be undertaken to complement and provide additional insights to reporting on other international conventions such as the UNFCCC concerning GHG emissions and the Convention on Biological Diversity concerning data on ecosystem extent, condition and services. In these contexts, data for SF-MST purposes should be considered a sub-set within a wider information set for a given measurement theme.

2.7.3. Considerations in the implementation and application of SF-MST

- 2.101. The SF-MST as introduced in this chapter has a wide coverage of themes and, on first impression, implementation is likely to be considered daunting. An extended introduction to relevant issues is provided in Chapter 6. This section summarizes some important messages concerning the implementation of SF-MST. To begin, four key points must be recognized:
- The current range of data demands concerning tourism's sustainability is broad and hence it is appropriate that the SF-MST has a broad coverage in the sense of ensuring that tourism statistics can cover the relevant information requirements and to reduce the challenges that arise from ad hoc data collection and organization.

- 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 outputs and indicators 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 undertaken 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.
- Substantial progress on the implementation of SF-MST can occur in advance of a country compiling a tourism satellite account following the TSA:RMF or various environmental-economic accounts following the SEEA. While the SF-MST has a design that is strongly linked to these accounting frameworks, there are a range of intermediate entry points for compilers that should be pursued following the principle of flexible and modular implementation.

2.102. 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.

2.103. 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. More generally, successful implementation will require high levels of co-ordination across multiple agencies especially across the various data source agencies. Co-ordination across geographic scales will also be beneficial to build as much coherence as possible between information available at national level and information available at sub-national level including for local tourism destination. The level of co-ordination that will be required implies that strong governance arrangements will be needed as part of any implementation project.

2.104. 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. Where data are not readily available within a country, it may be appropriate to commence implementation work using global datasets where this is applicable although it will be necessary to understand the methods and assumptions that have been used and to ensure that they are relevant and appropriate for the country context.

- 2.105. 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.
- 2.106. At sub-national scales, 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.
- 2.107. However, measurement at a regional scale may not be sufficient for assessing certain questions concerning the sustainability of tourism, and measurement at municipal and local tourism destination scale will be required. This presents additional challenges because:
- there are potentially a large number of local tourism destinations;
 - additional 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.
- 2.108. In common with the measurement of regional statistics, measurement at the municipal or 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.

- 2.109. 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.
- 2.110. 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 by supporting a coordinated approach to compiling statistics across multiple local tourism destinations within a country. Public administration at different levels, national and regional statistical institutes, universities and other stakeholders may also 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.
- 2.111. On the basis of the concepts and definitions described in the SF-MST, it is envisaged that a range of materials to support implementation will be developed progressively. These could include more detailed methodological guidance on the derivation of indicators or more detailed descriptions of data collection techniques, such as the use of big data. Such materials would supplement the wide range of information that is currently available to support implementation of statistics across the economic, environmental and social dimensions. Although much of this material may not be specifically targeted at tourism, the SF-MST should provide appropriate initial guidance on how measurement may be tailored to a tourism context.

3. Measuring the economic dimension

3.1. Introduction

- 3.1. The activities of visitors drive a range of economic benefits at local, national and global scales. These benefits include incomes earned by tourism establishments, wages and salaries paid to employees in tourism establishments and indirect benefits to economic units that supply goods and services to tourism establishments. Recording these various economic benefits has been a focus of tourism measurement over recent decades. From a sustainability perspective, the focus lies in assessing whether the benefits that have been received in the past can be anticipated to continue to be received in the future with the associated ambition that there are economically viable and long-term tourism related operations in place.
- 3.2. Making an assessment of the future economic viability of tourism activity requires consideration of a number of factors. In terms of maintaining production, tourism establishments will be dependent on the availability of labour, technology, infrastructure and levels of ongoing investment and finance. In turn, these factors will be connected to factors such as the size and ownership structure of establishments and the characteristics (including age and skills) of the work force.
- 3.3. Economic viability of tourism for a given country or destination will also be driven by the extent to which visitors continue to travel. This can be influenced by many things, including potentially large disruptions due to conflict or pandemics, movements in exchange rates and prices, or changes in travel preferences. The link between economic viability and these types of factors indicates that measurement in the context of sustainability needs to record information on a range of structural elements underpinning the production and consumption of tourism outputs in addition to the standard measurement of tourism expenditure and tourism value added. The measurement aim then is to provide data that help identify potential areas of risk and vulnerability if contexts change, recognizing that context change may be both driven by tourism activity itself or result from non-tourism related events and changes.
- 3.4. Beyond this more economically focused assessment, the economic viability of tourism will also be impacted by wider social and environmental trends. For example, in some locations tourism activity may be directly dependent on environmental features such as beaches or rivers. In these cases, the declining quality of the environment whether related to tourism activity or not, will be a driving factor in assessing economic viability. These types of systemic connections highlight that economic viability cannot be considered in isolation. Indeed, in some situations there may be direct challenges in balancing the desire for economic benefits with the expected implications for environmental and social outcomes. The integrated framing for measurement described in the SF-MST is intended to support understanding these wider connections.
- 3.5. In this context, there is a range of economic factors that should be considered in assessing sustainability of tourism recognizing that relevant environmental and social factors are considered in Chapters 4 and 5. To assess the economic sustainability of tourism **it is recommended** to measure the following economic factors:
 - **Visitor flows** – i.e. the extent to which current patterns of visitor flows will continue or change in the future.

- **Tourism 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 establishments** – i.e. the extent to which the performance, composition and characteristics of tourism establishments will continue or change in the future.
- **Produced assets**, including infrastructure, used by tourism establishments – 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 establishments** – 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.
- **Government tourism-related revenues and expenditures** – i.e. the extent to which government invests in and support tourism activity.

3.6. Measuring visitor flows and their characteristics, 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 (IRTS 2008) and the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA:RMF 2008). As a result of this statistical development, there is significant statistical guidance for the measurement of the economic dimension.

3.7. 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. The extensions included in SF-MST concern: additional detail on the characteristics of tourism establishments and characteristics of employment in tourism (extending TSA:RMF Table 10); an introduction to the measurement of tourism occupations; an introduction to measurement of the sustainability of individual tourism establishments; an extended discussion on tourism gross fixed capital formation building on the TSA:RMF; a description of tourism-related government revenues, expenditures and transfers; and a discussion on the distribution of economic benefits including the seasonality of these flows. Also included in the chapter is a separate section on the measurement of economic factors related to the sustainability of tourism at sub-national scale applying the general description of relevant sub-national measurement issues in Chapter 2.

3.2. Measuring the sustainability of visitor flows and expenditure

3.2.1. Visitor flows

3.8. To understand the sustainability of tourism-related activity, the recommended starting point for measurement is ongoing recording of visitors flows. The total number of visitors (i.e. tourists and same-day visitors) to a country or destination is 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.

- 3.9. Following IRTS 2008 total visitor flows should also be classified according to a range of breakdowns including:
- Forms of tourism: number of inbound visitors, domestic visitors and outbound visitors and number of tourists and same-day visitors.
 - Duration of trips.
 - Main purpose (nine main types are listed in IRTS).
 - Types of 'tourism product'.
 - Origin and destination.
 - Modes of transport.
 - Types of accommodation.
 - Visitor characteristics including sex, age, economic activity status, occupation, annual income, education and country of residence.
- 3.10. Table 3.1 provides a basic structure for the organization of relevant data building on 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). Additional detail can be added to this table as required.

Table 3.1: Data on visitor flows (number of trips)

		Form of tourism			
		Inbound tourism		Domestic tourism	
		Tourists	Same-day visitors	Tourists	Same-day visitors
TOTAL					
Classes of visitors					
Sex					
	Female				
	Male				
Age					
	0-14				
	15-24				
	25-44				
	45-64				
	65+				
Main purpose					
	Holiday, leisure and recreation				
	Business and professional				
	Visiting friends and relatives				
	Education and training				
	Health and medical care				
	Religion / pilgrimages				
	Shopping				
	Transit				
	Other				
Mode of transport					
	Air				
	Water				
	Land				
Country of residence					
	by country				
Annual household income					
	by income groups				

- 3.11. Since there are a large number of potential characteristics it will be necessary for compilers to develop statistics that are relevant to their context and their data availability. **It is recommended** that these different characteristics of visits should be measured for visitor flows at both national and regional level. Thus, countries are encouraged to expand this

set using the information on characteristics of visitors as presented in the IRTS 2008. In addition, it will be relevant to collect total visitor flows on a monthly basis to facilitate assessment of seasonality.

- 3.12. From an economic sustainability perspective, the key question is whether a country or destination 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 due to natural disasters, pandemic or exchange rate volatility). Thus, 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. Consequently, understanding the composition of visitor flows, the seasonality of visitors and how these patterns are changing over time will help identify critical points of economic dependency. All of the different breakdowns of visitors presented in Table 3.1 may be of relevance depending on the context. For example, some destinations may be dependent on specific modes of transport (e.g. air transport).
- 3.13. At a national level, an important economic dependency indicator concerning visitor flows is the **number of inbound visitors relative to total internal visitors (inbound + domestic)**. A high ratio of inbound visitors may point to potential economic risks if circumstances change such that visitors from other countries are not able to travel. Therefore, for example, domestic tourism - taking into account trips within the country of reference – was important during the COVID-19 pandemic as a stabilizing factor for the tourism economy compensating partly for the loss of inbound tourism in many countries.

3.2.2. Tourism expenditure

- 3.14. The natural extension of measuring visitor flows is the measurement of tourism expenditure and **it is recommended** that data on tourism expenditure is collated for all of the classes of visitor flows listed above (i.e. by type of visitor, by forms of tourism and by visitor characteristic). 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 establishments are dependent on high levels of expenditure from specific classes of visitors.
- 3.15. Table 3.2 provides a summary presentation of TSA:RMF tables 1-3. For different forms of tourism (inbound, domestic, outbound; and further disaggregated by tourists and same-day visitors) it shows the levels of expenditure on different tourism characteristic products. This additional detail on the products purchased by visitors provides insight into which tourism establishments are likely to be affected if there are changes in levels of tourism expenditure, including via changes in visitor flows.
- 3.16. Information on tourism 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 for a reference country concerning tourism expenditure is **average internal tourism expenditure per visitor**, where internal tourism expenditure is the sum of domestic and inbound tourism

expenditure. Measurement of expenditure on outbound tourism will remain of relevance to the extent in order to monitor the potential implications of shifts in the patterns of travel for a reference country.

Table 3.2: Data on tourism expenditure (local currency)

	Form of tourism					
	Inbound tourism		Domestic tourism		Outbound tourism	
	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						
Total visitors						
Average tourism expenditure						

3.3. Measuring the economic structure and performance of tourism industries

- 3.17. Data about visitor flows and tourism 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 establishments that supply tourism products and their economic performance over time.
- 3.18. In focusing measurement on tourism establishments it is recognized that in many instances, there may be an important contribution to tourism activity from the informal economy where there is no registration of economic units and hence difficulties in collecting data. There are a range of compilation materials available to support the measurement of the informal economy that are summarized in Chapter 6. Conceptually, informal activity and the economic units involved, commonly households, are within the measurement scope as discussed in this section but in practice their inclusion in statistics may not be possible.
- 3.19. The measurement of the economic activity of tourism focuses on tourism establishments as this provides a level of measurement that is most attuned to the interaction with visitors. However, within the wider field of economic measurement, the more common data collection unit is at the enterprise level. This may equate to an establishment but may also comprise a

number of establishments. Where data are not available at the establishment level, the following areas of measurement can still be undertaken at the enterprise level accepting that the level of precision may not be as high with respect to identifying tourism activity.

3.3.1. Economic structure

- 3.20. Data on the characteristics of tourism establishments is most readily organized by 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 establishments within an economy, classifies them to standard industry classes and attributes data about other characteristics. Where business registers exist, it is most common for them to be maintained at an enterprise level since at this level a much larger range of economic and financial data are available. However, for tourism measurement purposes, particularly for sub-national measurement, establishment level data are most informative and business registers should be encouraged to identify a minimum number of characteristics at the establishment level (e.g. location, turnover, employment) to support a richer understanding of tourism's economic structure.
- 3.21. Within the structure of a business register, for those establishments classified as being involved in tourism industries (following the classes listed in Box 2.1, Chapter 2), it is possible to assess the economic structure of tourism using variables such as:
- industry class (by ISIC class (or relevant equivalent classification such as NACE));
 - size of establishment (e.g. in terms of turnover or employment);
 - employment (e.g. by sex, occupation, skills, experience);
 - ownership (resident or non-resident); and
 - legal entity (corporation, unincorporated/household business).
- 3.22. A basic framing for the organization of data on the characteristics of tourism establishments is presented in Table 3.3. 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.
- 3.23. An assessment of sustainability using the types of data in Table 3.3 could be made by considering whether there are imbalances in composition of tourism establishments. At a national level, relevant indicators include the **share of large tourism establishments in tourism industries** (where large may be defined as having more than 100 employees), the **share of small and medium establishments (SME) in tourism industries** and the **share of resident ownership of tourism establishments**.
- 3.24. The assessment of sustainability could also involve analysis of changes in the structure of tourism establishments over time and analysis of the demographics of tourism establishments in terms of how many new establishments are created, how many close, their average business life, etc. Another factor relevant to economic viability concerns the levels of financial liabilities held by tourism establishments. High levels of debt will increase the exposure of relevant establishments to changes in interest rates in addition to potential changes in tourism activity. All of these measures will give insight into the stability of the economic structure and give a sense of its sustainability.

- 3.25. Where available, business registers are most commonly developed at a national level to include all economic units within a country, with the relevant data derived mainly from administrative data sources and business statistics (e.g. structural business statistics). 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 establishments. Given the ongoing advances in geospatial economic statistics³⁷ 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 establishments stored within the business register. Such data can be used to derive indicators of tourism concentration.

Table 3.3 Main characteristics of establishments in the 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 establishments												
Number of new establishments (births)												
Number of closed establishments (deaths)												
Size of establishments (# employees)												
1-9												
10-49												
50-99												
100-500												
>500												
Ownership (# establishments)												
Resident												
Non-resident												
Legal entity type (# establishments)												
Corporation												
Household (unincorporated)												
Government												
Indicators												
Share of large tourism establishments (>100 employees)												
Share of SME (<50 employees)												
Share of resident ownership												

3.3.2. Economic performance

- 3.26. In addition to recording information on the characteristics of tourism establishments, measures of economic sustainability must incorporate also data on the economic performance of tourism establishments 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.

³⁷ See for example is about: <http://ggim.un.org/UNGGIM-expert-group/>

- 3.27. The collation of data on these economic variables is summarized in accounting format in the TSA:RMF Table 5 relating to tourism supply. Table 3.4 summarises the core data from that TSA table, detailing the tourism characteristic 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). It is estimated by aggregating the value added of all tourism and non-tourism industries that is associated with tourism expenditure.
- 3.28. In terms of assessing sustainability, an important indicator that points to the dependence of an individual industry on tourism activity is the **tourism share of output** estimated for each industry as the total output of tourism characteristic products by an industry divided by its total output. High tourism shares will point to high levels of dependence. It will also be relevant to assess (i) the share of value added accruing to compensation of employees and gross operating surplus, (ii) trends in output and intermediate consumption, and (iii) the extent to which total tourism direct GDP is dependence on contributions from specific individual tourism industries.

Table 3.4: Data on tourism supply of tourism products (local currency)

	Tourism industries												Total tourism industries	Non tourism industries	Total economy	
	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																
Other output																
Total Output																
Total intermediate consumption																
Gross value added																
Compensation of employees																
Other taxes less subsidies on production																
Gross mixed income																
Gross operating surplus																
Indicators																
Tourism share of output																
Tourism direct value added																

- 3.29. More generally, structural information about tourism demand and supply that is present in TSA (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.
- 3.30. Within the main categories of tourism demand and supply presented in the TSA:RMF 2008, additional detail might be incorporated within tables 3.3 and 3.4 to record data on specific market segments (or “tourism products”) such as activities related to cruise ships,

ecotourism, cultural tourism or city breaks. For this purpose, data on the characteristics, outputs, and value added of the specific market segment could be included in an additional “of which” column in either of the tables.

- 3.31. One driver of tourism activity is intermediation service activities, for example in relation to accommodation. These intermediation activities may be carried out on digital platforms (sometimes called online tourism platforms or sharing economy) or through non-digital channels, such as mail and telephone. The measurement of these activities is of particular interest in the context of sustainability since they may drive tourism activity towards specific locations that might have unexpected social and environmental effects on those locations. Analysis of the relationships between intermediation service activities and economic, social and environmental outcomes can be facilitated using SF-MST although further development of measurement practice in relation to these activities is required.

3.3.3. Distribution of economic benefits

- 3.32. 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, an initial question is examining the relative shares of value added accruing to different economic units. At a macro-level, a focus on the share of tourism value added accruing to employees in the form of compensation of employees may be appropriate. However, more detailed analysis may be possible considering, for example, the share of tourism compensation of employees accruing to women or staff in non-management roles; or the share of gross operating surplus accruing to small and medium sized businesses. In addition, a focus on value added shares should be complemented with analysis of average returns per economic unit (e.g. average wages per employee).
- 3.33. For some countries and destinations there may be interest in compiling measures of **tourism leakage** where the operating surplus generated from tourism activities does not fully accrue to local economic units but rather is also earned by non-resident units and not reinvested in the local economy. Ideally, tourism leakage would be assessed by distinguishing, in Table 3.4, 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 3.3. Table 3.5 provides some indications of the types of data that may be combined to derive indicators of the distribution of economic benefits. In deriving indicators from the data listed in Table 3.5, it is important to ensure that appropriate adjustment is made using the tourism share for each industry. If this adjustment is not made, then industries with relatively lower tourism shares – for example food and beverage servings activities – may inappropriately dominate aggregated results for the total of tourism industries.

Table 3.5: Data concerning the distribution of economic benefits

	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	
Total establishments												
Number of small and medium (SME) establishments (<100 employees)												
Number of large establishments (>100 employees)												
Number of resident owned establishments												
Number of non-resident owned establishments												
Total jobs												
Number of jobs held by women												
Number of jobs held by men												
Number of non-management jobs												
Tourism compensation of employees (COE)												
Tourism gross operating surplus (GOS)												
Tourism value added												
Indicators												
Share of Tourism GOS accruing to SME												
Share of Tourism GOS accruing to residents												
Share of Tourism COE accruing to women												
Share of Tourism COE accruing to non-managers												

- 3.34. 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 and hence value added will not remain in the country. There is a substantial program of work on measuring trade in value added of tourism activity (OECD³⁸) undertaken to understand these types of economic issues. The additional information on the characteristics of tourism establishments provided in SF-MST would support understanding more completely the implications that may arise from high levels of dependence on imports to support tourism activity within a country.
- 3.35. More generally, a complete assessment of the distribution of economic benefits from tourism would involve tourism value chain analysis. Such analysis considers not only the direct effects of tourism activity but also the indirect effects through other industries both locally and internationally. Such analysis will involve the use of input-output techniques. The data organized following the TSA:RMF 2008, as presented in Table 3.4 are structured to directly support such analysis through the common use of classifications and national accounting principles which underpin input-output tables at national and multi-regional scales.
- 3.36. Economic benefits will also be distributed unequally over time. 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, tourism expenditure, and accommodation occupancy.

³⁸ https://www.oecd-ilibrary.org/industry-and-services/providing-new-oecd-evidence-on-tourism-trade-in-value-added_d6072d28-en

- 3.37. 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.

3.4. Measuring the employment aspects of tourism

3.4.1. Introduction

- 3.38. 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, 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.
- 3.39. At the same time, important challenges exist since jobs in the tourism industries 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.
- 3.40. 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.
- 3.41. 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 4 on the measurement of the environmental dimension.
- 3.42. Overall, governments, tourism establishments 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 persons employed and their conditions of work in the tourism sector. 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. Of particular interest are measures of labour productivity where the output and value added generated by tourism is compared to the hours worked in tourism.

- 3.43. 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. Further, the concept of human capital can be used to underpin a narrative that highlights the relevance of investing in education and training to support the maintenance and enhancement of the labour force available to work in tourism and hence support the long term economic viability of tourism. There is also close connection between human and social capital and the various social aspects of employment, and hence further discussion on human capital is included in Chapter 5 on the social dimension.
- 3.44. 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 4 while a discussion of decent work, employee satisfaction and the link between employment and local livelihoods is provided in Chapter 5.

3.4.2. Measures of employment for tourism

- 3.45. The importance of employment is reflected in the IRTS 2008 and the TSA:RMF 2008 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 employment measures from the TSA:RMF 2008 and IRTS 2008 stem from the same statistical sources and use the same international employment concepts and classifications from the ILO including standards on work relationships and informal work. This section describes the range of measures that are available.
- 3.46. 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 jobs³⁹ 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.
- 3.47. Following the IRTS 2008, 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*⁴⁰ in the tourism industries in any of their jobs;
 - *persons employed* in the tourism industries in their main job;
 - *jobs* in the tourism industries⁴¹.
- Figure 3.1 below, adapted from IRTS 2008, Figure 7.3, sets out the linkages between these different employment measures.

³⁹ 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.

⁴⁰ Persons employed includes both employees and self-employed people.

⁴¹ IRTS 2008, Figure 7.1 provides a schematic showing the linkages between these measurement scopes.

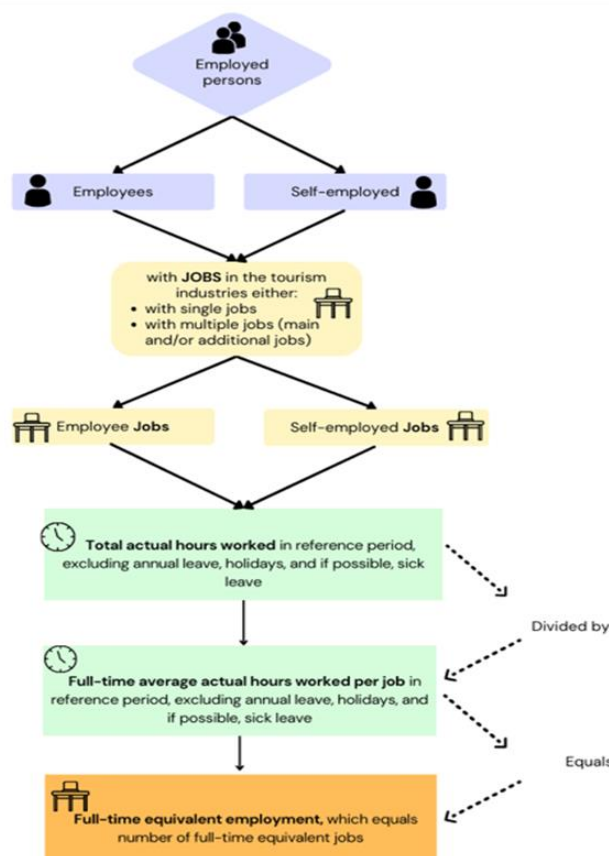
- 3.48. Where the intent is to determine the number of people who depend to some extent for their livelihoods by working in the tourism industries, then a count of persons with a job (main or other) in these industries would be appropriate. A measure based on a person's main job would serve to gauge those with significant attachment to the tourism industries.
- 3.49. 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 attribution of individuals across tourism and non-tourism industries. However, note that the total number of jobs will be higher than total persons employed, since a person can have more than one job and this is common in the tourism sector.
- 3.50. Separately from 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 (which will be lower than the number of persons employed). 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 countries⁴².
- 3.51. TSA:RMF 2008 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).
- 3.52. 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.
- 3.53. For sustainability measurement purposes, a number of indicators may emerge from these data. Key indicators include the **total employment in tourism industries** in terms of number of jobs and number of persons and the **share 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.

⁴²For more information on the calculation of FTE see:

<https://unstats.un.org/wiki/display/IRTSCG/C.4.%09Full+time+equivalent+employment#:~:text=Full%E2%80%91time%20equivalent%20employment%20is,worked%20in%20full%E2%80%91time%20jobs.>

- 3.54. Further, it may be relevant to derive measures of labour productivity, i.e. output per unit of labour input (e.g. hours worked⁴³, jobs). Measures of changes in **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.
- 3.55. 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 guidelines⁴⁴. These can be readily compared over time and to other industries.

Figure 3.1: Linkages between measures of employment in tourism



3.4.3. Characteristics of employment in tourism industries

- 3.56. 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 (ISCO 2008⁴⁵) and status in employment.

⁴³ Measures of hours worked should be compiled consistently with ILO standards for the measurement of working time – see https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_099576.pdf

⁴⁴ <https://www.oecd.org/sdd/productivity-stats/2352458.pdf>

⁴⁵ <https://www.ilo.org/public/english/bureau/stat/isco/docs/groupdefn08.pdf>

- Permanent/temporary employment expressed in terms of number of jobs, hours of work, full-time equivalence, etc.
 - Employment by educational attainment, skill levels, vocational certifications.
 - Levels of training provided, including on the job training.
 - 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.
- 3.57. Statistical definitions and treatments for all of these characteristics are found in the *International Recommendations for Tourism Statistics 2008: Compilation Guide*⁴⁶, and in the relevant ILO and SNA publications.
- 3.58. 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 3.6 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. These and other employment related characteristics will also be relevant in the measurement of the social dimension of tourism discussed further in Chapter 5.
- 3.59. Collectively, these data provide a basis for the assessment of tourism's human capital and hence a basis for identifying potential labour requirements and developing relevant investment strategies, including education and training programs. To support analysis indicators can be derived from the table by estimating the share of total tourism jobs in a particular category. For example, indicators showing the share of females, the share of managers, and the share of jobs held by people <20 years of age can be readily derived.
- 3.60. Note that the coverage of Table 3.6 are those persons employed in the tourism industries with no adjustment for the relative contribution of tourism to the industry. Thus, for example, the data referring to food and beverage serving activities will cover jobs that provide services to both visitors and non-visitors. In aggregate across the tourism sector, care should be taken in interpreting the results since industries with low tourism shares may inappropriately dominate the results. It is also noted that Table 3.6 excludes employment in industries in the tourism value chain, i.e. indirect employment.
- 3.61. For SF-MST, particular note is made of the characteristics concerning education, training and occupation. There is generally a close link between education and vocational 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-2011)⁴⁷ is considered to be directly applicable in a tourism context. Approaches for the measurement of occupation in tourism industries are discussed further below.

⁴⁶ See Chapter 7. *Measuring employment in the tourism industries*; available at:

<https://unstats.un.org/unsd/tourism/publications/E-IRTS-Comp-Guide%202008%20For%20Web.pdf>

⁴⁷ <https://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf>

Table 3.6 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												
TOTAL														
Sex	Female													
	Male													
Age (years)	<20													
	20-29													
	30-39													
	40-59													
	>60													
	Average													
Education level (ISCED-2011 classes)														
	Less than basic (ISCED lvl X & 0)													
	Basic (ISCED lvl 1 & 2)													
	Intermediate (ISCED lvl 3 & 4)													
	Advanced (ISCED lvl 5-8)													
	Level not stated (ISCED lvl 9)													
Occupation (by ISCO-08 major groups)														
	Managers													
	Professionals													
	Technicians and Associate Professionals													
	Clerical support workers													
	Services and sales workers													
	Skilled Agricultural, Craft and related trades workers													
	Plant and machine operators and assemblers													
	Elementary occupations													
Salary (relative to average earnings)														
	<30% average earnings													
	30-50% average earnings													
	50-70% average earnings													
	>70% average earnings													
Hours of work (per week)														
	less than 15													
	15-40													
	40-48													
	48-60													
	more than 60													
Nationality														
	Resident													
	Non-resident													

3.4.4. Measuring occupations within the tourism industries

3.62. 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.

- 3.63. 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.
- 3.64. At this stage, there is no specific recognition of tourism occupational categories in ISCO, in part because of the special character of tourism as a cross-cutting economic activity. An initial recommendation is to consider all occupations within tourism characteristic industries as tourism characteristic occupations. Further development will propose a basic 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 will also be pursued.
- 3.65. 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 developed by Statistics Canada to identify tourism-characteristic occupations adapts the criteria recommended by UNWTO to identify tourism industries⁴⁸. Following this approach, a tourism occupation can be identified in cases where the occupation would either cease to exist, or would continue to exist only at a significantly reduced level of employment, as a direct result of an absence of tourism. This approach can be applied using data on employment and occupation in the economy, and deriving tourism's significance for each occupation in each tourism industry by multiplying the share of total employment for an occupation that is in tourism industries by the corresponding tourism value-added ratios for each tourism industry.
- 3.66. Further research is required however to articulate an agreed definition of a tourism occupation and to develop measurement approaches that can be implemented in different data availability contexts. As well, consideration should be given to the effects of assessing the significance of tourism occupations at different scales (e.g. sub-national and national scales) and to the indirect effects of tourism on employment and occupations in other industries.

3.5. Measuring tourism investment in produced assets and related infrastructure

- 3.67. 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. The focus in this section is on produced assets with other types of tourism related assets, i.e. human capital and environmental assets which are discussed in Section 3.5 and Chapter 4 respectively.

⁴⁸ Through the application of this method, Statistics Canada identified 46 tourism characteristic occupations and 16 other tourism occupations. For details see ILO (2013) https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_222947.pdf and S. Meis (2014) https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_243294.pdf

- 3.68. There are three types of produced assets defined in the SNA, namely fixed assets, inventories and valuables. In terms of underpinning tourism production in the future, the focus here is on fixed assets which are produced assets that are used repeatedly or continuously in production processes for more than one year. Produced fixed assets include dwellings, buildings and offices, machinery and equipment and intellectual property products including computer software and databases.
- 3.69. The SNA distinguishes produced assets from non-produced assets which have economic value but which are not themselves the result of production processes. A number of non-produced assets are also environmental assets, including land and timber resources for example. These assets are discussed further in Chapter 4 on the measurement of the environmental dimension. There are also some non-produced assets, in particular marketing assets and corporate brands, which also underpin productive activity and which may be relevant in the context of tourism. They are not the focus of discussion here but relevant extensions to the considerations here can be made following the treatment of these assets in the System of National Accounts 2008.
- 3.70. The investment in and depreciation of capacity through improvement or decline in the quantity and quality of produced assets is 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.
- 3.71. 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 and this should be applied in the SF-MST.
 - *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 the following specific classes of non-tourism specific fixed assets and to record which tourism industries purchase these assets:
 - transportation equipment;
 - IT equipment and software;
 - buildings and other construction; and
 - other equipment.
 - *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). Often 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.

- 3.72. While these paragraphs give a good overview of the different types of produced assets, additional work is required to provide more substantive advice on precise measurement boundaries and treatments. In this respect, special note is made of the potential relevance of capital formation in dwellings intended to supply short-term accommodation for visitors. The development of more detailed guidance on tourism produced assets is an item on the research agenda.
- 3.73. In addition to these specific types of produced assets listed in the TSA:RMF, focus may also be placed on recording specific purposes of investment in assets. For example, investments in improving the accessibility of hotels and other tourism-related venues may be relevant and there is increasing interest in the level of investment in tourism related innovation. Such innovation may concern, for example, hospitality management, search and booking applications, payment and connectivity, ride hailing and intercity mobility. To undertake measurement of innovation, best practice is to follow the statistical guidance in the Frascati Manual⁴⁹ most recently released in 2015 (7th edition) concerning the measurement of research and development.
- 3.74. 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 by tourism industries. Thus, in a first stage of measurement it is appropriate to identify the tourism related aspects of relevant infrastructure, 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.
- 3.75. Table 3.7 provides a comprehensive table for recording expenditure on tourism specific fixed assets and non-tourism specific fixed assets by tourism industries. Key indicators that can be used for the assessment of sustainability are **total gross fixed capital formation in tourism specific fixed assets as a share of total GFCF of tourism industries**, and **total GFCF in tourism industries relative to total economy GFCF**.

⁴⁹ <https://www.oecd.org/innovation/frascati-manual-2015-9789264239012-en.htm>

Table 3.7 Gross fixed capital formation of tourism industries

	Tourism industries												Non tourism industries	Total economy		
	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				
Tourism specific fixed assets																
Accommodation for visitors																
Other non-residential buildings and structures proper to tourism industries																
Passenger transport equipment for tourism																
Other machinery and equipment specialized for the production of tourism characteristic products																
Improvements of land used for tourism purposes																
Non-tourism specific produced assets																
Total tourism industry GFCF																

- 3.76. 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. Initial estimates of investment (gross fixed capital formation) by asset type for the tourism industries can be compiled using data sources and methods applied in the compilation of economy wide measures of gross fixed capital formation in the national accounts. Common approaches include the use of annual business surveys to capture data on expenditure on produced assets particularly machinery and equipment, data on imports of capital equipment (e.g. transport equipment) and data on building approvals and completions (e.g. for hotels). These various data sources are commonly reconciled in supply and use tables for the economy and hence will include estimates for tourism industries.
- 3.77. Ideally, measures of gross fixed capital formation would be compiled with associated measures of the capital stock of these assets but this is a far more involved process. Nonetheless, relevant measurement guidance at the economy wide level is provided in the OECD manual on capital stock measurement⁵⁰ and could be applied to the tourism industries. 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.
- 3.78. If a complete information set on tourism capital stock is available following the guidance provided in the OECD manual, then it will be possible to provide estimates of consumption of fixed capital (depreciation) for tourism related assets. To the extent that the depreciation of assets is greater than the gross fixed capital formation this provides an indicator that the capacity of tourism produced assets is declining and that further investment is required.

⁵⁰ <https://www.oecd.org/publications/measuring-capital-oecd-manual-2009-9789264068476-en.htm>

Also, tourism capital stock data are an input to the measurement of multi-factor productivity which provides a more complete indicator of the extent to which tourism is becoming more productive over time taking into account both inputs from labour and produced assets.

- 3.79. 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).
- 3.80. To support analysis of the data on gross fixed capital formation, Table 3.8 provides a structure for recording information about the stock of produced assets as described in the previous paragraph and hence gives some insight into current and future capacity to support tourism activity. Relevant data to support compiling these indicators may be sourced from the same information sources described above for the measurement of gross fixed capital formation and capital stock. In addition, particularly for data concerning transport infrastructure, it would be relevant to consider data available in reports from departments of infrastructure and similar agencies.

Table 3.8: Measures of the stock of tourism specific and related produced assets

	Tourism industries											Total tourism industries	Non tourism industries	Total economy	
	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				
Tourism specific fixed assets															
Accommodation for visitors															
- Number of hotels															
- Average age of hotels															
- Average number of rooms per hotel															
Other non-residential buildings and structures proper to tourism industries															
- Number of buildings and structures															
- Average age of tourism specific buildings other than hotels															
Passenger transport equipment for tourism															
- Number of airplanes owned by resident operators															
- Average age of airplanes owned by resident operators															
Tourism related infrastructure															
Roads															
- Kms of intercity highways															
Ports															
- Number of cruise ship berths															
Airports															
- Number of airports															
- Average landing capacity (# flights per day)															

- 3.81. An important perspective in the measurement of produced capital is the source of finance for the investments. Thus while tourism production processes rely directly on the assets themselves, the maintenance and expansion of capacity requires ongoing finance. Increasingly, there is interest in providing finance to support sustainability objectives with

UNWTO investment Guidelines⁵¹ giving an example of what is relevant in that area. From a measurement perspective, it will be relevant to record information on the sources of finance for investments in tourism related assets, in particular foreign direct investment (FDI). At an aggregate level, relevant indicators will be **total tourism FDI as a share of the total tourism GFCF** and **total tourism FDI as a share of total FDI**.

- 3.82. Generally this information is recorded on a project by project basis and is focused on flows of finance for specific purposes rather than recording the actual investment of assets. Consequently, it may be difficult to reconcile directly with estimates of gross fixed capital formation presented in Table 3.7. At the same time, it is important that measures of FDI align with the statistical principles for measuring cross-border flows outlined in the Balance of Payments manual. This alignment is embedded in the primary database on FDI flows operated by the OECD with the recording reflecting the OECD Benchmark Definition of Foreign Direct Investment, 4th edition⁵².
- 3.83. Where data are available on a project level, further analysis would be supported by recording information on any investment incentives (e.g. tax incentives) that may have been applied, levels of employment generated through the project and the extent to which the project was compliant with sustainability requirements and benchmarks.
- 3.84. 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. Additional discussion on these types of locational issues is presented in section 3.6 on sub-national measurement in the economic dimension.

3.6. Measuring tourism related government transactions

- 3.85. The role of government in the development and promotion of tourism is well recognized at all scales. A key role of the data organized following SF-MST is to support policy makers from local and regional, to national and global scales, in having informed discussions about the sustainability of tourism. In the economic dimension, data about the activity of government in relation to tourism is reflected in transactions concerning government expenditure and government transfers (including taxes, subsidies and other payments). Data about these transactions will be recorded in standard national accounts and government finance statistics (GFS) following well established statistical and accounting treatments. This section highlights the entries that may be of most relevance to understanding government's level of activity in supporting tourism in a country or other jurisdiction. The discussion here should be considered together with the more general discussion on governance in the context of sustainable tourism in Chapter 5.

⁵¹ <https://www.unwto.org/investment/unwto-investment-guidelines-SA1>

⁵² <https://www.oecd.org/daf/inv/investment-policy/fdibenchmarkdefinition.htm>

- 3.86. Government expenditure comprises government final consumption expenditure (GFCE) and government gross fixed capital formation. *GFCE consists of expenditure incurred by general government on both individual consumption goods and services and collective consumption services* (SNA 9.114). In the context of tourism, GFCE will most commonly encompass expenditure on tourism promotion, development, research and development and administration by relevant government agencies.
- 3.87. In addition, as part of GFCE, there will be individual non-market services provided by governments that benefit visitors and exceed the values paid by the visitors themselves. Examples include the costs of museums, performing arts, short-term education, and some health services. Following the TSA:RMF these expenditures should be recorded as Tourism social transfers in kind and are included in measures of total tourism consumption (TSA:RMF 4.41).
- 3.88. Data on GFCE is classified using the Classification of the Functions of Government (COFOG) (UN, 2000)⁵³. The classes most relevant to tourism are shown in Table 3.8. The indicator **total tourism related government final consumption** is the sum of government final consumption expenditure in COFOG classes 04.5, 04.7.2, 04.7.3 and 08.2.

Table 3.8: Tourism related Functions of Government – COFOG classes

04		Economic affairs
	04.5	Transport
	04.7.2	Hotels and restaurants
	04.7.3	Tourism
08		Recreation, culture and religion
	08.2	Cultural services, including museums, art galleries, libraries, etc

- 3.89. Government gross fixed capital formation may also be classified using COFOG and hence data for expenditures following the same classes just listed may be available. These data would support the measurement of tourism gross fixed capital formation described in the previous section.
- 3.90. While there is the potential to collect data at this level, in practice, data collected may relate more to the structure of government departments and agencies. Hence where there are changes in roles and responsibilities, it may be difficult to identify a direct connection between the actual expenditures recorded in government accounting systems and the functions (or purposes) of that expenditure. Nonetheless, discussion with relevant GFS experts can support understanding the available data.
- 3.91. A specific part of GFCE related to tourism that is identified in the TSA:RMF is **tourism collective consumption**. TSA:RMF 2.57-2.65 provides an introduction to the definition and measurement of tourism collective consumption highlighting the relevance of government activity to support tourism both directly and indirectly, for example through maintaining order and security and health systems. TSA:RMF also proposes a list of products, following the Central Product Classification (CPC v2.1⁵⁴) that might be used to

⁵³ The COFOG classification is available here <https://unstats.un.org/unsd/classifications/unsdclassifications/>. Supporting implementation guidance from Eurostat is provided here <https://ec.europa.eu/eurostat/documents/3859598/10142242/KS-GQ-19-010-EN-N.pdf/ed64a194-81db-112b-074b-b7a9eb946c32>

⁵⁴ <https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf>

identify the government production of collective non-market services related to tourism. TSA:RMF Table 9 provides a structure for recording data about this expenditure by level of government. The relevant product classes are:

- 85561 Tourism promotion services.
- 85562 Visitor information services.
- 91135 Public administrative services related to the distributive and catering trades, hotels and restaurants.
- 91136 Public administrative services related to tourism affairs.
- Part of:
 - 83700 Market research and public opinion polling services.
 - 91260 Police and fire protection services.
 - 92919 Other education and training services, n.e.c.
 - 92920 Educational support services.

- 3.92. Government transfers comprise payments to government, such as taxes and fines, and payments by government, such as subsidies. *Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units* (SNA 8.10). Data about the value of these taxes usually available via detailed government finance statistics in terms of the specific tax since each tax will generally have specific legislation concerning how it is levied and collected. There are a range of taxes that may be considered tourism related. Some, such as taxes on hotels, government airport and departure fees and similar amounts levied directly on visitors may be considered directly related to tourism. However, visitors will also likely pay general taxes as part of their expenditure while travelling, particularly value added taxes (VAT). While some VAT may be reclaimed by visitors as they leave a country, some amount will be paid and will be included in measures of tourism expenditure. Estimating that component may apply relevant VAT rates for different products to estimates of visitor expenditure. Other taxes may include fuel taxes. Again estimates of these flows as they pertain to tourism will require information on relevant tourism expenditures and rates of taxation.
- 3.93. *Subsidies are current unrequited payments that government units make to enterprises on the basis of the level of these production activities or values of the goods and services that they produce, sell or import.* (SNA 7.98). Other government transfer payments include social benefits to households, investment grants, transfers between levels of government and transfers to non-profit institutions. A recent example of such transfer payments was support provided to tourism businesses through the Covid-19 pandemic. These payments by government can also be classified using COFOG and hence information on subsidy payments related to tourism may be identified within government finance statistics. Unlike the government expenditure recorded above, subsidies and other transfer payments do not involve the purchase of goods and services.

3.7. Measuring the economic dimension for sub-national spatial areas

- 3.94. As explained in Chapter 2, the measurement of the sustainability of tourism for sub-national spatial areas is aimed at providing both a richer understanding of the impacts of tourism activity for policy makers and analysts at national levels and more relevant information for decision makers at local levels. The nature of the measurement requirements varies depending on the type of spatial area. The discussion here distinguishes between measurement for regions and measurement for local tourism destinations. The relevant

issues for other sub-national spatial areas is encompassed in looking at these two types. Generally the context for measurement will be examining trends over time however, at sub-national scales, there may also be interest in measuring some components of the economic dimension for specific major events which occur irregularly (e.g. world championships, Olympic Games, music concerts). Indeed, appropriate analysis of trends may require that the effects of such events is separately identified.

- 3.95. The measurement of tourism 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 and national levels. 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 assessment of potential pressures on environmental and social dimensions of sustainability for local tourism destinations. Thus, for example measures of visitor flows and numbers of tourism establishments collated at regional level will likely provide important contextual information for the analysis of outcomes concerning environmental quality, water use, waste generation and traffic congestion who impacts will be more evident at local tourism destinations.
- 3.96. In addition, there will be some environmental and social themes that are relevant to assessing sustainability that may be usefully analyzed for regional spatial areas. Examples include energy use, water use, and employment. In these cases, understanding the context beyond the local tourism destination in terms of energy supply, water supply and the labour market, is likely to provide strong supporting information for the analysis of sustainability at the local tourism destination level.
- 3.97. Related to the issue of strengthening the resilience of the tourism sector, aspects of building resilience towards specific risks should be assessed on a sub-national level due to their risk-specificity. Specific risk management tactics that account for preventing (e.g. economic incentives), adapting (e.g. early warning systems, education programs), preparedness (e.g. emergency energy and water supply, shelters) and recovery (e.g. emergency funds) must be made explicit at smaller regional scales and be tailored to the risk profile of the destination.
- 3.98. There are a number of ways in which regional data may be compiled. Some data 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 in line with the data compiled at national level with the only caveat being to ensure a reconciliation with national level totals (i.e. the sum of the regions is equal to the national total) and to ensure consistency in the use of concepts and definitions.
- 3.99. Other information such as on the characteristics of tourism establishments would ideally be sourced from a national level database – such as a business register – which contained information to allocate establishments 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 across a country.
- 3.100. For data related to visitors, i.e. 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). On the production side, the main challenge is the allocation of transport activity across regions. In this case production is normally allocated in national statistics to the head office region but for regional statistics it will be more relevant to allocate the national level of production based on the distribution of activity by region, for example in terms of the number of flights landing in airports within each region. Conceptually, these same challenges confront the compilation of national level aggregates in relation to international travel. However, it is likely to be more difficult to resolve at regional level if there is less data available concerning, for example, the duration of stay or amount of expenditure with each region as part of a trip.

- 3.101. In all situations, it will be beneficial to develop maps showing the spatial distribution for each variable of interest if data are available. Such maps will help to clarify and focus attention for policy purposes, especially for those decision makers at national level.
- 3.102. 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 sustainability⁵⁵. However, the compilation of regional TSA can be a challenging and costly task. A particular challenge is that allocating tourism expenditure to its production in a particular regions – i.e. matching supply and demand for tourism products is more difficult than attributing tourism expenditure to countries. As well, there are often close economic connections between regions with different regions benefitting from other regions in different ways and these linkages can be difficult to identify⁵⁶. It is therefore recommended that initial focus be placed on estimating production, employment and expenditure on a common core list of tourism products and industries across all regions and ensuring alignment with national aggregates. This work will provide a strong basis for development indicators at a regional level.
- 3.103. 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.
- 3.104. For measurement at the local tourism destination level, based on the principles described in Chapter 2, the core data that can be used to delineate local tourism destinations include: visitor overnights, the number of tourism establishments, accommodation capacity (rooms/beds) and the resident population and associated demographics.
- 3.105. In addition to data on visitor flows, tourism establishments and accommodation capacity, the measurement of the economic dimension for local tourism destination areas should encompass employment, output of tourism industries and measures of tourism seasonality. Beyond these core themes, consideration may be given to measurement of the physical characteristics of tourism infrastructure, government final consumption expenditure and the sustainability of tourism establishments in the area.

⁵⁵ See UNWTO Issue Paper Series, Regional Tourism Satellite Account; <https://www.e-unwto.org/doi/epdf/10.18111/9789284415649>

⁵⁶ For example, products demanded by visitors in a given region A is produced in another region B which contributes to Tourism Value Added of region B

- 3.106. Data on these topics can also be used to provide a general sense of tourism's concentration and how it is changing over time. At regional and national level these measures are also relevant but at local tourism destination level there is additional relevance since 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.
- 3.107. In a similar vein, there will be considerable benefit in collecting data for these various themes in relation to major events and festivals whose impact at local tourism destination level is likely to be both significant economically (compared to their relative significance at regional or national levels) and also create the potential for local environmental and social impacts.
- 3.108. Also at local tourism destination level, it will be relevant to monitor the size and changes in the wider accommodation activity including short term rentals that are made available through various means. Again, the impact of short term rentals is likely to be of heightened significance when considered at the local level.
- 3.109. 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.
- 3.110. 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.
- 3.111. 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.
- 3.112. One of the significant benefits in the application of the SF-MST should also be that different local tourism destinations 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.

4. Measuring the environmental dimension

4.1. Introduction

- 4.1. 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.
- 4.2. In addition, tourism activity has an impact on the natural and built environment. The IRTS 2008 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.” (IRTS 2008, 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 greenhouse gases (GHG) from tourism activity. The concerns around tourism’s negative impact on the environment are often collected in discussion of concepts such as tourism intensity, overtourism and carrying capacity.
- 4.3. At the same time, visitors and tourism businesses can help advance work on environmental protection and the conservation of biodiversity and hence play a role as part of global policy efforts on climate change (e.g. towards net zero GHG emissions) and reversing losses of biodiversity (e.g. driving nature positive outcomes where the state of biodiversity is improved). Further, given that tourism involves a variety of production and consumption contexts from transport and accommodation to food consumption and recreation, there is substantial opportunity for tourism to implement behaviours and solutions that contribute to reducing environmental impacts. Relevant policy considerations in this context include sustainable production and consumption patterns and circular economy.
- 4.4. Overall, in many contexts, tourism is regarded as an economic activity that has the potential to be compatible with achieving a range of environmental sustainability goals. At the global level this has been recognised in the SDG where the role of tourism in securing progress towards sustainability is explicitly recognised in Goal 15 concerning Life below water and specifically as part of Target 14.7 to increase the economic benefits from sustainable use of marine resources. There are also links to the recently adopted goals of the Convention on Biological Diversity in which improved ecosystem and biodiversity outcomes can be secured through careful development of nature based tourism rather than alternative land uses. Given this high policy relevant, the provision of clear and comparable baseline information on the link between tourism and the environment underpinned by the SF-MST can build a richer understanding of potential policy pathways between ministries of tourism and environment.
- 4.5. 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 while still supporting comparison across locations.

- 4.6. 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 the following four broad themes:
 - The pressures that tourism activity places on the environment, for example, through the release of GHG emission, other pollutants and the generation of waste.
 - The use of natural resources such as water and energy as an input to the production of tourism industries.
 - The role of ecosystems as the location in which tourism activity takes place, including for example the role that biodiversity plays in supporting tourism.
 - The responses that tourism industries implement to reduce environmental pressures and improve environmental outcomes.
- 4.7. These themes reflect, in general terms, core elements of the driving force-pressure-state-impact-response (DPSIR) framework (EEA, 2019) that has been widely used to design and evaluate various environmental policies. The information set provided by SF-MST should support analysis of elements of the DPSIR framework in a common way across different locations.
- 4.8. This chapter describes a systematic approach to the measurement of the tourism-environment connection in each of the 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, measurement boundaries and classifications (for example of economic units).
- 4.9. As appropriate, definitions and descriptions from the SEEA are included in the chapter recognizing that the relevant conceptual detail and associated methodological guidance that has been developed as part of the SEEA should be actively consulted in compilation. Further, compilation of estimates on environmental sustainability related to tourism is likely to be significantly assisted through close engagement between tourism statisticians and experts in environmental-economic accounting. In addition, experts in the collection of environmental statistics and those engaged in environmental monitoring should be connected to this work to best support effective and comparable data collection to underpin SF-MST related measurement. Chapter 6 provides more discussion on the issues of implementation and the associated institutional requirements.
- 4.10. To cover the relevant aspects of measurement of environmental sustainability in relation to tourism the following approach is applied. Section 4.2 focuses on the measurement of environmental flows, including GHG emissions, solid waste, water and energy, that are of relevance in most tourism contexts and commonly act as pressures on the environment either through pollution or excess use of resources. A key measurement challenge concerning environmental flows is the appropriate attribution to tourism. Relevant

conceptual and methodological issues concerning attribution are presented in Annex 4.1. Section 4.3 focuses on the link between tourism and ecosystems, including connections to biodiversity, providing a structured approach to organizing data relevant to describing the dependence and the impact that tourism has on the quality of ecosystems and the services they provide. Section 4.4 considers the responses that tourism industries may make to environmental matters through expenditures, specific actions or employment pathways. Section 4.5 provides a brief introduction to the measurement of environmental considerations at sub-national level although it is noted that much of the measurement of the environmental dimension will involve collection and organization of sub-national and location specific data.

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

4.2.1. Introduction

- 4.11. 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, to regulate land development and to develop the circular economy.
- 4.12. 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.
 - Excess resource use, for example of water and energy.
 - Changes in ecosystems due to the expansion of tourism activity resulting in a loss of natural ecosystems.
 - Changes in the quality of ecosystems including losses in species and biodiversity.
- 4.13. This section discusses the first three groupings of information, i.e. having a focus on recording flows of pollution and emissions, specifically GHG emissions and flows of solid waste and also flows of water and energy. While there is a focus on these two flows, the same principles of recording can be applied for all types of environmental flows including emissions to water, wastewater, air pollutants and other material flows. A short discussion on measurement of these other flows is included at the end of this section. The organization of data concerning changes in the composition and quality of ecosystems is discussed in Section 4.3.

4.2.2. Measuring GHG emissions for tourism

- 4.14. Recording flows of GHG emissions that are attributable to tourism activity is a challenging task for a number of reasons. A primary challenge is that the measurement of GHG emissions is generally undertaken on a territory basis, i.e. the emissions that take place as a result of activity in a given country or jurisdiction, irrespective of the residency of the

business or individual causing the emission. Since tourism involves people leaving their normal places of residence there will not be a simple alignment between the emissions recorded for a country and the emissions that may be of interest from a tourism perspective. Consequently, the following discussion identifies a number of different measurement scopes and related indicators, each of which will be relevant in different contexts⁵⁷.

- 4.15. Applying the recording approach recommended in Annex 4.1, GHG emissions for tourism are recorded in a physical supply and use table as shown in Table 4.1. It presents information on the generation of GHG emissions by tourism and non-tourism industries and households 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 and non-tourism industries and also the share that is attributable to tourism based on the use of tourism ratios. The generation of GHG emissions will be “used” (received) by the atmosphere directly.
- 4.16. Table 4.1 separately identifies GHG emissions generated by visitors (both residents and non-residents) directly within a reference country. An important source of these emissions will be visitors using their own vehicles or rental vehicles for tourism activity. This follows the treatment in the SEEA Central Framework (para 3.129). The column for households included in this table is to record the share of emissions generated by visitors when staying with other households, including visiting friends and relatives.
- 4.17. Following the recommended approach for the attribution of environmental flows to tourism leads to the indicator **Internal tourism GHG emissions** which is calculated as the total GHG emissions associated with domestic and inbound trips that are (i) generated by resident tourism and non-tourism establishments (adjusted for their tourism share); (ii) generated by visitors directly through their tourism activity; and (iii) the visitors’ share of emissions generated by resident households when visitors stay with them. Ideally, internal tourism GHG emissions will also include any GHG emissions associated with inbound visitors pre- and post-trip tourism expenditure in their place of residence (i.e. by non-resident establishments) and GHG emissions generated by non-resident passenger transport operators who provide services for domestic and inbound trips.
- 4.18. The treatment of the GHG emissions associated with passenger transport is of particular interest. These flows should be separately recorded for different types of passenger transport based on the residence of the transport operator and applying a tourism share recognizing that not all passenger transport concerns tourism (e.g. transport within the usual environment). The use of a residence principle for recording, consistent with the SEEA Central Framework, will exclude some GHG emissions related to passenger transport activity that will be of relevance. Therefore, a supplementary item is included in Table 4.1 to record the GHG emissions of non-resident passenger transport who bring visitors to reference countries or locations.
- 4.19. More broadly, the attribution of GHG emissions to visitors (as distinct from tourism industries) will be of relevance to provide a consumption perspective, particularly in the case of air passenger transport. A consumption perspective, as described in Annex 4.1,

⁵⁷ An extended discussion of the range of alternative GHG emission measurement scopes is presented in Gossling et al (2023) <https://www.sciencedirect.com/science/article/pii/S0261517722001947>. This issue also relates to the private sector measurement described in the GHG Protocol which describes Scope 1, 2 and 3 emission measures (<https://ghgprotocol.org>). These scopes are related to the alternatives described here but they are not specifically assessed.

attributes GHG emissions to the consumer of the relevant good or service. In the SF-MST, a consumption perspective is limited to the direct consumption of goods and services and does not reflect an aggregation of all GHG emissions embodied across a supply chain. Such measures which incorporate indirect flows of GHG emissions are often referred to as “footprints”.

- 4.20. In practice, as described in Annex 4.1, there will be substantial measurement challenges in fully applying a consumption perspective. In particular, it will 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) and modelling using multi-regional input-output tables will be required. An ideal way forward, in the case of air transport, would be the development of international datasets⁵⁸, which apply a consistent approach across countries to attributing environmental flows according to the residence of visitors.
- 4.21. For those countries or locations interested in deriving indicative consumption-based measures of GHG emissions, one approach is 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.

⁵⁸ 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

Table 4.1: Tourism GHG emissions account ('000 tonnes)

Generation of emissions											Accumulation	Total supply of emissions	Flows to the environment	Total use of emissions
Tourism industries							All other industries	Visitors direct emissions		Households	Emissions from landfill			
Type of substance	Accommodation for visitors	Food & beverage serving	Passenger transport				Other tourism Ind.	Total tourism Ind.	Residents	Non-residents				
			Air	Water	Road	Rail								
Carbon dioxide														
Methane														
Dinitrogen oxide														
Nitrous oxides														
Total CO2 equivalent														
Tourism share (%)														
Internal tourism GHG emissions														
Supplementary Items														
Emissions by non-resident passenger transport arriving in reference country														

- 4.22. In general, progress towards environmental sustainability will be indicated directly by lower total internal tourism GHG emissions and hence this will be a key indicator. In addition, indicators of **internal GHG emissions per visitor** and **internal GHG emissions per unit of tourism direct GDP** will also be relevant. 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 emissions⁵⁹.
- 4.23. Accounting for GHG emissions is related to but different from measurement of GHG inventories as reported following the UNFCCC⁶⁰. Many countries compile relevant statistics on greenhouse gas emission inventories on a regular basis and there are close parallels in the accounting for air emissions as described in the SEEA. An important consideration in using SEEA based estimates in the context of SF-MST is that the data are organized in line with the ISIC classification of economic activity which is also used as the basis for classifying tourism industries. This permits a direct integration of data and supports the consistency in interpretation envisaged through the SF-MST.
- 4.24. Aside from alignment to industry classes, the main adjustments required to create a bridge between SEEA based GHG accounts and data required for the UNFCCC greenhouse gas emission inventories concern adjustments relating to the residency of economic units including visitors and operators of transport equipment. Bridging between UNFCCC and SEEA based estimates is described in more detail in the SEEA Technical Note on air emissions accounting⁶¹.
- 4.25. Accounting for GHG emissions will also be closely related to accounting for flows of energy, as discussed below. Because a significant source of greenhouse gas emissions is the burning of fossil fuels, there are important connections between the measurement of air emissions and the measurement of energy accounts. Indeed, data contained in energy accounts may provide a good basis for the compilation of relevant sections of air emissions accounts. Wherever relevant, a coherence should be developed between these two areas of accounting, with a particular focus on ensuring consistent application of the residence principle.

4.2.3. Accounting for solid waste generated by tourism activity

- 4.26. To record flows of solid waste for tourism a physical supply and use table is used – Table 4.2. 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 3.9⁶².

⁵⁹ Since the focus of measurement in SF-MST is on direct emissions, excluded from scope will be those GHG emissions related to the production of electricity that is subsequently used by tourism industries. Where electricity use is a significant potential source of indirect emissions by the tourism industries additional data may be incorporated by extending Table 4.1.

⁶⁰ United Nation Framework Convention on Climate Change

⁶¹ https://seea.un.org/sites/seea.un.org/files/seea_technical_note_-_air_emissions_13_july_draft.pdf

⁶² Note that Table 4.8 does not include a recording for solid waste products, i.e. solid waste that is subsequently sold.

- 4.27. 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 4.2 although focus may be placed on recording only the total generation of solid waste rather than specific types of waste.
- 4.28. 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 4.2 are those deemed most relevant for tourism industries and for the activities of other industries that meet visitors' demand⁶³.
- 4.29. Of specific note is that the table supports recording data on food waste and plastic waste both of which may be of policy interest in certain countries or locations, for example in relation to policies concerning circular economy and sustainable production and consumption.
- 4.30. The focus in Table 4.2 is on situations in which the solid waste generated is primarily 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 (using for example data from local councils).

Table 4.2: Tourism solid waste account (tonnes)

		Generation of solid waste						Flows from the rest of the world	Flows from the environment	Total supply	
		Tourism industries						Other industries	Households	Imports of solid waste	Recovered residuals
		Accommodation for visitors	Food & beverage serving	Passenger transport	Culture, sports & recreation	Other tourism ind.	Total tourism ind.				
Generation of solid waste residuals											
	Metallurgical waste										
	Non-metallurgical recyclables of which: Plastic waste										
	Discarded equipment and vehicles										
	Animal and vegetal wastes of which: Food waste										
	Mixed residential and commercial wastes of which: Food waste										
	of which: Plastic waste										
	Other wastes										
	Total solid waste generated										
	Tourism share (%)										
	Total tourism solid waste										
Intermediate consumption; Collection of residuals											
		Waste collection, treatment and disposal Industry						Other industries	Households	Exports of solid waste	Total use
		Landfill - local	Landfill - other national	Incineration	Recycling and reuse	Other treatment	Total				
Collection and disposal of solid waste residuals											
	Total solid waste										

⁶³ The general, economy-wide categories of solid waste are described in Annex 1 of the SEEA Central Framework.

- 4.31. The column for households included in this table is to record the share of solid waste generated by visitors when staying with other households, including visiting friends and relatives.
- 4.32. Since the collection and treatment of solid waste, including its disposal in landfill, is a spatially specific activity, it is 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.
- 4.33. Following the recommended treatment for recording environmental flows, the total flows of solid waste for tourism and non-tourism industries should be adjusted by the relevant tourism share to derive measures of tourism solid waste.
- 4.34. In general, progress towards environmental sustainability would be indicated by lower total flows of solid waste and hence **total tourism solid waste flows by tourism industries** will be a key indicator. In addition, to support an understanding of the trends in solid waste, indicators of **solid waste generated per visitor** and **solid waste generated per unit of tourism direct GDP** will also be relevant. Note that these indicators are limited to solid waste generated by tourism industries, i.e. excluding waste generated by visitors recorded under other industries or households.
- 4.35. Depending on the focus of analysis, indicators concerning specific types of solid waste may also be derived for example concerning food waste and plastic 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.
- 4.36. An introduction to the nature of accounting for solid waste is provided in the SEEA Central Framework, section 3.6.5. Guidance on the definition of solid waste is provided in the Eurostat Guidance on the classification of waste (2010) although it is likely that each country will have established its own classes of waste and in the initial stages of developing accounts, **it is recommended** to work with these national classifications in the first instance.
- 4.37. The collection of information for tourism will likely require direct collection of information from tourism industries, for example estimating the volume of solid waste generated per visitor. Another approach may be to engage directly with waste collectors to understand whether, for some large tourism establishments, specific information can be collated. As for the estimation of water and energy flows described below, it will be necessary to consider the generation and treatment of waste by more remote tourism establishments who may manage their own land-fill, composting or incineration facilities.

4.2.4. Measuring water resources used in tourism

- 4.38. 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. In the context of assessing the sustainability of tourism, it would be appropriate to focus only on those catchments that can be considered related to tourism. **Tourism connected catchments** are those where the catchment is a part of, or overlaps with, a tourism area (regions, municipalities, local tourism destinations or local tourism connected areas) as defined in Chapter 2.

- 4.39. 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.
- 4.40. Following the SEEA, two accounts are relevant for the measurement of water resources in the context of tourism. 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 industries. The account also allows tracking flows of water released by tourism industries including wastewater and return flows to the environment.
- 4.41. Table 4.3 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.
- 4.42. Ideally, Table 4.3 should be compiled at catchment level with multiple tables compiled to cover all tourism connected 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 estimates for tourism industries are coherent with the economy wide estimates.
- 4.43. Table 4.3 would normally be compiled on an annual basis recording the total flows over a single year. However, seasonal variation in the use of water may be of particular interest in some locations. Although it would be conceptually possible to compile Table 4.3 on a monthly or quarterly basis, instead **it is recommended** that, in contexts where water use and availability are significant issues, focus should 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 4.4).

- 4.44. 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 to recognize the tourism share should be made following the methodological advice discussed above.
- 4.45. Key indicators concerning water flows are average **tourism water use per visitor** and per visitor overnight, **tourism water use per unit of tourism value added** and **tourism wastewater per visitor overnight**.

Table 4.3: 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.								
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													
		Total water use													
		Tourism output share													
		Tourism water use													
Wastewater received															
Return flows of water															
TOTAL USE															

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

Table 4.4 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.

- 4.46. 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 industries. In addition, it will be necessary to record information on the stock of water and changes in this stock.
- 4.47. The appropriate account for this task is the **water resources asset account** – shown below in Table 4.5. This account is an adaptation of SEEA Central Framework Table 5.25. The 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. A potential indicator of the sustainable use of water resources is **annual tourism water use as a proportion of the net change in stock of water resources**. A stable proportion will indicate that tourism's use of water is not placing additional pressure on the availability of water within the catchment.
- 4.48. 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.
- 4.49. 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.
- 4.50. For assessing the sustainability of tourism, it is not required to develop water resources asset accounts for all catchments within a country. Rather the focus should be on tourism connected catchments as defined above.

Table 4.5: Water resources asset account: Tourism connected catchments (cubic meters)

	Type of water resource					Total	
	Surface water				Groundwater		Soil water
	Artificial reservoirs	Lakes	Rivers and streams	Glaciers, snow and ice			
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>							
Reductions in stock							
Abstraction							
of which: for tourism purposes							
Evaporation & actual evapotranspiration							
Outflows to other territories							
Outflows to the sea							
Outflows to other inland water resources							
<i>Total reductions in stock</i>							
Net change in stock of water resources							
Closing stock of water resources							

- 4.51. 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. It may also be relevant to assess the quality of water resources in situations where there is concern about levels of pollution or other contamination that would affect the capacity to use the water for tourism purposes.
- 4.52. Where storage capacity is limited, it may be highly relevant to monitor both water use and changes in the stock of water on a monthly basis such that information for monitoring the capacity to meet peak tourism demand is well established. This may be particularly important as weather and climate patterns vary such that rainfall and peak visitor arrivals do not align well. 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. Table 4.4 provides the structure to report the relevant data.
- 4.53. The compilation of data for these water resources accounts should follow the concepts and guidance described in the SEEA Water (UN, 2010), the International Recommendations for Water Statistics (UN, 2010) and in related implementation materials. Over 60 countries have developed water accounts and hence there is a substantive body of measurement expertise.
- 4.54. A recommended initial focus for compilers should be on engagement with the local water utilities to understand the availability of data on water flows by type of business. However, the level of industry detail may be limited. In these cases, additional data collection through surveys of tourist establishments may be required to provide more accurate data. Ideally, information would be available according to a common business register and this would provide the strongest basis for aggregation and integration. As well, all countries will have well established hydrological measurement, including the delineation of catchments.

- 4.55. Special note should be taken of the coverage of water utilities with respect to tourism establishments. It may commonly be the case that tourism establishments access water via a distribution network however, there may be instances, for example in remote resorts, where water is abstracted by the establishment directly either through the collection of rainwater or from groundwater sources. The own-account production of desalinated sea-water may also need to be taken into account.

4.2.5. Measuring energy use in tourism activity

- 4.56. 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.
- 4.57. 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 4.6 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.
- 4.58. 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 approach⁶⁴.
- 4.59. 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.

⁶⁴ Note that it may be necessary to take into consideration the treatment of fuels stored in bunkers when considering the use of energy by transport operators. SEEA Central Framework paragraph 3.126 describes the appropriate approach.

- 4.60. Generally, the source of energy used by many tourism establishments, particularly in the form of electricity, will not be within the control of the tourism establishments 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.
- 4.61. 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).
- 4.62. Given this discussion, a key aspect of Table 4.6 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.
- 4.63. 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.
- 4.64. 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 4.6 may be extended to recognize energy obtained from other countries but it is not likely to be possible to separate out tourism specific flows.
- 4.65. The key indicator for energy flows is the **total end-use of energy products by tourism industries** recorded in the bottom section of the supply and use table covers use for both tourism and non-tourism purposes. To ensure an appropriate estimate of the contribution of tourism to overall energy use, and following the methodological advice in Annex 4.1, the total use for each industry should be multiplied by the tourism share to derive an estimate of tourism energy use. Alternatively, if data are available, a more direct estimate of tourism use of energy products might be estimated focused on, for example, using information on fuel used in delivering specific transportation services (e.g. intercity bus travel) which can be attributed appropriately to tourism.

- 4.66. The compilation of Table 4.6 should follow the concepts and guidance of the SEEA Energy and the International Recommendations on Energy Statistics. There is substantial compilation experience on energy accounting, including via materials used to support the reporting of EU countries as part of legal reporting arrangements. Relevant other institutions include the International Energy Agency. There are also likely to be close connections between the measurement of some energy flows and the measurement of GHG emissions as required under the UNFCCC. Tourism data compilers may take advantage of the data sources used to underpin these two related areas.

Table 4.6: Tourism energy flow account (joules⁶⁵)

	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.								
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													
	Total end use													
	Tourism share													
	Tourism energy use													
Energy residuals and other residual flows														
TOTAL USE														

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

⁶⁵ 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.

- 4.67. In terms of data sources, the existence of established energy data programs at the international level⁶⁶, generally means that basic data on energy supply and use is available for most countries. Since these sources will likely cover the major energy flows (with possible exception of within enterprise flows and goods for processing) these data in most cases will be sufficient to form the basis for estimating an initial physical flow accounts for energy. For example, if a country has already estimated energy balances, these estimates will generally provide much of the data needed to estimate SEEA energy accounts. It is noted that data from energy balances will require adjustments to conform to SEEA accounting rules; the most important adjustments usually concern the residency principle applied in the SEEA (and SNA), an adjustment that will likely be most significant in the case of transportation. A description of the required adjustments is presented in SEEA-Energy and supporting compilation tools have been developed by UNSD and Eurostat.
- 4.68. Special note should be taken of the coverage of electricity utilities with respect to tourism establishments. It may commonly be the case that tourism establishments access electricity via a distribution network however, there may be an increasing number of instances, for example in remote resorts, where electricity is generated on own-account through the use of solar panels or wind turbines. Information on these practices should be gathered through direct contact with tourism establishments.

4.2.6. Other environmental flows

- 4.69. Beyond the accounts for GHG emissions, solid waste, water and energy described here, there may be other environmental flows of interest in particular countries or locations. For example, flows of pollutants to water and air might be of importance in some contexts. Examples of pollutants include emissions of PM_{2.5} and PM₁₀ (i.e. particulate matter of size <2.5 and <10 microns respectively), sulfur dioxide, nitrous oxides, volatile organic compounds (VOC), ammonia and heavy metals. The gases included in the Convention on Long-Range Transboundary Air Pollution (LRTAP), which aims to eliminate, mitigate and reduce air pollution on a transboundary basis, may also be of interest in some analysis. The general principles of accounting for these types of flows as described in the SEEA Central Framework, in particular section 3.6.3 on accounting for air emissions, and as applied here for SF-MST can be readily applied.
- 4.70. In addition to recording flows of individual substances, it is also common to track flows of materials in aggregate terms using economy-wide material flow accounts (EW-MFA). These accounts provide an aggregate overview, in tonnes, of the material inputs and outputs of an economy. A short overview of EW-MFA is provided in the SEEA Central Framework and more detailed guidance is available from the OECD and Eurostat. EW-MFA provide a relatively coarse set of information given the aggregation of different materials but such information, since it covers the entire economy, can provide useful information on connections among activities to support, for example, studies of the circular economy.
- 4.71. 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. Thus, measures of emissions to air can be complemented with measures of

⁶⁶ UNSD Annual Questionnaire on Energy Statistics, the International Energy Agency (IEA), the Statistical Office of the European Communities (Eurostat), the International Atomic Energy Agency (IAEA), the Organization of the Petroleum Exporting Countries (OPEC), and the Organización Latinoamericana de Energía (OLADE).

air quality for local airsheds and measures of emissions to water can be complemented with measures of water quality in coastal and marine areas and local waterways. Generally, these measures will be most relevant in a local context rather than at national scale.

- 4.72. From a statistical perspective, it will be relevant to record levels of and changes in environmental quality using the structured approach of an ecosystem condition account as described in section 4.3. This approach will support measurement at local scales in a consistent manner across a country. 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 on environmental quality.
- 4.73. Another flow of interest will be wastewater generated by tourism activity. These flows can be recorded using the physical supply and use table for water described above with the addition of information on the tourism share to identify the appropriate allocation to tourism activity from industry totals. Flows of wastewater may be associated with emissions to water if there is insufficient treatment of wastewater generated. In locations where this is relevant the same considerations just noted about complementing measures of wastewater generated with measures of ecosystem condition should be applied.
- 4.74. 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. Rather measurement in different locations within a country where pollution issues are apparent and potentially attributable to tourism is appropriate.

4.3. Measuring the connections between tourism and ecosystems

4.3.1. Introduction

- 4.75. 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. 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. 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.
- 4.76. Following the SEEA, measurement of the environment in these contexts involves accounting for environmental assets. *Environmental assets are 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).
- 4.77. The SEEA describes the measurement of environmental assets from two perspectives. In the first perspective the focus is on individual components of the environment that provide materials and space to all economic activities. These components include mineral and

energy resources, timber resources, water resources and land. In the second perspective the focus is on ecosystems. *Ecosystems are a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit*⁶⁷. Examples of ecosystems include terrestrial ecosystems (e.g., forests, wetlands) and marine ecosystems (e.g. coral reefs). These are complementary perspectives for measurement of the same environmental assets within a given spatial area.

- 4.78. Collectively, ecosystems underpin the supply of a wide range of services and benefits that are relevant to tourism. Thus, for the purposes of SF-MST, the focus in this section is on organizing data about ecosystems:
- that directly underpin the provision of goods and services to visitors by being owned and/or managed by tourism industries;
 - that are locations/areas (e.g. national parks, protected areas, beaches, lakes, rivers, mountain areas including ski resorts) with their associated features (including significant species – gorillas, pandas, fish) where visitors undertake tourist activity;
 - whose size or quality is impacted negatively by tourist activity, for example through excess visitation or the release of pollutants or wastewater; or where ecosystems and biodiversity are lost or affected as a result of tourism development;
 - whose size or quality is impacted positively as a result of restoration or similar activity by tourism establishments, for example through environmental protection expenditure.
- 4.79. In measuring environmental assets connected to tourism, there is no adjustment to isolate the part of the assets that pertain to tourism, i.e. there is no tourism share of environmental assets. Rather, environmental assets whether individual assets such as water resources or ecosystems, should be managed as complete entities. It will be relevant in different contexts to determine the contribution that tourism activity may make to changes in an environmental asset but this should not be interpreted as a share of the asset itself.
- 4.80. The remaining parts of this section describe in turn the measurement of the three primary components of ecosystems measured following the SEEA EA: ecosystem extent (size), ecosystem condition (quality or health) and ecosystem services. Links to measures of land use are described in the context of accounting for ecosystem extent and the relevance of key species and biodiversity is described in the context of accounting for ecosystem condition. Ecosystem accounting is an emerging area of statistical measurement. A number of countries have national programs of work and MST compilers are encouraged to work closely with those programs to build robust and integrated measures related to ecosystems at both local and national scales.

4.3.2. Accounting for ecosystem extent

- 4.81. Building on the definition of ecosystems shown above, the SEEA EA defines **ecosystem assets** as *contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interaction*. (SEEA Ecosystem Accounting, 2.11). The starting point for measuring ecosystem assets is **ecosystem extent** which is the size of an ecosystem asset in terms of spatial area. Accounting for ecosystem extent involves identifying (delineating) separate spatial areas within a country each representing an ecosystem asset. Most commonly, these separate areas are initially determined on the

⁶⁷ United Nations (2001) Treaty Series, vol. 1760, No. 30619, Convention on Biological Diversity article 2, Use of Terms.

basis of different vegetation types but other abiotic and biotic characteristics and ecological knowledge should be used in the delineation. Each ecosystem asset is thus 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 (including the built environment), cropland and pasture, and plantations⁶⁸.

- 4.82. Consistent with SEEA accounting principles, all ecosystem assets within a geographical territory (referred to as an ecosystem accounting area, e.g. country, region, local tourism destination) are classified to an ecosystem type in a non-overlapping manner. Each of these ecosystem assets might change in 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.
- 4.83. **It is recommended** that ecosystem extent accounts are compiled to record the current composition and changes in composition of each region within a country, including relevant marine 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 should be tracked over time. Maps of these changes may also be useful policy tools. The delineating and mapping of ecosystem assets at regional level provides the underlying framing for applying ecosystem accounting in the analysis of tourism's impacts and dependencies. Initial focus may be placed on those regions in which tourism activity is considered relatively more important.
- 4.84. Using the ecosystem extent data for each tourism region compiled following the SEEA EA guidance and classified consistently with the IUCN Global Ecosystem Typology reference classification, analysis should be undertaken to identify those ecosystems that are connected to or impacted by tourism activity, i.e. tourism-related ecosystem assets. This analysis can be undertaken as part of work to delineate local tourism destinations and local tourism connected areas (see Chapter 2). As part of this analysis, **it is recommended** to consider the spatial boundaries of any protected areas and related parks that are within the tourism region. The output from this analysis should be a tourism-related ecosystem asset register that records the size (area) and type of all ecosystem assets that are considered tourism-related within the tourism region. Where information are available, additional information pertaining to each ecosystem asset on the register may be progressively incorporated, including for example information on key species, ecosystem condition (as described in the following section), visitor numbers, accessibility, protected status, and the presence of cultural heritage. While not all of these fields of information are directly relevant for the compilation of ecosystem accounts, the asset register structure can provide a strong basis for the organisation of a range of information relevant for tourism management and decision making.
- 4.85. Using data on the area of different ecosystem types across the region, a regional ecosystem extent account (Table 4.7) can be compiled. This account should record the area of tourism related ecosystem assets by ecosystem type (derived from the register).

⁶⁸ The reference classification used for ecosystem types in the SEEA EA is the IUCN Global Ecosystem Typology.

The **share of tourism-related ecosystem assets to the total area of the region** can then be derived as an indicator for monitoring the degree of connection between tourism and ecosystems.

- 4.86. Table 4.7 uses a selection of biomes from the IUCN GET to demonstrate the structure of the account. In practice, the best starting approach is the use of national ecosystem classifications which will provide classes of most relevance to the context. Discussions with local ecologists in establishing the appropriate approach to the classification and delineation of ecosystem assets is highly recommended.
- 4.87. SF-MST does not recommend partitioning individual ecosystems assets or determining a tourism share of ecosystems. Rather, it is recommended to assess the stocks and change in stocks for the ecosystems as a physical whole and to separately record data on the tourism and non-tourism uses. This also applies to the measurement of the degradation and enhancement of ecosystems. This approach will provide a much clearer sense of the changing capacity of the ecosystem to supply services and benefits into the future and allow assessment of the relative importance of tourism uses to other uses of the same ecosystem asset.
- 4.88. A focus on ecosystems as a whole also allows for recognition of the wider benefits to local communities that arise from activities to restore and enhance ecosystems, and the loss of benefits if the size or quality of ecosystems declines. 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 types of social outcomes are discussed further in the following chapter on the measurement of the social dimension.

Table 4.7: Regional ecosystem extent account ('000 hectares)

	Total area of region	Area of tourism related ecosystem assets	Share of area of tourism related ecosystem assets
IUCN Global Ecosystem Typology Biomes			
T1: Sub-tropical forests			
T2: Temperate-boreal forests and woodlands			
T3: Shublands and shrubby woodlands			
T4: Savannas and grasslands			
T5: Deserts and semi-deserts			
T6: Polar-alpine			
T7: Intensive land use			
F1: Rivers and streams			
F2: Lakes			
F3: Artificial fresh waters			
TF1: Palustrine wetlands			
FM1: Semi-confined transitional wetlands			
M1: Marine shelves			
Other marine biomes			
MT1: Shoreline systems			
MT2: Suprelittoral coastal systems			
MT3: Anthropogenic shorelines			
MFT1: Brackish tidal			
Total			

- 4.89. The use of land for tourism activity and development that was previously natural or semi-natural ecosystems or used for other purposes (e.g. agriculture) 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.
- 4.90. Where data is required for the analysis of land use change and associated issues, the biome Intensive land use (T7) in Table 4.7 should be disaggregated to highlight the relative area of land used by tourism industries such as hotels, restaurants, recreational facilities, golf courses, transport hubs, etc. Recording this detailed data on land use, in combination with data on other biomes presented within a region, will provide a comprehensive data set for recording land use and land use change. When these data are presented in maps, it highlights whether there are particular tourism clusters and how these might be changing over time. The analysis of land use change due to tourism may also consider the indirect effects of tourism activity, for example, increases in agricultural area due to increased demand for food by visitors.

4.3.3. Accounting for ecosystem condition

- 4.91. 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 ecosystem asset, a range of characteristics relevant to the assessment of the overall integrity and functioning of the asset. Characteristics selected will vary by ecosystem type but should cover the six classes of the SEEA EA ecosystem condition typology. Examples of characteristics 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.
- 4.92. Building on the tourism-related ecosystem asset register described above, ecosystem condition measures should be compiled for each tourism related ecosystem asset within a region. This should include marine ecosystems as relevant. Regular recording of ecosystem condition for these ecosystem assets will provide a strong basis for assessing the impacts of tourism activity on local ecosystems in terms of both enhancement and degradation⁶⁹. An indicator that may provide initial insights into ecosystem condition is the extent to which ecosystems within a region or country are protected. Thus, the **percentage of protected areas (marine and terrestrial) to total area** can be derived by adding information on the protected area status of ecosystems in the ecosystem asset register. Note that only initial insights on condition are provided from this indicator since the actual ecological condition is not determined solely by its status as a protected area.
- 4.93. As part of the measurement of ecosystem condition it is relevant to incorporate measures of biodiversity. In general, higher levels of biodiversity will be associated with higher levels of ecosystem condition. In measuring the diversity of species, recording the number of and changes in the stock of key species over time will support an understanding of both the

⁶⁹ There will be a wide range of ecological considerations that can be integrated in ecosystem condition accounts and incorporating local ecological knowledge will be important. Beyond guidance materials developed in the context of SEEA EA other sources will also be relevant, for example the work on the limits of acceptable change in the context of tourism, see <https://responsibletourismpartnership.org/limits-of-acceptable-change/#:~:text=The%20Limits%20of%20Acceptable%20Change,constrained%20with%20in%20the%20LAC.>

ecosystems supporting tourism activities, as well as the effects of tourism activity. The flora and fauna species that provide the focus for wildlife watching and related activities (non-consumptive uses), and species that are a focus for recreational hunting and fishing (consumptive uses) underpin an important share of tourism activity in many places.

- 4.94. For recording data about species, a standard asset account structure (see Chapter 2) may be adapted or developed for selected species of animals and plants. Species accounts may also be considered for species that are considered emblematic to the territory or otherwise considered a policy priority (e.g. threatened species). A standard species account focuses on recording the numbers (abundance) of selected species monitored at regular intervals and entered into an asset account format. This can 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 4.8 for tourism-related 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.
- 4.95. 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).
- 4.96. 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.

Table 4.8: Species account for tourism-related 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										
:										

4.3.4. Accounting for ecosystem services

- 4.97. The third ecosystem account concerns ecosystem services. Following the framing of ecosystem accounting, ecosystem assets supply ecosystem services, including for example opportunities for recreation. **Ecosystem services** are the contributions of ecosystems to the benefits that are used in economic and other human activity. The measurement of ecosystem assets and ecosystem services requires a spatial blending of components, including land and species, to provide a systemic view of components within a spatial area.
- 4.98. Commonly, ecosystem services are grouped into three broad classes: provisioning services, regulating services and cultural services. Of most immediate relevance for the assessment of tourism are cultural services. Cultural services concern the opportunities provided by ecosystems to enjoy and learn from nature. They include educational and scientific connections and, most significantly for tourism, cultural and recreational opportunities including wildlife watching, hiking, camping, visits to national parks, swimming and other outdoor recreation. Recording changes in ecosystem condition and flows of cultural services can highlight the connections about the dependency of tourism on nature.
- 4.99. In some cases, the services and benefits supplied by ecosystems will be received directly by visitors, such as when visiting a game reserve or kayaking on a river. In other cases, the services will be jointly used by visitors and non-visitors, for example all people near the coast will benefit from coastal protection services provided by dunes and mangrove ecosystems.
- 4.100. Of high relevance to tourism are recreation-related services. These are defined following the SEEA EA as follows: *recreation-related services are the ecosystem contributions, in particular through the biophysical characteristics and qualities of ecosystems, that enable people to use and enjoy the environment through direct, in-situ physical and experiential interactions with the environment. This includes services to both locals and non-locals (i.e. visitors, including tourists* (SEEA EA Table 6.3). Ideally, the flows of recreation-related ecosystem services are measured in terms of the number of interactions that visitors have with nature and the various features (e.g. waterfalls, rock formations, beaches, iconic species) present within an ecosystem asset. The number of interactions with tourism-related ecosystem assets within a tourism region can be recorded as an additional entry in the tourism-related ecosystem asset register, alongside data on the extent and condition of that ecosystem asset. Where the number of interactions is not available alternative modelling approaches have been developed that may be considered for use. This includes the Recreation Opportunity Spectrum (ROS) method.
- 4.101. The measurement of **total recreation-related services in a tourism region** can provide an indicator of the dependence of tourism on ecosystems and also be compared to measures of the carrying capacity of the ecosystems. Measurement of the carrying capacity should consider both the number of visitors and the change in condition of the ecosystem.
- 4.102. 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.

- 4.103. 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. Monitoring flows of regulating services for relevant ecosystem asset will support assessment of the wider impacts of tourism on the benefits received from ecosystems within a local area or region.
- 4.104. 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 maintains or enhances the condition of local ecosystems (for example, through designation of protected area status or construction of boardwalks and paths that limit direct impact of visitors on 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 community⁷⁰.
- 4.105. 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. However, it must be recognized that there remain a range of conceptual and practical issues in applying non-market valuation techniques in an accounting context and hence the monetary valuation chapters of the SEEA EA (Chapters 9-11) have the status of international recommendations rather than reflecting statistical standards. 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.
- 4.106. 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 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 assessing the sustainability of tourism at a destination level.

⁷⁰ The compilation of tourism and biodiversity accounts in South Africa and Uganda provide examples that recognise the relevance of the connection between tourism and ecosystems.

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

4.4.1. Introduction

- 4.107. 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.
- 4.108. 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. In addition to the monetary data recorded in relation to these transactions it is also relevant to collect data concerning the activities and behaviours of tourism establishments concerning environmental responses.
- 4.109. 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.

4.4.2. Environmental transactions related to tourism

- 4.110. 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).
- 4.111. Following the concepts, definitions and treatments of the SEEA Central Framework, the SF-MST records environmental transactions where they are undertaken by tourism industries. Such information can support an improved understanding of responses to environmental issues from a tourism perspective.
- 4.112. The first section of the table concerns expenditure on environmental protection. *Environmental protection activities are those activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment* (SEEA Central Framework, 4.12). Environmental protection may be undertaken by tourism establishments either by paying other establishments to complete relevant works, or it may be undertaken by its own staff (own account production), or a tourism establishment may finance restoration efforts, for example, via an environmental NGO. In some cases, tourism establishments may receive funding, e.g. from government, to undertake restoration work. Each of these types of transaction can be recorded in this table.

- 4.113. Ideally, the table would also be able to connect to data on the changes in extent and condition of the ecosystems that are the focus of restoration and maintenance efforts. Recording this outcome information is an important complement to the expenditure information. However, collecting this information may be challenging if the details on the location and type of ecosystems that are the subject of restoration and maintenance activity are not known. While this table is limited to the expenditure of tourism industries, it may be of interest to collate data on environmental protection expenditure on tourism related ecosystems undertaken by governments and non-profit institutions serving households (e.g. environmental NGOs), noting that this expenditure may not be undertaken primarily for the purposes of tourism. Data on environmental protection expenditure should be classified following the Classification of Environmental Functions (forthcoming).
- 4.114. The second section of the table records data on total production of environmental goods and services by tourism industries. This production encompasses specific services, sole-purpose products, adapted goods or technologies which are produced, designed and manufactured for the purposes of, or are beneficial for, both environmental protection and resource management. (SEEA Central Framework, section 4.3.3) The total production will include both (i) amounts paid to other establishments for the supply of environmental goods and services; and (ii) expenditure to produce environmental goods and services within a tourism establishment, i.e. own account production. This expenditure will include, for example, wages and salaries paid to employees who undertake environmental activities.
- 4.115. The third section of the table considers the range of environmental taxes that may be paid by tourism industries. This is a different perspective from the discussion of taxes in Chapter 3 which focuses on the collection of taxes from visitors. Environmental taxes paid by tourism industries should be recorded in the table following the definitions in the SEEA. The SEEA identifies four categories of environmental taxes: energy taxes (including taxes on carbon), transport taxes, pollution taxes and resources taxes. These taxes represent a sub-set of the total taxes paid in relation to tourism that are recorded following the advice in Chapter 3 on government tourism-related transactions which records total taxes. It is recommended that a tourism share of environmental taxes be estimated. For non-transport industries the use of a tourism output ratio could be used. For transport industries, the tourism share should take into account factors such as passenger kilometres to the extent that the tax levied is related to distance travelled.
- 4.116. Compilation of estimates of the production of environmental goods and services and environmental protection expenditure will require direct collection from tourism establishments. Where countries already collect such data as part of implementation of the recommendations in the SEEA Central Framework, estimates for tourism industries may be drawn from those collections or additional sample included to provide estimates of suitable quality. Eurostat has developed considerable guidance on the compilation of statistics in these areas⁷¹. Data on environmental taxes should be collated using government finance statistics.

⁷¹ <https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-ra-09-012>

Table 4.9: Environmental transactions related to tourism

		Tourism industries							Total tourism ind.	
		Accommodation for visitors	Food & beverage serving	Passenger transport				Culture, sports & recreation		Other tourism ind.
				Air	Water	Road	Rail			
Environmental protection expenditure										
	Paid to other establishments									
	Undertaken on own-account									
	Financing of other restoration activity									
	Funding received for restoration activity									
Environmental goods and services (EGSS)										
	For environmental protection purposes									
	Paid to other establishments									
	Undertaken on own-account									
	For resource management purposes									
	Paid to other establishments									
	Undertaken on own-account									
Payments of environmental taxes										
	Energy taxes (including taxes on carbon)									
	Transport taxes									
	Pollution taxes									
	Resource taxes									

4.117. In addition to the monetary flows reported in Table 4.9, it may also be relevant, particularly at local tourism destination level, to collect information on the number of establishments that undertaking practices that are considered more environmentally sustainable or may be linked to securing environmental outcomes. For example, installing water efficient equipment, using renewable energy sources, composting food waste, eco-labelling, sustainability certification and reporting. If such information is available or collecting the data can be undertaken, then additional rows could be added to Table 3.3 to record additional characteristics of tourism establishments. A distinction between the practices of large and small and medium establishments might also be made. This information may be available in cases where tourism establishments are seeking accreditation or certification for sustainability through relevant schemes. A separate perspective on environmental sustainability may be obtained through studies of visitor perceptions of both tourism destinations and tourism establishments as discussed in Chapter 5 on measuring the social dimension.

4.4.3. Employment in environmental activities

4.118. Building on the framing of employment in tourism provided in Chapter 3, the focus in this section is on the description of approaches to the measurement of employment specifically in environmental activities in tourism 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 Statisticians (ICLS) in 2013⁷². These guidelines provide definitions of the main concepts, measurement methods and potential data sources.

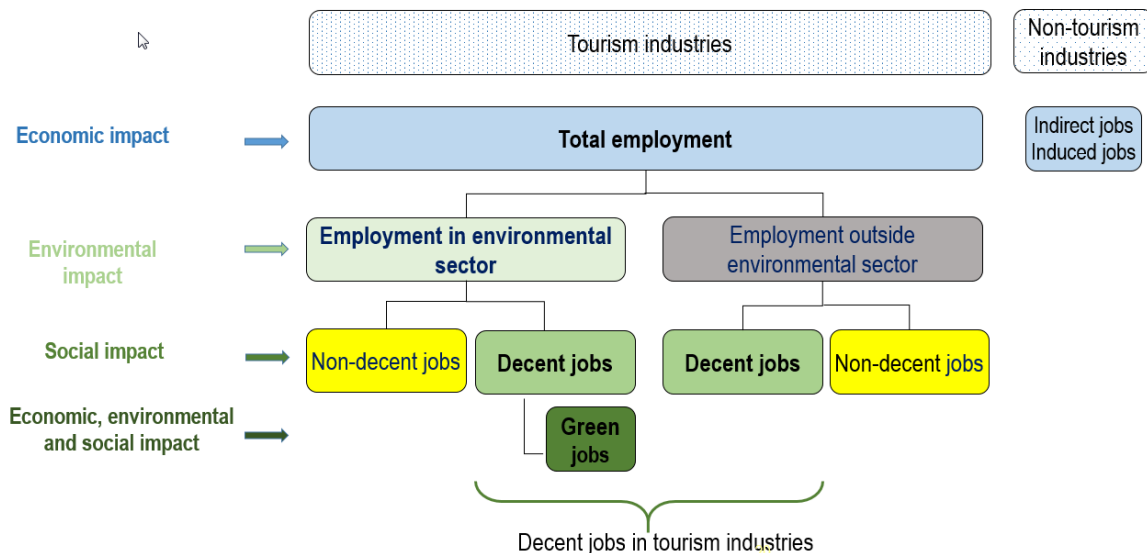
4.119. The guidelines define the environmental sector as comprising all economic units that carry out environmental activities, where those activities are defined following the SEEA Central Framework as economic activities whose primary purpose is to reduce or eliminate pressures on the environment (environmental protection-EP) or to make more efficient use

⁷² https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_817835.pdf

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.

- 4.120. 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.
- 4.121. The concept of employment in environmental activities is closely associated with the concept of green jobs. Following the ILO guidelines, and as depicted in Figure 4.1, the identification of green jobs in tourism involves a number steps. The starting point is total employment in tourism industries of which some will reflect employment in the environmental sector. Of that environmental sector employment, some jobs will meet the requirements of decent work (e.g. offer adequate wages, safe conditions, workers’ rights, social dialogue and social protection) and it is these jobs that are defined as green jobs. 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 5 on the measurement of the social dimension. While the measurement of green jobs provides a clear focus, it should be recognized that not all positive environmental outcomes will arise from jobs satisfying the definition.

Figure 4.1: Employment data for assessing the three dimensions of sustainability of tourism



Adapted from Stoevska, 2019

- 4.122. To record data on employment in environmental activities, **it is recommended** that extensions be applied to TSA:RMF 2008 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. To support measurement work, 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). Analysis of green jobs by the OECD within their program of work on Local Employment and Economic Development (LEED) also provides insights on appropriate methods and data sources⁷³.

- 4.123. Relevant indicators concerning employment in environmental activities for tourism are:
- Share of employment in the environmental sector of tourism.
 - Percentage of jobs and FTE in tourism industries that are decent.
 - Percentage of jobs and FTE in tourism industries that are green.
- 4.124. Note that these indicators, in conjunction with measures of employment and jobs in tourism more generally, provide a coverage across each of the dimensions of sustainable tourism. Indeed, a major advantage of counting 'green jobs' in tourism industries is that it focuses on all three dimensions.
- 4.125. 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.
- 4.126. Consequently, in understanding the response of tourism establishments 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.

4.5. Measuring the environmental dimension at the sub-national level

- 4.127. As noted in the introduction to this chapter, the assessment of sustainability with respect to the environmental dimension will commonly require consideration of data at sub-national levels. It is at these finer levels that the connection between tourism activity and the environment is most directly observed and given the significant variation in environmental contexts across a country, taking these variations into consideration is both appropriate and necessary.
- 4.128. The general advice in SF-MST with respect to sub-national environmental data is to seek to record data at as finer spatial level as possible and to attribute that data to the structured register of spatial areas described in Chapter 2. While it will not be necessary or relevant to record data at fine spatial levels for every environmental themes or for all locations across a country, keeping this general advice in mind is useful in establishing a framework for the organization of data and building as much coherence as possible across the range of data sets and data holders. As the ongoing improvement in the spatialization of data continues, there becomes the opportunity to fill gaps progressively while still maintaining a clear sense of the overall national picture.

⁷³ <https://www.oecd.org/employment/greeningjobsandskills.htm>

- 4.129. There are two key scales for consideration measuring the environmental dimension at the sub-national level. The first concerns the need to place tourism areas in a wider context. For this purpose, statistics compiled for tourism regions and tourism connected catchments are highly relevant. Specifically, data on water resources should be compiled for tourism connected catchments and data for land accounts and ecosystem extent should be compiled for tourism regions. These data will provide both local and national decision makers a solid understanding of the potential scale of connection between tourism and environment and serve as a starting point for prioritization of measurement activity at finer scales.
- 4.130. The second key scale is at the level of individual locations, best represented in terms of ecosystem assets. At this scale the pressures of tourism activity in terms of high visitor activity, emissions to air and water, and potential restoration activity, become evident. In turn, once the environmental outcomes from tourism activity are localised, attention can turn to identifying and measuring pressures, for example, in terms of numbers of visitors, flows of wastewater, the generation of solid waste and emissions to air and water by tourism industries.
- 4.131. The measurement of these flows at a national level is useful context information but the availability of these data at finer scales where a link may be analysed to environmental outcomes is most useful for developing appropriate policy responses. One example of the potential of these types of data to inform tourism decision making concerns land zoning and planning for which data at a local scale is essential.
- 4.132. With these considerations in mind the following environmental themes are considered of most relevance for the assessment of the sustainability of tourism at sub-national level:
- Water use and water resources.
 - Generation of solid waste.
 - Emissions to air and measures of air quality.
 - Emissions to water, including wastewater flows, and measures of the condition of freshwater and marine shelf ecosystems.
 - Land accounts and ecosystem extent accounts allowing for landscape scale assessment.
 - Protected areas and their connection to local tourism destinations and other sustainability-related tourism areas.
 - Environmental protection activities and expenditures.
- 4.133. In each of these areas of measurement, the discussion in the earlier sections of this chapter provides initial advice on measurement options.

4.6. Annex 4.1: General considerations in measuring the environmental dimension of tourism

- 4.134. This annex 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; accounting for the location of environmental flows, the distinction between the production and consumption perspective; and estimating indirect environmental flows.

4.6.1. Geographical scale and frequency of compilation

- 4.135. The measurement described in this chapter is presented in terms of compilation for annual frequencies and at national level. 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). A national level dataset will also 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.
- 4.136. It is recognized that for some purposes of sustainable tourism management and analysis, this level of detail will usually not be sufficient. For example, at local tourism destination scale some important ecosystems may be under pressure which could be intensified by tourism, or indeed where visitors might provide finance resources that could fund ecosystem remediation⁷⁴. 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. An introduction to relevant sub-national measurement considerations for the environmental dimension is provided in section 4.5.

4.6.2. Estimating the tourism share of environmental physical flows

- 4.137. *Environmental physical flows (environmental flows) are the flows of materials, water, pollutants, waste and energy that move between the environment and the economy and within the economy. They may be natural inputs to production and consumption activity, product flows between economic units, or residual flows from production and consumption activity to the environment (Adapted from SEEA Central Framework, para 2.14).*
- 4.138. Measuring the connections between tourism activity and environmental flows (including water, energy, waste, GHG emissions) requires consideration of a number of aspects of measurement and analysis. There are three primary considerations: (i) the extent to which observed environmental flows are directly related to tourism activity; (ii) the location where the connection between tourism activity and environmental flow is observed and the associated residence of the economic units involved; and (iii) the measurement question and purpose of recording. Each of these aspects is considered in the following sections. The discussion in these sections does not consider the measurement of the connection between tourism activity and environmental assets or changes in environmental assets. These issues are discussed in section 4.3.
- 4.139. To consider the extent of the direct connection between tourism activity and environmental flows it is useful, in the first instance to assume that all tourism activity in a reference country is domestic tourism where all visitors remain in the country and all of their consumption is supplied by resident economic units.

⁷⁴ e.g. via Payments for Ecosystem Services; see <https://www.oecd.org/stories/ocean/payments-for-ecosystem-services-programmes-540de426> for example

- 4.140. Under this assumption, the starting point for measurement is that environmental flows are generally 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. However, since not all of the output of a given industry is purchased by visitors, not all of the environmental flows 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.
- 4.141. Two direct measurement approaches may be applied in estimating the tourism share. First, data on environmental flows related to tourism activity could be collected directly from tourism and non-tourism establishments if they 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. As well, it would be necessary to ensure that this directly sourced data was coherent with industry level data for the same environmental flow that covered tourism and non-tourism activity.
- 4.142. Second, where an environmental flow represents an important input or residual flow for a particular activity (e.g. energy use in passenger transport), **it is recommended** to calculate estimates of the tourism share using relevant factors concerning the potential size of the environmental flow in physical terms that would be attributable to tourism activity. For example, measures of tourism energy use in passenger transport may be estimated using data on passenger kilometres and volumes of fuel. A tourism share can then be derived as the ratio between this estimate and the total energy use for the industry. Since these calculations are undertaken using physical measures the estimated attribution of the environmental flow to tourism will not be affected by issues concerning changes in the prices of inputs and outputs⁷⁵.
- 4.143. In the absence of directly collected data or modelled estimates, **it is recommended** to calculate the total environmental flow at the industry level (e.g. restaurants) and then apply the tourism output ratio for that industry to provide an estimate of the proportion of the environmental flow attributable to tourism activity. This provides an estimate of the tourism share of that environmental flow. The tourism output ratio is calculated by dividing an industry's output sold to visitors by its total output, generally using data that has been integrated via a TSA following the TSA:RMF 2008 (Table 6). If a TSA has not been compiled, the ratio may be derived using a combination of visitor expenditure data and national accounts industry data⁷⁶.
- 4.144. Where a country has compiled physical flow accounts following the SEEA, for example for water, energy, GHG emissions or solid waste, the task of applying tourism ratios is made significantly more straightforward. This is because the data on the environmental flows will have already been classified following standard industry classifications aligned with those used in classifying tourism industries within a TSA. The advantages of the consistent application of industry classifications between SEEA and TSA also emerge when

⁷⁵ An example of this approach was undertaken by Istat/Ispra where they estimated physical production of air pollutants attributed to domestic tourism attributable to private road transport in tourism demand flows of trips (https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2023-01/MST_pilots_learning.pdf).

⁷⁶ See World Tourism Organization (2022), Estimating Tourism Direct GDP with limited data, UNWTO, Madrid (online), available at: https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2022-12/Measuring_TDGDP_2.pdf

considering measurement of a consumption perspective (see discussion below) since this will require modelling using multi-regional input-output tables which themselves will be structured using the same approach to industry classification.

- 4.145. The assumption in estimating tourism shares using a TSA approach 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.
- 4.146. The preceding discussion has the implicit scope wherein all environmental flows are connected directly to tourism establishments and not to visitors. Thus, for example, water use and GHG emissions are attributed to production activities. The vast majority of tourism consumption activity does take occur through direct connections with tourism establishments and hence, overall, a focus on establishments is appropriate. However, there are some additional flows that should be included to provide a complete scope. These 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)⁷⁷.
 - 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. solid waste) related to visitors' 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 visitor⁷⁸.
- 4.147. The estimation of these additional flows related to visitors will require the collection of data directly from visitors. The need to collect additional data should be considered in light of analytical and policy requirements.

4.6.3. Accounting for the location of the environmental flows

- 4.148. In the previous section, the underlying assumption was that all tourism activity took place within a single reference country and concerned domestic tourism. In this section, this assumption is relaxed to some degree and the focus is placed on attributing environmental flows to a location.

⁷⁷ Consistent with SEEA Central Framework 3.129.

⁷⁸ 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)

- 4.149. All environmental flows resulting from tourism activity take place in a specific location. For many environmental flows determining this location is straightforward in concept. Thus, for example, water and energy will be used in specific locations, waste will be generated and collected in specific locations, pollution of air and water will occur in specific locations. Also, in practice, for many activities the measurement of the flow will be able to be linked to those locations, e.g. the location of a hotel. When this connection can be made directly then the development of statistics on the volume of environmental flows for a given spatial area, such as a country, region, or local tourism destination, is straightforward. For different environmental flows there may be more relevance in collecting and interpreting data at different scales. For example, water use may be best analysed by catchment, air pollution may be best analysed for local tourism destinations and energy use may be best analysed at regional or national scale. But this scale of reporting and analysis does not affect the current discussion.
- 4.150. In cases where a specific location can be determined for the activity and the environmental flow, the data can be recorded on a territorial basis, i.e. the measurement concerns the total flow within a given spatial area (e.g. country, region, local tourism destination). Using a territorial basis means that no adjustment is made concerning the residence of the economic units (tourism establishments or visitors) involved in the activity, in particular whether the visitor has travelled from another country. All environmental flows that take place within a territory are included.
- 4.151. The significant exception to this logic concerns transport activity. While there is a direct connection between the activity and the flow itself, e.g. GHG emissions of air transport and energy use of bus transport, there is no immediate choice for determining the location of the activity and hence the attribution of the environmental flow to a location. In this situation, the SF-MST applies the residence principles of the SNA (and other standards such as TSA:RMF 2008 and SEEA). Thus, the environmental flow is attributed to the country to which the transport operator is considered resident. For example, the GHG emissions of Qantas, wherever their flights occur around the world, are attributed to Australia. This approach to spatial attribution is evident in work of the OECD on the allocation of GHG emissions for marine and air transport and in the CORSIA framework for air transport.

4.6.4. Distinguishing the production and consumption perspective

- 4.152. The final aspect to consider is aligning the location of the environmental flow to the residence of the economic units involved in tourism in relation to the reference country or spatial area. There are a number of combinations to consider which concern whether the tourism establishments are resident in the reference country and whether the visitors are resident in the reference country. The question of which combination to apply will depend on the question of analysis and data availability⁷⁹.
- 4.153. The table below describes the combination of sources of environmental flows that are relevant for each type of tourism – domestic, inbound and outbound. There are four primary types of economic unit that are sources of environmental flows, namely tourism establishments (excluding passenger transport); passenger transport operators; visitors; and households. In each case the economic units involved can be split into resident and

⁷⁹ Gossling et al 2023 provides a comprehensive discussion of options in relation to the allocation of GHG emissions.

non-resident units. As shown in the table, for each type of tourism a different combination of sources will be relevant. A “Y” indicates that the environmental flow generated by the economic unit is included for this type of trip.

Table 4.10: Sources of tourism environmental flows by type of trip

	Sources of tourism environmental flows							
	Tourism establishments (excl passenger transport)		Passenger transport		Visitors (direct generation of flows to/from the environment in the country visited)		Households (including generation of flows attributable to visiting friends and relatives)	
	Resident	Non-resident	Resident	Non-resident	Resident	Non-resident	Resident	Non-resident
Domestic trips	Y	N	Y	Y (potentially)	Y	N	Y	N
Inbound trips	Y	Y (pre + post trip)	Y	Y	N	Y	Y	N
Outbound trips	Y (pre + post trip)	Y	Y	Y	Y	N	N	Y

- 4.154. At a broad level, a distinction can be made between applying a production or a consumption perspective. For a country, a production perspective provides a measure of the total environmental flows for the resident producers of that country who provide goods and services to all visitors irrespective of their country of residence. This can be derived by considering the “resident” columns in Table 4.10. On the other hand, a consumption perspective for a reference country provides a measure of the total environmental flows for all visitors resident of a given country no matter where they travel. This can be derived considering the rows for domestic trips and outbound trips in Table 4.10. Note that if all tourism activity is domestic, and all producers are resident, then the estimates of environmental flows representing the production and consumption perspectives will be the same. The following discussion assumes complete movement of visitors across national borders.
- 4.155. Assuming that environmental flows associated with transport activity are allocated to countries on a residence basis, then a production perspective will be equal to the sum of all environmental flows for all resident producers, including households. This will be a relevant aggregate to answer the question of what share of a country’s environmental flows can be attributed to tourism activity. In addition to the environmental flows arising from domestic tourism, but excluding the direct generation of environmental flows by visitors, this production perspective aggregate will also include (i) environmental flows associated with inbound tourism (but excluding environmental flows associated with pre- and post- trip expenditures of these visitors); and (ii) environmental flows associated with pre- and post-trip expenditures of outbound visitors.
- 4.156. The estimation of a consumption perspective is used to answer the question of the total environmental flows generated by visitors from a given country. This could be further refined to also develop data to answer the question of what the total environmental flows are generated by visitors to a specific location. For a given country, a consumption perspective will include (i) environmental flows arising from domestic tourism; and (ii) environmental flows associated with outbound tourism. It will exclude environmental flows associated with inbound tourism. With respect to transport related environmental flows, a

consumption perspective requires that the flows for any given transport operator are allocated to the country of residence of individual passengers and attributing the relevant share to the reference country. For example, a consumption perspective for visitors resident in the United States should include the share of emissions on Qantas (a resident unit of Australia) flights on which US residents travel.

- 4.157. Consequently, complete measurement of a consumption perspective requires data on environmental flows from both the reference country and all countries visited by its residents. In addition, a particular challenge concerns third-party suppliers where the producer of the service is not a resident of the country being visited. Thus, complete measurement of a consumption perspective requires substantive modelling using multi-regional input-output (MRIO) tables. While such measurement is conceptually and technically feasible, it is only possible at present with considerable investment of time and resources.
- 4.158. Consequently, **it is recommended** that countries organize the data that is relevant for the production perspective combining territorially based data for non-transport activity and residence-based data for transport activity. The total environmental flows for any given substance will differ from entries in the standard SEEA based recording through the addition of flows generated by inbound visitors directly in the reference country (e.g. GHG emissions associated with driving a private car). Importantly, the data on environmental flows from SEEA based accounts must be adjusted such that only the tourism share of the environmental flow is included following the recommendations described above. Organizing this data will provide important information concerning the share of a country's environmental flows that are attributable to tourism activity. It will also provide the core data required to underpin MRIO measurement such that a full consumption perspective can be estimated where resources and time permit.
- 4.159. Two alternative combinations and presentations of data on environmental flows may also be considered. One is a variant on the consumption perspective where all environmental flows for all visitors are linked to a final destination. The other, discussed further in the following section, highlights that the discussion here has focused on the allocation of direct environmental flows – i.e. where there is a direct link between tourism activity and the environmental flow. In many instances, there is also interest in indirect flows that may be attributable to tourism activity. For example water and energy used to produce food consumed by visitors. These indirect or embodied environmental flows may be significant and their measurement would support a richer analysis of the consumption and production perspectives.

4.6.5. Estimating indirect environmental flows

- 4.160. 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 establishments. 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.

- 4.161. 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 visitors⁸⁰. In principle, by using the information on the relationships between inputs and outputs of goods and services reflected in standard 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. For example, it is possible to estimate the quantity of water embodied in the growing of food that is ultimately consumed by visitors. The same logic can be applied for other environmental flows such as energy and GHG emissions. The resulting measures are often referred to as footprints.
- 4.162. 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 visitors⁸¹. 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.

⁸⁰ 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. https://www.oecd.org/dac/aft/AidforTrade_SectorStudy_Tourism.pdf

⁸¹ Eurostat makes available footprint calculation tools (<https://ec.europa.eu/eurostat/web/environment/methodology>).

5. Measuring the social dimension

5.1. Introduction

- 5.1. Besides the economic and environmental dimensions, also the social dimension and its effects are key to assessing the overall sustainability of tourism. At its core, tourism is a social phenomenon because it is for social purposes (personal and business & professional) that visitors travel from one location to another. Through the interaction between visitors and the residents of host communities, tourism has an impact on the local population at the places visited and on the visitors themselves. This reveals the potential for tourism to drive intercultural exchange, peace building, inclusion and community empowerment, but also highlights the need to safeguard communities' cultural heritage and ensure awareness of the potential negative effects of tourism on day-to-day life, for example concerning living costs and safety and security. Links to social aspects are also evident in the supply of tourism goods and services which commonly requires direct participation of local people in their roles as employees and business owners.
- 5.2. Tourism can therefore provide many opportunities and support livelihoods at the community level and throughout the value chain. Consequently, tourism value chain analysis (see Chapter 3) can be a highly useful tool. Finally, governance of tourism at local, regional and national levels is an embodiment of social organization and will be critical to the success of tourism and its sustainability. The social dimension of tourism is not static, but dynamic. Besides social actors and social structures, social and cultural change is one of its key elements.
- 5.3. In a society wide setting, measurement of different themes of the social dimension has been long standing statistical 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). More directly, the social aspects of tourism have also been the focus of much research covering topics such as visitor motivations and choices, customer journeys, interactions between visitors and host communities, appreciation of and pressures on locally unique cultural characteristics, the relevance of institutions and governance and opportunities for tourism employment.
- 5.4. While measurement across many of these individual themes is well developed, both generally and for tourism, the level of harmonization and co-ordination of data for many of these social themes is lower compared to the economic and environmental dimensions. Indeed, while there are different social theories that may be used, there is currently no agreed overarching framework that places these social themes in a single context. Consequently, consistently determining the relevant themes that should be within the scope of an 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.

- 5.5. Thus, to provide a conceptual framing for the organization and presentation of data on the social dimension, this chapter identifies four perspectives that are relevant to assessing tourism's social sustainability, namely visitors, host communities, tourism suppliers and governance and through these perspectives recommends relevant measurement themes and indicators. The framing is not based on a strict application of a multiple-capitals approach, but it does recognize that tourism activity (i) will be impacted by social aspects and (ii) will have an impact on social aspects. This framing allows the interconnectedness between the social dimension and other dimensions to be revealed and the systems description focus inherent in the measurement of the economic and environmental dimensions remains in place.
- 5.6. After the introduction, the chapter is structured to describe, in Section 5.2, the framing that has been developed to organize data and support the derivation of indicators concerning the social dimension. The focus is on explanation of the four perspectives just listed and the associated measurement areas and themes. Sections 5.3-5.6 then present in more detail the relevant measurement issues concerning each perspective including relevant indicators, data sources and measurement guidance, and distinctions in measurement at national, regional and local levels.

5.2. Statistical framing for the measurement of the social dimension

5.2.1. Conceptual framing of the social dimension

- 5.7. In broad terms the 'social dimension' concerns people living in society who have individual and shared value systems or beliefs. A value system is a coherent set of values, norms, expectations and goals that are shaped by the culturally shared notions and practices of the community. Value systems manifest themselves in the way people think, behave and express themselves, including in the domain of tourism⁸².
- 5.8. The behaviors and expressions can be measured and reflected in both objective and subjective indicators. Objective indicators include, for example, the number of visitors who visit a specific destination and the actual outcomes at a destination including health, education, crime, housing, living costs, changes in land use, and pressures on local infrastructure. Subjective indicators concern how people think and see things: their perceptions. For example, the way residents view the behavior of visitors, the perceptions of the level of crime in a resident's neighbourhood and the views of visitors on the tourism experience in a destination. These subjective perceptions do not necessarily correspond to the actual situation. However, it is these perceptions that people act on.
- 5.9. The core of the social dimension considers the social interactions with others, for example, through the networks people have and the links to socio-cultural identities. These social interactions with others can influence the value systems of people and vice versa. Through social interactions shared or institutionalized value systems or beliefs arise. These shared value systems or "stable way of doing things" are often referred to as the 'cultural identity' of a group, population or local community. For tourism, for example, travel trends or the way

⁸² The way the social dimension is described here is one of a number of possible perspectives that could be applied. Other possible perspectives include a social systems approach or an approach where emphasis is placed on describing social change. The perspective applied here is considered appropriate given the goal of developing a general framing that supports the identification and selection of measurement themes and the interpretation of indicators.

one should behave during one's holiday. Since people belong to more than one group, they also have more than one cultural identity. As the cultural identity determines to a large extent individual value systems, it also determines indirectly how people think and behave. The social interactions between people do not only involve the networking in itself, but also other ways of indirect influence, for example through social media and promotion. From a more economic perspective, the whole of individual and shared value systems, reflected through formal and informal networks and relationships, is often referred to as 'social capital'⁸³.

- 5.10. Besides individual and shared value systems (and their associated social interactions, groups, roles, power, influence and communication) the social dimension also includes consideration of institutions and governance. Institutions are formal or informal agreements between people who jointly arrange how they work together. In tourism these concern, for example, governments and destination management organizations (DMOs), but also tourism-related businesses. Governance is, among others, about the management of organizations and their policy, including the implementation, monitoring, evaluation and enforcement of these policies.
- 5.11. In the context of tourism, individual and shared value systems determine the way visitors travel outside their usual environment and the specific choices that they make in relation to these visits. These value systems can vary among people and cultures. In turn, visitors can influence destinations and host communities. This can, among other things, lead to social change in host communities, but the visitor is also influenced by the social interaction with the host community. Subsequently, visitors take their travel experiences home with them, which, together with the travel experiences of others, influences the prevailing shared value systems and affects the way people plan and organize their next trip. This rather complex and dynamic system of value systems and social interactions is mainly determined by the subjective perceptions of the visitor and the host communities.
- 5.12. This description of the social dimension from an actor perspective leads to recognizing four key perspectives from which to measure the social dimension of tourism. These perspectives reflect the main actors participating in tourism: visitors, host communities, tourism suppliers (especially employees) and institutions (e.g., governance).
- 5.13. These four perspectives provide the core entry points for considering the social dimension of tourism in the SF-MST. The conceptual framing is completed by considering the extent to which measurement should consider (a) the **impact of** tourism activity on society; or (b) society's **impact on** (or society's contribution to) tourism activity. Both of these types of impact will be relevant. The social impact of tourism includes, for example, the impact of tourism on host communities and tourism employment. Society's impact on tourism concerns, for example, the influence of individual and social preferences on travel choices, the effects of local destination context (e.g. safety and security) or the government's tourism policy.
- 5.14. Combining these perspectives and impacts leads to the identification of the following primary measurement themes. These themes are summarized in Table 5.1. While these four themes provide a comprehensive coverage of measurement across the social dimension, in a number of cases measurement noted for one perspective will be directly

⁸³ See for example the OECD: <https://www.oecd-ilibrary.org/sites/9789264307278-12-en/index.html?itemId=/content/component/9789264307278-12-en#:~:text=Introduction,social%20progress%20and%20well%2Dbeing>.

relevant in the measurement of another perspective. This overlap is recognized and should be considered in interpreting the data organized following the four social perspectives:

- *Visitor's perspective.* In this perspective, there are four key themes. In relation to visitor's perspectives of the places and communities visited it is relevant to measure (i) **visitor flows** covering the volume and characterization of visitors to a destination including their motivations, mode of transport and type of accommodation; (ii) **visitor engagement with and appreciation of host communities** including participation in events and cultural experiences. (iii) **visitor satisfaction** as a reflection on the tourism experience, the objective and perceived interaction with host communities and positive and negative experiences; and (iv) **visitor access to and participation in tourism.** In relation to the perspectives of people within their usual environment about travel before becoming visitors the focus of measurement concerns the drivers behind tourism demand (e.g., motivations, possibilities, inclusiveness, choices made in the way people travel) and the way that visitors share their experiences with others.
- *Host community perspective.* The measurement of this perspective considers the perspective of residents within a host community, where the measurement question is whether there is a significant number of visitors in the destination creating a pressure on that community and the extent to which this is affecting residents' social environment (e.g., living environment, cultural identity and wellbeing). The impacts on residents may be measured by considering both the perceptions of residents about the impacts of tourism and through observation of the state of the host community, for example in terms of incomes, health, noise, living costs, land use change, relocation of residents, etc.
- *Tourism supplier perspective.* This perspective mainly concerns the socially orientated elaboration of the employment and tourism establishment indicators included in the economic dimension of the SF-MST (Chapter 3). It thus covers the measurement themes of **characteristics of employed persons, entrepreneurship and decent work.** The attitude and responsibility of tourism establishments towards their direct environmental, social and governance context also belongs to this theme.
- *Governance perspective.* This perspective mainly concerns the impact of governance and institutional frameworks on tourism, including governments and DMOs. The measurement focus is on indicators concerning the design and implementation of **tourism strategy, plans and regulations** (including limiting access of visitors) of national and local governments and DMO's, as well as the **civic engagement and participation** of local residents and the private sector in the decision-making process and the extent of transparency in monitoring tourism strategies and impacts. This measurement area includes destination stakeholders' view on how the current governance is preserving sustainability.

Table 5.1: Measurement themes for the social dimension of tourism

	Perspectives			
	Visitor	Host communities	Tourism suppliers	Governance (Government and DMO)
Measurement themes	Visitor flows Visitor engagement with and appreciation of community Visitor satisfaction Visitor access to and participation in tourism	Pressures exerted by tourism and impacts of tourism on the host community including in terms of perceptions of tourism impacts on community	Characteristics of employed persons Entrepreneurship Decent work	Strategy/plans/regulations/local limits (including concerning sustainability, cultural assets, accessibility, health, human rights) Extent of civic engagement and stakeholder participation

5.2.2. General considerations in measuring the social dimension

- 5.15. The social impacts linked to a specific tourism activity can be positive and negative. Importantly, it depends on the perspective taken as to how these impacts can be measured and interpreted. For example, more visitors may be good for tourism establishments, but can lead to experiences of overcrowding for local residents and visitors. Or, visitors may come to communities to experience their traditional heritage, but the host communities are also changing and following new social developments. Understanding the range of positive and negative social impacts on host communities is essential for the ability to manage tourism in a sustainable way.
- 5.16. In the measurement of the social dimension, there will commonly be a close link to the economic dimension through data about tourism establishments and the environmental dimension through data about local areas. Clear connections can be seen in some of the themes shown in Table 5.1 including measures of visitor flows and employment characteristics. From an environmental perspective, measures of changes in the state of the environment (e.g. with respect to pollution, water availability and quality, ecosystem condition, etc.) will be linked to both visitor and host community perceptions of the impacts of tourism.
- 5.17. While these connections exist, there are distinct differences in the focus of measurement with the aim to consider economic and environmental topics using the four perspectives that provide the entry points to the social dimension. The use of these four perspectives thus provides the opportunity to reinterpret economic and environmental data and follow different measurement pathways notwithstanding the commonality in the measurement theme.
- 5.18. An important distinction in measurement that arises in the visitor and host community perspectives concerns measures based on the perception and measures based on actual changes. For example, a difference may be present between host community's perception of crime in a destination and actual rates of crime as measured through police records in the same destination (e.g. compared with other tourism and non-tourism regions). Both types of measurement are relevant in the assessment of the social dimension recognizing that both visitors and host communities will act on their perception of the situation.
- 5.19. One measurement challenge is that it may not be possible to attribute changes in social context in a given destination or country directly or completely to tourism activity. Thus, building on the example above, there may be many reasons for changes in rates of crime other than tourism (e.g. due to higher penalties). Furthermore, social reality and value systems are continuously changing. For these reasons, and recognizing that it is perceptions that very commonly drive tourism choices and behaviours, there is a strong focus in the measurement recommendations on the collection of data on the perceptions of visitors and host communities.
- 5.20. While there is commonly a focus on negative impacts, positive social impacts should also be recognized. An example may be where the income from tourism allows for maintenance of the cultural variety of local heritage, events and intangible knowledge thus contributing to the socio-cultural wellbeing of host communities.

- 5.21. Another general challenge in the application of these concepts is to interpret the changes in social impacts. 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 framing described above provides a starting point for the selection of relevant themes and indicators but it is fundamental that the measurement scope reflects the social perspectives and values of the place being assessed.
- 5.22. 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 United Nations Sustainable Development Goals and Beyond GDP which build on work on sustainability measurement through the United Nations Economic Commission for Europe (UNECE)⁸⁴ and the OECD Better Life initiative, among other national and international programs of work.

5.3. Measuring the visitor's perspective

- 5.23. The **visitor perspective** covers the whole of the intention to travel (e.g. purpose), the choices of how to travel, the journey itself, the reflection on the journey and finally sharing the experiences gained with others. A useful separation can be made between (i) the perspectives of people before the trip (within their usual environment) (ii) the visitor's perspectives of the place(s) and communities visited during the trip; and (iii) the reflection after the trip.
- 5.24. Key features of the perspectives of people before the trip concern the different purposes for travel, the extent to which people have the capability to travel (inclusiveness) and the way people make choices about the way they travel. There will be considerations and choices of where and how to travel to a destination, including type of transportation, type of accommodation, individual or group travelling, prices paid and the booking method. These considerations and choices will provide information on economic, environmental and social dimensions, based on the information collected, current trends, marketing and previous travel experiences.
- 5.25. Key features of the visitor's perspective of the places and communities visited concern the actual experiences and perceptions of visitors, including the travel to and from the places visited and interaction with host communities, and the extent to which visitors are ready to adjust their behaviour to respect the continued wellbeing of local residents.

⁸⁴ UNECE (2015) Conference of European Statisticians: Recommendations on measuring sustainable development https://www.unece.org/publications/ces_sust_development.html

- 5.26. Key features of the phase after the trip are the reflection and sharing of experiences with others. Although, after the emergence of the internet, sharing of experiences can take place in all phases.
- 5.27. This three phase system connecting the desire to travel, choices made, tourism activities, gaining experiences, interacting with and influencing host communities and vice versa, perceptions and social change is at the core of the social dimension of tourism. Further, the nature of the social impact will be affected by the awareness, motivation and capacity of the visitor to consider the place to be visited as a place where other people live, rather than a place providing a service to visitors.
- 5.28. Much can be measured in the social dimension of tourism, seen from a visitor's perspective. This must involve both objective and subjective indicators. Many of these indicators are already measured through existing visitor surveys and demand side statistics. Four main measurement themes **are recommended**: visitor flows, visitor engagement with community, visitor satisfaction and people's access to tourism. The first three themes concern the visitor while travelling and their reflections on that experience. The fourth theme concerns people within their usual environment before becoming visitors.
- 5.29. When looking at the trip itself as the actual manifestation of the need to travel, it mainly concerns indicators on visitor flows and associated characteristics, including purposes for travel, their way of travelling (transport and accommodation choices) and activities undertaken. The measurement of visitor flows with respect to the social dimension builds directly on the data organized following the discussion in Chapter 3. Table 3.1 provides a structure for recording data on the number of visitors according to different forms of tourism (inbound, domestic) and different characteristics of visitors (tourists, same-day visitors) such as sex, age, education, main purpose, mode of transport, country of residence and annual household income.
- 5.30. To build a richer data set to consider the social dimension, **it is recommended** to introduce an extension to Table 3.1 to include data on the length of stay (e.g. number of nights). Further, in addition to recording data at a national level, **it is recommended** to collect data at a regional and local tourism destination level to support understanding the different effects on different locations. Finally, where resources permit, **it is recommended** to compile data on a monthly basis to assess the seasonality of visitor flows for the country and for those regions and local tourism destinations where there are relatively high visitor numbers.
- 5.31. Using these data, indicators may be derived including the **average length of stay**, the **number of same-day trips compared to overnight trips**, **tourism seasonality ratios** and **visitor dependency rates** derived as the number of visitors from the top three regions or countries of residence divided by the total number of visitors and. Table 5.2 proposes an organization of data to support derivation of these indicators for multiple local tourism destinations.

Table 5.2: Visitor flow and engagement data by local tourism destination

	Local tourism destination					Total (National)
	A	B	C	D	...	
Total visitors						
Same day visitors						
Tourists						
Inbound						
Domestic						
Average length of stay						
Country of residence						
Country #1						
Country #2						
Country #3						
Visitor dependency rate						
Visitor engagement						
Participation in local traditions						
Interactions with local residents						
Visitation to museums						
Attendance and participation in cultural performances						

- 5.32. **Visitor engagement** with the community provides another measurement area for assessing the connection between visitors and the social dimension of tourism. At a regional and local level, visitor surveys may be used to collect data on topics such as **participation in local traditions and customs, levels of interactions with and attitudes towards local residents** (e.g., changes in value systems), **visitation to museums** and **participation and attendance in cultural performances**.
- 5.33. In understanding the activities of visitors, it may be relevant to consider the collection of time-use survey data following the recommendations of the International Classification of Activities for Time-Use Statistics (ICATUS) 2016 (UN, 2021). ICATUS recognizes different groups and activities that are relevant for tourism, in particular activities associated with ICATUS Major division 8: Culture, leisure, mass media and sports practices. However, further work to support consistent identification of tourism related activities will be required since ICATUS does not differentiate the location at which activities are undertaken (i.e. within the usual environment or outside) and consideration will be needed of how to best record the time of people travelling for work or other non-leisure purposes. It is also noted that since the collection of time-use data focuses on the activities of residents, it is likely most suitable for collecting data concerning domestic and outbound tourism. Notwithstanding these questions of measurement scope, the classes described in ICATUS could be considered for use in visitor surveys and hence support consistent description of people's activities.
- 5.34. Measurement of **visitor satisfaction** 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) and may be a component of international and domestic visitor surveys. Also, 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. At present however, further harmonization of data collection is required to support comparability and further investigation is recommended as part of the MST research agenda.

- 5.35. **It is recommended** to collect one main indicator of visitor satisfaction reflecting **visitors' overall satisfaction with a destination**. In addition, the collection of data on the following core topics concerning visitor's satisfaction **is recommended**:
- Satisfaction with transport to and from the destination.
 - Satisfaction with accommodation.
 - Satisfaction with food and beverage services.
 - Satisfaction with public services (e.g. infrastructure, information services).
 - Satisfaction with and perception of destination's accessibility for people with a disability and ease of mobility (e.g. local public transport).
 - Satisfaction with and perception of tourism attractions and offers (e.g. bad weather programs/options, value for money, walking/hiking trails, opportunities for families/children and for disabled/elder persons).
 - Perception of destination's cleanliness, noise, waste management, pollution etc.
 - Perception of destination's safety and security and the effectiveness of emergency response.
 - Perceptions of destination's cultural authenticity.
- 5.36. The collection of data on these topics will generally require a focus on specific local tourism destinations or other sub-national areas. National level data would therefore be derived through presenting data that summarizes the findings from these finer levels, for example presenting data on the share of local tourism destinations that have a high satisfaction rating. Care should be taken in averaging the results across a number of destinations since this is likely to hide important detail in interpreting and responding to trends in visitor satisfaction. Ideally, data would be collected to support analysis of seasonality in visitor satisfaction (for example, measured satisfaction may be lower at peak seasons) and also to accommodate assessment of the effects of major and special events.
- 5.37. Data on levels of visitors' satisfaction and perception should be complemented with data on the social and environmental context as measured through indicators concerning employment, health, income, prices, education, crime, pollution and waste. Such information, particularly at a regional and local tourism destination level can support informed interpretation of data on satisfaction. Visitor satisfaction may also be measured by collecting data on the **number of repeat visitors** and the **extent to which visitors would recommend a destination**.
- 5.38. Data on levels of visitors' satisfaction and perception may also be complemented using data on their expectations and motivations ahead of the trip. Analysis of the degree of alignment between these "before" and "after" perspectives of a trip may provide useful insights for a destination.
- 5.39. The fourth theme of the visitor perspective concerns the desire or need to travel outside the usual environment which is driven by the individual and shared value systems (among other motivations) and conditioned by the possibilities to travel, such as (free) time, income, prices, stage of life, lifestyle, accessibility (e.g., visas) and capacity etc. These can be seen as the drivers behind tourism demand. Information about these drivers and other factors for selecting a destination is also important for making forecasts about the numbers of visitors and their characteristics that come to a destination. In turn, these forecasts are crucial input for managing a destination in a sustainable way.

- 5.40. As a specific measurement focus, **visitor access to and participation in tourism** concerns data on the extent to which people in a country or region participate in tourism and what challenges may exist to such participation. Measurement of this theme requires consideration of visitor flows by country or region of residence and comparison to population numbers in those places. Then, for the reference country or region, assessments can be made concerning, for example, levels of income and employment, distribution of income, availability of transport, visa and documentation requirements, and other factors that may support, or hinder, access to and participation in tourism⁸⁵. Another measurement approach provides a general indicator of participation in tourism labelled in Europe residents' tourism demand and in Argentina travel propensity. It involves conducting household surveys to measure the number of people participating in tourism and reasons for people not travelling.

5.4. Measuring the host community perspective

- 5.41. The **host community perspective** has a high-profile in discussion of sustainable tourism because the central area of interest is whether and how heavily a host community is impacted by tourism, recognizing also that host communities can be an important part of the tourism attraction and motivation to travel.
- 5.42. In SF-MST, a *host community* is defined as a group of people and businesses that are involved and/or affected by the travel of people outside their usual environment. It is envisaged that this definition would generally be applied at the local tourism destination or municipal scale as defined in Chapter 2. National level data would then be obtained through the collection of data for multiple host communities.
- 5.43. The host community perspective is measured considering both the pressure exerted by tourism and the impact on host communities. The pressure exerted by tourism is measured using similar data to those used to measure visitor flows as described above, especially in terms of the number of visitors (tourists and excursionists), or tourists only if data on excursionists is not available. More specifically, the pressure on host communities is measured by two indicators: the **number of visitors compared to the number of residents** (visitor to local resident ratio), and the **number of visitors compared to the spatial area** (visitor to area ratio). If data on number of visitors is not available at the local level, an alternative could be to use, for example, financial transaction data or mobile phone data to approximate for the number of visitors. In addition to data on visitor numbers, derivation of these indicators will require data on resident population and spatial area⁸⁶ for the relevant municipality or local tourism destination.
- 5.44. The pressure on host communities of tourism can also be measured using indicators of the supply of tourism services, for example in terms of number of establishments in the tourism industries by type, size, capacity, occupancy and spatial area used. It is noted that the impacts arising from tourism do not only concern the total number of visitors, but also, for example, the type of visitor (e.g., their behaviour and length of stay) and their purpose of travel.

⁸⁵ See for example the analysis for Argentina based on their Tourism Household Survey https://webunwto.s3-eu-west-1.amazonaws.com/imported_images/50458/wge_mst_2nd_item_2.4.1.pdf

⁸⁶ Spatial area can be recorded in units such as km² or hectares. Marine areas should be excluded, and, where relevant, the area of large waterbodies (e.g. lakes, estuaries) should also be excluded.

- 5.45. Measures of the impact of tourism on host communities focus on the extent to which tourism activity in the host community is affecting residents' social context, that is their cultural identity, living environment and wellbeing. This may include, for example, impacts on the quality of life, employment and income, cultural heritage, prevailing beliefs, and the access to services such as health care, education, transport and infrastructure, and housing.
- 5.46. These impacts may be measured by considering both the perceptions of residents about the impacts of tourism on their social context and through observation of the actual state of the host community, for example in terms of incomes, employment, health, noise, prices, crime, etc. This analysis would also be supported by a comparison across tourism and non-tourism locations.
- 5.47. It should be clear that it will not always be easy to distinguish the impacts of the presence of visitors from the impacts of non-tourism influences on the social context of host communities. Also, some of these impacts will only become visible in the longer term, i.e. they will not be related to visitation at a particular point in time. Further, at the scale of host communities it may be difficult to separate the social and environmental contexts since the host community is living within and connected to its local ecosystems and resources. Thus, changes in, for example, water availability and quality, air quality and the condition of ecosystems and their services, whose measurement is discussed in Chapter 4, will often directly impact on resident's perspectives on tourism.
- 5.48. Measures of tourism's impacts will primarily be of relevance at local tourism destination levels. It is at this scale that the perceptions, attitudes and acceptance of residents towards tourism and visitors is most clearly identified and measured in a way that is useful for decision making. It is further noted that even in cases where a national program of collecting perceptions of host communities is undertaken it will be inappropriate to derive national averages. Alternative aggregate presentations of data are recommended, such as the percentage of host communities with scores within a particular range.
- 5.49. In measuring tourism impacts on host communities, a wide range of topics may be considered to cover the various positive and negative impacts of tourism activity on host communities. These topics include, among others:
- **Overall perception of host communities of visitors** (i.e. the attitudes and behavior of visitors).
 - Perception of effects on cost of living, including housing affordability, due to tourism.
 - Perceptions of effects of tourism on the local environment including concerning cleanliness, land use (soil sealing), waste management and pollution.
 - Perceptions of effects of tourism on local social context including crime, safety, and noise.
 - Perceptions of effects of tourism on local levels of congestion, noise, crowdedness and access to community facilities.
 - Perceptions on effects of tourism on the prevailing culture identity.
 - Perceptions of effects of tourism on access to and quality of public services.
 - Perceptions on effects of tourism on job creation and employment (including seasonal employment).
 - Perceptions on tourism's collaboration with wider local business and community organizations.
 - Perceptions on the negative and positive contribution of tourism to overall wellbeing.

- 5.50. The collection of data on the perceptions and acceptance of host communities would generally be undertaken using surveys of residents. A range of methods and tools have been developed for this purpose although, at present, there is limited harmonization of methods to support comparability and further research is required. Current examples of good practice include work in the Pacific⁸⁷ and a methodology developed by the German Institute for Tourism Research called the Tourism Acceptance Score⁸⁸. Because it often involves expensive surveys, it may be necessary initially to limit data collection to selected destinations where tourism plays a major role however it will be important to ensure overall representativeness in data collection over the longer term. Further, it is important that there is an understanding of the nature of the connection to tourism of the respondent (e.g. an employee of a tourism establishment, no direct connection) since this will likely affect their perception of tourism.
- 5.51. As for the measurement of visitor satisfaction, the measurement of the subjective host communities' perceptions of tourism should be complemented with data on the economic, environmental and social context as measured through objective indicators concerning employment and unemployment, health (e.g. life expectancy), average earnings, prices (e.g. consumer prices, house prices), education (e.g. school attendance rates), personal safety/crime (e.g. crime rates), pollution (e.g. air quality) and waste (e.g. tonnes of solid waste). Such information, particularly at a regional and local level can support informed interpretation of data on perceptions. As noted above however, it may not be possible to directly connect or attribute changes in social context to tourism activity and so care in using these data is required. It is also noted that establishing appropriate comparisons across countries for some variables may be difficult given the range of different social contexts.
- 5.52. Some of these data, like indicators on wellbeing and the living environment, may be available via national statistical surveys and census where sub-national level data are generated, and such sources should be used to support greater comparability across locations. An example of the types of data that will be relevant is the EU Statistics on Income and Living Conditions (EU-SILC)⁸⁹. Other data are likely to require collection at local and regional levels. Often it will be appropriate to consider data on each of these topics separately since there is no natural aggregation across them. At the same time, if an aggregate measure is of interest, it is possible to derive composite indexes by weighting together selected variables. The Social Progress Index developed in Costa Rica is an example of such an index. If a composite index is derived, it is important to ensure that the underlying input measures and the weights are separately available to support interpretation of movements in the composite index.

⁸⁷ Simon Milne, Auckland University, [Cook Islands Community Attitudes Towards Tourism, & Niue Community Attitudes Towards Tourism, 2020](#)

⁸⁸ The tourism acceptance score (TAS) is based on a measurement scale that was developed to assess the tourism acceptance among the resident population within a specific destination. In this regard, tourism acceptance is understood as the degree to which the resident population perceives tourism in the respective place of residence as positive or negative. Central to the research instrument is the question how people perceive and evaluate the impacts of tourism in their place of residence. Thus, the instrument does not necessarily measure the actual impacts but the perceived impacts which can be compared to the perceived temperature.

See https://www.ditf-fhw.de/fileadmin/content/downloads/aktuelle_projekte/DITF_TAS_Study_overview_ppt_English.pdf and <https://www.nit-kiel.de/en/>

⁸⁹ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_statistics_on_income_and_living_conditions_\(EU-SILC\)_methodology](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_statistics_on_income_and_living_conditions_(EU-SILC)_methodology)

- 5.53. Another complement to the measurement of host communities' perceptions of tourism are measures of the (subjective) wellbeing of host communities. Frameworks for the measurement of (subjective) wellbeing are well established with leading work being undertaken by the OECD and published in their Guidelines on Measuring Subjective Well-being (OECD, 2013⁹⁰). These guidelines propose a short core question module to provide a basis for a common international set of reference questions on subjective wellbeing. There are also a range of initiatives to develop measures of subjective wellbeing including Planet Happiness⁹¹. Again, it may not be possible to directly connect or attribute changes in wellbeing to tourism activity and so care in using these data is required.
- 5.54. As part of considering the connection of tourism to host communities it will also be relevant to consider the effects of tourism activity on cultural authenticity, vibrancy and heritage. Relevant indicators will include the number of cultural points of interest, the number of cultural events in a month or year, and the presence of internationally recognized cultural heritage items including UNESCO World Heritage Sites and intangible cultural heritage objects. These data might be collected via data from tourism administrations, cultural statistics, and surveys of residents. The UNESCO Framework for Cultural Statistics (UNESCO Institute for Statistics, 2009) provides a comprehensive approach to the organization of cultural statistics with tourism recognized as a distinct related domain (Figure 2, p24).
- 5.55. Finally, in relation to the management of sustainable tourism and its social impacts the concept of '**tourism carrying capacity**' is relevant. This concept is defined by the UNWTO as: '*the maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction*' (UNWTO, 2004)⁹². It must be seen as attempt to determine the maximum growth of tourism in several domains, related to an increasing attention for the negative impacts of tourism on its environmental and social context. The social carrying capacity of this concept then would refer to the point (e.g., number of visitors) where the negative social impacts outweigh the positive social impacts of tourism, leading to negative feelings of host communities towards tourism. However, there is no unambiguous scientific elaboration of this concept and no simple measure that can be evenly applied to all destinations.
- 5.56. A useful approach to measuring tourism carrying capacity is to first determine which key indicators should be measured and then define what level of change in these key indicators is acceptable (commonly involving a social/political decision). This kind of implementation is used by derived methods, such as the Limits of Acceptable Change (LAV) method⁹³ and Visitor Impact Management (VIM) method⁹⁴, where stakeholders agree on the key indicators to be measured and the thresholds beyond which change in these indicators would be unacceptable. In terms of the scope of indicators, relevant concerns include the capacity of the infrastructure, accessibility, accommodation capacity, wellbeing, type of visitors, congestion and crowdedness, activities, local heritage, cost and benefits. An example of the use of the concept of carrying capacity can be found for the city of Amsterdam⁹⁵.

⁹⁰ <https://www.oecd.org/wise/oecd-guidelines-on-measuring-subjective-well-being-9789264191655-en.htm>

⁹¹ <https://www.ourheritageourhappiness.org>

⁹² UNWTO (2004) *Tourism Congestion Management at Natural and Cultural Sites*

⁹³ [https://responsibletourismpartnership.org/limits-of-acceptable-](https://responsibletourismpartnership.org/limits-of-acceptable-change/#:~:text=The%20Limits%20of%20Acceptable%20Change,constrained%20with%20in%20the%20LAC.)

[change/#:~:text=The%20Limits%20of%20Acceptable%20Change,constrained%20with%20in%20the%20LAC.](https://responsibletourismpartnership.org/limits-of-acceptable-change/#:~:text=The%20Limits%20of%20Acceptable%20Change,constrained%20with%20in%20the%20LAC.)

⁹⁴ http://www.tba.co.nz/kete/PDF_files/ITP107_visitor_impact_management.pdf

⁹⁵ See <https://onderzoek.amsterdam.nl/publicatie/amsterdam-tourism-carrying-capacity-in-2021>

5.5. Measuring the tourism suppliers perspective

- 5.57. The **tourism suppliers perspective** is relevant to understanding the context in which the production of tourism goods and services takes place. In particular, it focuses on the experience of and support for employed persons in supplying tourism goods and services. Thus, the tourism supplier perspective encompasses employment related questions such as why people look for a job in the tourism sector, their experiences when working in the tourism sector, including levels of decent work, the extent to which tourism is considered an attractive sector for employment, the quality of the education and training available for those working in the tourism sector and how employees spread positive and negative work-experiences to others (e.g. changing value systems and the creation of a certain image). Measures of tourism businesses attitudes or responsibility towards their environmental, social and governance context are also relevant.
- 5.58. From a socio-economic perspective, the development of employment is important for, for example, the income stability, access to social benefits, personal development and self-esteem of residents of host communities. It can also contribute to the development of regions, for example in terms of poverty reduction, social inclusion and overall wellbeing, especially if there are no other alternative employment opportunities. Tourism is a labor-intensive sector and different industries of the sector offer a varied range of high and low-skilled jobs. For tourism establishments it is important that the quality and quantity of the (potential) workforce matches their needs for labour. On the other hand, tourism establishments also bear responsibility for their employees (e.g., decent work) and the economic, environmental and social context in which they operate.
- 5.59. Employment is also clearly linked to the economic performance of tourism establishments, which in turn is indicative of the potential sustainability of tourism establishments. From a social perspective this is relevant in the sense of demonstrating the ongoing potential of tourism to secure local employment, local businesses and related links in the supply chain and local communities. Of course, the potential for ongoing strong economic performance will depend on a range of factors including, from a tourism supply perspective, the economic structure, the capacity for entrepreneurship and the availability of suitable skilled and trained employees.
- 5.60. With a focus on employed persons three measurement themes are most relevant in the social dimension; the **characteristics of employed persons in tourism industries**, **entrepreneurship** and **decent work**. Many characteristics of employed persons will be relevant in measuring the social dimension, including data (per tourism industry) on gender, age, education level, hours of work, time in job and nationality. In addition, to understand more fully the characteristics of employed persons, data should be collected on whether the employment is formal or informal, the average amount of compensation (e.g., earnings) and percentage of permanent and temporary workers.
- 5.61. All these variables can be used to describe a social phenomenon, whether it concerns equal pay, the security of having a permanent job, sufficient income and the position of foreign staff. In that respect, these indicators will also be relevant in the context of measuring decent work as discussed below. Overall, the assessment of sustainability will require consideration of whether there is excessive dependence on any single type of employment, e.g. part-time or casual work, or a type of employed persons, i.e. a group having a particular characteristic or set of characteristics.

- 5.62. Building directly on the discussion of employment in tourism in Chapter 3, Table 5.3 presents a structure for recording these additional variables for measurement of the social dimension. The measurement scope should refer to persons employed in establishments in tourism industries irrespective of the tourism share of output. Chapter 3, notably in Figure 3.1, provides additional detail on the relevant measurement concepts including the distinctions between employed persons, employees, jobs and full-time equivalents (FTE).
- 5.63. The collection of data on these characteristics is recommended following the guidance in Chapter 3 building on measurement recommendations in the IRTS 2008 and TSA:RMF 2008 concerning employment. The degree of detail that can be presented will depend partly on the availability of data but consideration of statistical confidentiality is also required. Thus, where only a few companies dominate an industry, for example, passenger transportation by air, the dissemination of detailed statistics may not be possible. The collection of data on informal employment may also be difficult as the people engaged informally are less likely to be readily identifiable through standard industry statistics. However, household surveys may provide useful insights. Further guidance on the measurement of informal employment and the informal economy is provided in relevant ILO documents⁹⁶.
- 5.64. Persons employed can be divided into independent workers (with and without employees) and dependent workers (including employees, dependent contractors and contributing family workers). Hence, data differentiated between independent and dependent workers can be used to derive the same indicators as for employed persons. Data on the characteristics of independent workers, for example between private and public sector or by size of establishment, will provide insight into the concept of **entrepreneurship**. In theory, the data about independent workers should be available via Labour Force Surveys (LFS) and similar surveys. However, since independent workers are a much smaller percentage of the labour force as a whole, the accurate identification of these people may be challenging. Ideally, data concerning the characteristics of independent workers would be collected for example of age, sex, level of education, and time employed in the tourism industry. From a sustainability perspective, high levels of entrepreneurship are likely to help establish an environment with more dynamic and outward facing tourism supply.

⁹⁶ Guidelines concerning a statistical definition of informal employment, adopted by the 17th ICLS (1998)
https://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_087622.pdf

Table 5.3 Employed persons in tourism industries by key characteristics for the social dimension

		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 employed persons											
TOTAL													
Sex	Female												
	Male												
Age (years)	<20												
	20-29												
	30-39												
	40-59												
	>60												
Education level (ISCED-2011 classes)	Less than basic (ISCED lvl X & 0)												
	Basic (ISCED lvl 1 & 2)												
	Intermediate (ISCED lvl 3 & 4)												
	Advanced (ISCED lvl 5-8)												
	Level not stated (ISCED lvl 9)												
Hours of work (per week)	less than 15												
	15-40												
	40-48												
	48-60												
	more than 60												
Time in job	<3 months												
	<12 months												
	1 yr - 5 yr												
	5 yr - 10 yr												
	+ 10 yr												
Nationality													
	by country of residence												
Work formality	Formal												
	Permanent												
	Temporary												
	Informal												
Salary (average hourly earnings)													
Pension scheme coverage (Y/N)													

5.65. There are a range of issues concerning employment which are collectively placed under the heading of **decent work**. According to the International Labour Organization (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.

5.66. The ILO Decent Work Measurement Framework⁹⁷ (DWMF) was developed with the objective of assisting ILO constituents (including employers’ organizations, workers’ organizations and governments) to assess progress towards decent work and to offer comparable information for analysis and policy development in support of decent work. The DWMF⁹⁸ covers ten substantive elements. Together these elements cover the four

⁹⁷ The ILO Decent Work Measurement Framework was initiated by the International Labour Office based on worldwide consultations with technical experts. A Tripartite Meeting of Experts (TME) was conducted in 2008 to discuss the framework, and later the same year the TME’s recommendations were reported to the ILO Governing Body and presented to the International Conference of Labour Statisticians.

⁹⁸ For more information about the Decent work measurement framework, see the ILO Manual, [Decent work indicators: Guidelines for Producers and Users of Statistical and Legal Framework indicators.](#)

strategic objectives of the Decent Work Agenda and represent the structural dimensions of the framework under which the decent work indicators are organized. There is an additional substantive element on the economic and social context for decent work.

- 5.67. Decent work measurement covers persons engaged in both employment and unpaid forms of work, though the primary reference concept is employment. The scope extends to all usual residents and therefore covers migrant and non-migrant workers, and workers of all ethnic origins.
- 5.68. The DWMF statistical indicators can be adapted and applied at national level to support measurement and monitoring of decent work in tourism. The recommended indicators listed below concern employment opportunities, adequate earnings, decent working time and social security. All of these indicators can be derived from the data compiled following Table 5.4. Other measures that may be considered for inclusion concern topics such as child labour, labour rights, working conditions, occupational safety, social dialogue and social protection. The DWMF provides a discussion on appropriate measurement approaches for all of these topics:
- Employed persons in tourism industries as a percentage of working-age population.
 - Percentage of employed persons in tourism industries that work part-time (threshold should be determined).
 - Average hourly earnings of employees in tourism industries relative to average earnings of employees economy wide and for the services sector.
 - Proportion of women in managerial position in tourism industries.
 - Proportion of informal employment in total employment in tourism industries.
 - Percentage of employed persons in tourism industries who are covered by a pension scheme.
- 5.69. It is reinforced that all of these indicators should be compiled by sex. According to the *Global Report on Women in Tourism – Second Edition (UNWTO, 2019)*⁹⁹ 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, 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.
- 5.70. These variables may be further extended to measuring for example, (a) the percentage of women who faced gender discrimination in career prospects or who faced sexual harassment, (b) the percentage 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 gender. A more complete list of these types of indicators is available in the *UNWTO Indicators of Sustainable Development for Destinations* which provide a further breakdown of gender-related concepts.
- 5.71. A range of data sources may support the collection and organization of data for these decent work indicators. Data from labour force surveys are likely the most comprehensive source but compilers should also consider data from other household surveys, from business surveys (e.g. for estimates of average earnings) and administrative data (e.g. for estimates of pension scheme coverage).

⁹⁹ *Global Report on Women in Tourism – Second Edition (UNWTO, 2019)*

- 5.72. To support the analysis of data on these measurement themes, it will be relevant to have general contextual data about the economic structure and characteristics of tourism establishments. Relevant indicators of economic structure of tourism industries have been described in Chapter 3. Table 3.3 presents data on the main characteristics of tourism establishments and this provides a suitable basis for assessing the social context. Key factors will concern the number and size of tourism establishments and their ownership status (resident / non-resident).
- 5.73. Separately it is noted that the economic performance of tourism establishments is clearly indicative of the potential sustainability of tourism establishments. From a social perspective this is relevant in the sense of demonstrating the ongoing potential of tourism to secure local employment, local businesses and related links in the supply chain and local communities. Of course, the potential for ongoing strong economic performance will depend on a range of factors including, from a tourism supply perspective, the economic structure, the capacity for entrepreneurship and availability of employees.
- 5.74. Note that it will be relevant to focus on the total economic activity of tourism establishments and not only on the share attributable tourism. That is, the longer term viability of an establishment will be a function of both tourism and non-tourism activity. Significant declines in the share of tourism activity may be of concern but, to the extent that the relevant establishments are able to continue operating, then the wider social implications will be mitigated.
- 5.75. Beyond these main measurement themes of the tourism suppliers perspective, there are some other topics which are also of relevance in measuring the tourism supply perspective. First, it is noted that good coordination of supply and demand of tourism-related employment in a region is a relevant consideration. In this context, monitoring the number of people who come from tourism-related education to work in tourism industries, and their associated skills, will be relevant. More generally, assessment of the drivers behind tourism supply will be supported by information on where people who work and want to work in the tourism sector come from, whether as employees or employers, and on their motivations for working in the sector. Other questions of relevance include why people stop working in tourism industries and to what extent perceptions of working in the tourism industry play a role. Measures of job satisfaction, retention and staff turnover will be relevant in considering these issues.
- 5.76. As part of this discussion and to support the development of the labour force available for tourism, information may be collected on tourism related education. Relevant data may include the number of dedicated tourism education facilities (e.g. hospitality schools), the number of places at such facilities, the number of graduates and the levels of expenditure on training and skills development for those employed in tourism establishments.
- 5.77. Second, it is relevant to consider the attitudes and responses of tourism establishments to their impacts on the environment and social context. Here, the question is how responsible entrepreneurs feel for their economic, environmental and social footprint and which obstacles arise in this regard. This can be measured, for example, by their actions, certification and the presence of a corporate sustainable responsibility vision or report¹⁰⁰.

¹⁰⁰ See also the Green Deal in Europe.

- 5.78. Third, in many contexts, it will be of high importance to recognize that tourism can fluctuate strongly on a seasonal basis. For example, employment in tourism industries is known for the fact that it often consists of a small core of permanent staff complemented with staff with a temporary contract and on-call workers. Hence, many, if not all, of the measures of tourism supply should be developed at sub-annual, ideally monthly, frequencies.
- 5.79. Fourth, there will often be a general interest in the productivity of people employed in tourism. While this may commonly be regarded as an economic question, from a social perspective there may be a number of connections particularly concerning the potential effects of investments in information technology and the emerging role of artificial intelligence. Such developments may affect the number of jobs in tourism, the nature of those jobs and skill requirements.
- 5.80. Finally, when considering the the social well-being of the local community, it is also relevant to consider how much the visitors can support providing jobs and services which also improve the quality of life for local residents, such as grocery stores open late, variety of cultural offer, opportunities for young people to remain in rural areas with a job, etc.

5.6. Measuring the governance perspective

- 5.81. The **governance perspective** is relevant in understanding the role of tourism policy and decision-makers, including destination management organizations (DMOs), at local, regional and national scale in setting the enabling context for the sustainability of tourism. Specific themes that emerge in this perspective concern, among others: formulating and implementing a sustainable vision for the development of tourism for a country, including monitoring and evaluation of that vision; the management of infrastructure and related areas (e.g., transport, health care, security and accessibility); the setting of regulations and limits concerning visitor numbers and movements and tourism business operation; and the role of public-private-community partnerships in destination management¹⁰¹. Another theme of the governance perspective concerns the extent to which the members of host communities, including both residents and private businesses, participate in tourism decision making.
- 5.82. The role of governance in supporting sustainable tourism, particularly at local tourism destination level, has been well recognized for many years. In general, the measurement of the relevant themes listed above is input rather than outcome focused. That is, the measurement focuses on whether there is relevant legislation (e.g. government subsidies linked to sustainability measures), strategy, guidelines, etc. in place and whether there is evidence of effective participation and process. Certainly these factors are of high relevance but they do not guarantee that the goals they target (e.g. environmental quality, human rights) will be achieved. Consequently, it is appropriate for a more complete understanding of governance to consider the outcomes of governance activity in terms of changes in economic, social and environmental context using the range of other indicators described in the SF-MST. This assessment may also be complemented with data on visitor and host community (including residents and private businesses) perceptions on the quality and effectiveness of governance for a country or destination.

¹⁰¹ 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>

- 5.83. A key theme of governance concerns **strategy and structure in relation to sustainable tourism**. For this theme relevant indicators concern the existence of policies, strategies and plans on the development of tourism in a sustainable way, the existence of a DMO or similar entity responsible for implementation of such strategies and the use of standard monitoring tools for assessing the environmental, economic and social dimensions of tourism. Strategy and policy concerning sustainable tourism can focus on many different aspects of sustainability. One policy focus that has been highlighted concerns sustainable consumption and production and the UNWTO baseline report on this issue (UNWTO, 2019)¹⁰² provides a thorough assessment and framework for assessing progress in this area of policy including the links to progress under SDG 12.b concerning the development and implementation of tools to monitor sustainable development impacts for sustainable tourism. It is further noted that the key indicator for SDG target 12.b concerns **implementation of standard accounting tools to monitor the economic and environmental aspects of tourism sustainability**, including the TSA and the SEEA.
- 5.84. A particular area of focus in gathering information should be the evaluation of policy effectiveness and any subsequent adjustments to the policies. This would involve assessment against observed changes in tourism activity, and social, economic or environmental context that is the intended focus of the policy or strategy. Relevant information to support such assessments may include visitor numbers, tourism employment, and water quality, alongside other MST measures.
- 5.85. In addition to strategy and structure, the existence of appropriate regulations and their enforcement is a relevant governance theme. A key focus at the local tourism destination level will include official measures which limit the number and flow of visitors. Such measures may include permissions for short-term rental accommodation, access limitations to cultural assets, and traffic congestion controls.
- 5.86. Governance measures will not only include policies focused on tourism directly, but also in other tourism-related domains, such as safety, crowd management, waste management, health and accessibility (to and from) and to society more generally, for example regulations concerning decent work and human rights.
- 5.87. Beyond governance within the tourism sector, it is increasingly recognized that co-ordination across government ministries is required for effective implementation of tourism policies. This will include, among others, co-ordination with departments of transport, environment, health, border services and immigration, labour and regional development. No specific indicators are proposed in relation to this area of tourism governance but analysis may be made of the extent to which there is appropriately broad representation of different department on relevant tourism committees and the extent to which tourism is effectively represented in the governance processes of other departments.
- 5.88. The second key theme concerns **civic engagement and stakeholder participation** which will be important in understanding the likely effectiveness of governance. This can be measured using indicators of the number of responses to planning processes, the extent to which the development of strategy and regulations is advertised and communicated among affected communities. These indicators should also be supported with information on the resources available, including finance and training, to support effective participation

¹⁰² <https://www.e-unwto.org/doi/epdf/10.18111/9789284420605>

and engagement. Ultimately, the objective is to secure engagement and participation that (i) is inclusive and representative of the host community and (ii) is undertaken with high levels of communication and transparency.

- 5.89. Data to support monitoring engagement and participation may be available in documentation supporting the development of strategies and regulations. Measures of perceptions of host communities via surveys of residents and tourism establishments could also be used to identify the share of the population who believe decision making concerning tourism is inclusive and responsive. Also relevant will be information on the governance structures and processes that are in place to support the engagement and participation of people in decision making processes, including whether a local or regional tourism strategy releases indicators related to sustainable tourism for the location.
- 5.90. Support for the social dimension of tourism is also encouraged through active support by government for **cultural assets** with relevant indicators concerning evidence of active management to conserve and restore cultural assets. This evidence will include the existence of policies, the levels of expenditure targeted at implementing the policies and the number of employees involved in supporting relevant activities.
- 5.91. Support for ensuring the **accessibility of tourism** is also a fundamental part of governance. One aspect of accessibility concerns the general potential of visitors to access and participate in tourism at destinations. This may be supported by ensuring the distribution of high quality information and other practices. Evidence to support this aspect of governance may include the levels of expenditure targeted at communication, the number of employees involved in relevant supporting activities and visitor perceptions of accessibility as measured under the visitor's perspective described above.
- 5.92. Another key aspect of accessibility concerns people with disabilities. 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”¹⁰³.
- 5.93. Indicators of accessibility can cover a range of themes and variables as proposed below across the different elements of the accessible tourism value chain. A focus is measuring the extent to which people with disabilities are able to access information, both on site and via on-line material, to support their own travel and tourism choices.

¹⁰³ 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 accessibility¹⁰⁴.
 - Number of websites meeting the W3C¹⁰⁵ requirements within the country.
 - Existence/Number of websites with accessible booking engines.
 2. *Transport:*
 - Existence/type of platforms providing passengers information in accessible formats.
 - Existence/type of signs providing passengers information about accessible options.
 3. *Accommodation:*
 - Implementation of minimum accessibility requirements for the accommodation sector.
 - 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 restaurants providing information to clients to support their access to the venue.
 - Number of restaurants providing menus in Braille.
 5. *Tourism resources:*
 - Existence of information on alternative transportation options to support access to 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.
- 5.94. Requirements for accessibility for visitors are likely to overlap considerably with the needs of the host 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 measurement¹⁰⁶.
- 5.95. A general indicator covering many of the aspects described above is the level of government expenditure on supporting tourism activity. In this context, measures of tourism collective consumption and related measures of government finance concerning taxes and subsidies will be relevant. These measures are described in Chapter 3.
- 5.96. As part of tourism governance at the host community level the private sector contribution is also likely to be very relevant. To assess the extent to which local tourism establishments are contributing well to tourism governance measures of ethical business conduct may be collected covering issues such as responsible governance, accountability and transparency. The increasing profile of environmental, social and governance (ESG) indicators should support the collection of relevant information.

¹⁰⁴ *UNWTO Recommendations on Accessible Information in Tourism* <https://webunwto.s3-eu-west-1.amazonaws.com/2019-08/recommendationsaccesstourismforallenok.pdf>

¹⁰⁵ For more information please visit World Wide Web Consortium, Web Content Accessibility Guidelines, <https://www.w3.org/TR/WCAG20/>

¹⁰⁶ 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).

- 5.97. Many of the indicators proposed in the measurement of the governance perspective are not traditionally within the scope of statistical frameworks. These have tended to focus on the collection of data on observed economic, social and environmental outcomes. Nonetheless, in light of the high relevance of understanding responses from government to various policy challenges, particularly with regards to countries' commitments to the Sustainable Development Goals, the UN Statistical Commission established the Praia City Group to investigate and develop guidance in the area of governance statistics.
- 5.98. The work of the Praia City Group has been brought together in the Praia Handbook on Governance Statistics¹⁰⁷. The purpose of the Handbook is to provide a foundation for the development of international statistical guidance and standards in all areas of governance statistics. The Handbook conceptualizes eight dimensions of governance (listed below); describes currently available data and best practice in measurement using administrative data, surveys and expert assessments, and proposes key indicators in each dimension of governance statistics.
- 5.99. The eight dimensions of governance statistics are:
- Non-discrimination and equality.
 - Participation.
 - Openness.
 - Access to and quality of justice.
 - Responsiveness.
 - Absence of corruption.
 - Trust.
 - Safety and security.
- 5.100. Although the Handbook is not specifically targeted at the measurement of governance in tourism, there are a range of statistical approaches that it describes which will be of high relevance to tourism statisticians in appropriately framing the collection and interpretation of data on governance in tourism.

¹⁰⁷ <https://www.ohchr.org/en/documents/tools-and-resources/prai-handbook-governance-statistics>

6. Complementary topics in Measuring the Sustainability of Tourism

6.1. Introduction

- 6.1. The SF-MST provides a comprehensive description of measurement across the economic, environment and social dimensions of tourism. The descriptions of concepts, definitions, classifications and measurement boundaries is a starting point but does not, of itself, generate a data base of information that can be used to support improved decision making. Implementation of SF-MST must therefore be considered and planned. This chapter provides a broad understanding of the relevant aspects of implementation summarized under the heading of “complementary topics”. A more comprehensive compilation guide will be prepared to support compilers implement the recommendations across the range of SF-MST themes.
- 6.2. Four topics are discussed in the chapter, institutional arrangements for implementation (section 6.2), management considerations in implementation (section 6.3), expectations concerning the quality of data (section 6.4) and potential applications and extensions (section 6.5). More detailed guidance and discussion of each of these topics will be required in practice and this chapter provides only an overview of the relevant issues. A final section introduces the research agenda of SF-MST listing the topics identified through the drafting process as being of relevance but without clear and agreed statistical treatments at this stage.

6.2. Institutional arrangements for implementation

- 6.3. It has long been recognized, including for example in the implementation of the International Recommendations on Tourism Statistics, that successful collection, compilation, dissemination and use of tourism statistics requires the active involvement of many agencies. In the context of supporting the implementation of SF-MST the relevant agencies will include, but is not limited to, national statistical offices (NSOs), national tourism authorities (NTAs), Central Banks, environmental agencies and departments of economy, labour, immigration, social affairs and regional development. This section summarizes the key roles of some of these agencies in the context of the wider message of the need for inter-institutional co-ordination.
- 6.4. NSOs have traditionally focused on producing official statistics independently, often in relative isolation from other data producers. Over the past several years, the role of NSOs has begun to evolve as new technologies have allowed for unparalleled levels of data collection from a variety of new sources by a variety of entities, and as a consequence, official statistics have become one source of information among many. Increasingly, this has prompted NSOs to undertake the role of data stewards. As data stewards, NSOs have shifted from being solely producers of statistics, to also becoming service providers, whereby NSOs facilitate a collaborative approach to data and statistics across different data and statistics communities and provide oversight and governance.

- 6.5. Arguably, no other domain epitomizes the potential role of NSOs as data stewards more than tourism statistics especially when considering the intent of the SF-MST to encompass environmental and social dimensions. Indeed, there is a long tradition of cross-agency cooperation in the compilation of tourism statistics involving national tourism authorities, NSOs, Central Banks, Immigration departments, and other agencies all contributing to the work. As well, there is commonly engagement with private sector tourism operators and academia thus highlighting the range of relevant stakeholders to be considered in developing and maintaining tourism statistics. Each country will have somewhat different arrangements for co-ordinating across these different agencies which are necessarily tailored to country circumstance.
- 6.6. Thus, while the implementation of the SF-MST may be led by the official statistics community and NSOs, the highly cross-cutting and spatial nature of measuring the sustainability of tourism necessitates a highly collaborative approach. Implementation will require the active participation of representatives of different agencies and disciplines. It will also include, in many countries, the need to co-ordinate with agencies and experts at sub-national administrative levels. A key objective is to work towards the appropriate institutionalization of the processes (including data sharing), roles and responsibilities for the compilation and organization of data.
- 6.7. NTAs will also play a central role in implementation through leading and guiding the co-ordination of institutions and ensuring that the data sets developed through SF-MST implementation are tested and applied in policy and analysis. Together with networks of scientists and researchers, NTAs and associated Destination Management Organizations (DMOs) will often play a critical role in collecting and validating local tourism data and knowledge. Since NSOs traditionally have less experience with these types of data, collaboration with these agencies in the development of these statistics should be encouraged and expected.
- 6.8. NSOs, in collaboration with relevant agencies, should provide oversight and better governance of the generation of statistical outputs by providing an independent and expert opinion of data to ensure trust and quality. Given the wide interest from multiple stakeholder groups (e.g., academia, government, private sector, etc), the role of NSOs in promoting high-quality and credible data is especially important. Moreover, the voice of NSOs can be an authoritative one by virtue of their independence and particularly unique role within government.
- 6.9. Institutional arrangements are generally understood as a set of agreements on the division of the respective responsibilities of agencies involved in the collection, compilation and dissemination of data pertaining to a given statistical domain. Such arrangements ensure that official statistics meet the needs of users, follow quality standards and are compiled and disseminated in the most efficient way. The scope of institutional agreements can range from determining the complete process of statistical production and dissemination to regulating certain parts of that process. In some cases, implementation can be supported through the establishment of a legal basis or requirement for the collection of specific data and the dissemination of statistical outputs.
- 6.10. It is recommended that these agencies establish and maintain the necessary formal and informal institutional arrangements with each other to ensure the highest possible quality of tourism statistics, as well as to ensure the continuity of improvements in their national

systems of tourism statistics. These arrangements should be established according to the methods usually used in a given country to ensure collaboration between entities. Such arrangements should be documented and should specify for what kind of tourism statistics (data series) each agency is responsible and the methods used for the exchange of information and for the preservation of confidentiality, in particular when the private sector or the tax administration is involved.

- 6.11. Further, given the wider coverage required for measuring the sustainability of tourism, **it is recommended** that existing inter-institutional platforms and governance arrangements for tourism statistics (traditionally composed of mainly NSO, Ministry in charge of tourism and Central bank) are enlarged to include other line Ministries (environment, social affairs, labour, planning, transport, regional development etc.) and other relevant institutions and agencies. This may include academic and private sector partners.
- 6.12. The implementation of SF-MST should also be expected to serve as a catalyst for improved collection of basic tourism statistics (for example concerning visitor flows and expenditure). In part the demand for improved data might arise from non-tourism agencies who are interested in better understanding the connection between their policy area and tourism activity. For example, environment agencies who are concerned about the impacts of tourism on natural ecosystems may provide support for the improved collection of data on visitor flows at a local scale.
- 6.13. Given the potential for overlap and connection between different policy agencies, it is recommended that joint or coordinated data collection programs be promoted. Such joint collections will lead to increased efficiency of data compilers and reduced reporting burden. Inter-agency cooperation may help to identify new ways to use the data that are already collected by reorganizing in it new ways to suit the needs of other areas of statistics. It can also help to make the most of existing operations by ensuring relevant disaggregations are in place to provide the level of detail necessary for e.g. identifying tourism industries.

6.3. Approaches and considerations in implementing SF-MST

6.3.1. Introduction

- 6.14. The longer term aim of implementation of SF-MST is to develop a nation-wide co-ordinated program of work on measuring the sustainability of tourism. Given the wide variety of situations and starting points, and taking into account the national policy priorities and institutional arrangements no single implementation approach can be described. At the same time, there are some general messages that should be considered by all countries based on experience in the implementation of statistical frameworks around the world.
- 6.15. The eight key messages are:
 - i. Implementation should be advanced following the completion of a general awareness and advocacy campaign concerning the potential of statistics on the sustainability of tourism to inform policy development, monitoring and evaluation.
 - ii. Implementation should aim to establish a coordinated, long-term, national programme of work involving a range of users of information and a number of different source data agencies.

- iii. An essential part of developing a long-term implementation is the development of supporting data collections and the underpinning national statistical system.
 - iv. SF-MST can be implemented as a series of modules on different aspects of the sustainability of tourism covering economic, environmental and social dimensions, and depending on the country policy priorities and data availability. All of the modules are connected through common classifications and measurement boundaries but can be compiled separately and progressively improved.
 - v. Many of the analytical benefits of the SF-MST comes from its connection to accounting approaches described in the System of National Accounts, the SEEA and the TSA:RMF; its use of other statistical frameworks concerning, for example, employment, decent work, and government finance and its inclusion of data in both monetary and physical terms.
 - vi. Implementation of the SF-MST requires strategic planning and the establishment of appropriate institutional mechanisms and arrangements for the ongoing compilation of statistics and the supporting data collections. In this, the national statistical office and the national tourism authorities have important roles to play.
 - vii. Implementation of the SF-MST can be linked to many different international initiatives, both statistical and policy related. Implementation strategies should seek synergies between these initiatives and any relevant national initiatives.
 - viii. Successful implementation will require step-wise development, and improvements will be generated through ongoing dissemination of statistics (possibly in preliminary or experimental form) and ongoing discussion with users and source data providers.
- 6.16. The overall message is that through setting appropriate expectations at the start of an implementation program it will be possible to progressively build a rich and coherent set of data. In setting expectations, it will be important to use a flexible and modular approach focusing first on the most relevant themes for analysis and undertaking compilation using available data, including global data sets. Through the process of regularly compiling and disseminating data, the data gaps and methodological requirements can be progressively identified and form the basis for securing ongoing investments in data and technology. Finally, recalling that the essence of SF-MST is the connection across three dimensions of the sustainability of tourism, it is important to keep a clear eye on the connections among the different measurement themes and to steadily build an overall narrative.

6.3.2. Specific considerations in the implementation and application of SF-MST

- 6.17. The SF-MST has a wide coverage of themes and implementation may be challenging. Indeed, those familiar with the implementation of TSA:RMF 2008 are familiar with the challenges of introducing new statistical frameworks that look to integrate and extend the current base of measurement.
- 6.18. To commence a discussion on implementation the following key points should be discussed.
- First, the current range of data demands concerning tourism’s sustainability is broad and hence it is appropriate that the SF-MST also has a broad coverage. This broad coverage aims to ensure that the set of tourism statistics that a country develops covers the relevant information requirements and to reduce the challenges that arise from ad hoc data collection and organization.

- Second, 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, including for data 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.
- Third, there is no expectation that all SF-MST tables and indicators 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 undertaken in a modular, flexible and demand-driven 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.
- Fourth, a sensible approach in some locations will be to start implementation at sub-national scales recognizing that the measurement principles described in the SF-MST are applicable at all scales. The development of nation-wide data sets may thus be advanced steadily through ongoing expansion of the coverage of sub-national areas. At the same time, not all data will be relevant at all scales and planning for the implementation of SF-MST should ensure an appropriate prioritization of implementation that considers requirements at different scales.
- Fifth, substantial progress on the implementation of SF-MST can occur in advance of a country compiling a tourism satellite account following the TSA:RMF or various environmental-economic accounts following the SEEA. While the SF-MST has a design that is strongly linked to these accounting frameworks, there are a range of intermediate entry points for compilers that should be pursued following the principle of flexible and modular implementation.
- Sixth, in a similar vein, it should be recognized that for each of the SF-MST measurement themes across the three dimensions, there will be a variety of potential measurement methods and associated data sources. Some methods will be more rigorous and data intensive than others. An appropriate approach is to commence implementation using basic data and methods and progressively improve measurement approaches over time. By way of example, initial measurement of GHG emissions might be based on the use of global or industry wide average rates of emissions and, over time, direct collection of GHG emissions from individual establishments can be envisaged. The pace and range of improvements should be linked directly to policy and analytical relevance. Again, a staged implementation approach is recommended.
- Seventh, while it will be possible to commence measurement using basic data and methods, potentially taking advantage of regional and global data sets, it is always preferable to build towards the collection of basic data from establishments and visitors or in relation to local ecosystems or host communities. The use of directly collected, granular data is important to ensure the relevance of the statistics and to recognize the differences between locations that should be taken into account in decision making. As well, the use of directly collected basic data is fundamental in supporting benchmarking and the operation of models that are commonly used in decision making. At the same time, directly collected data do not need to be collected for every time period and some interpolation and extrapolation can be used to fill in data gaps.

In this regard it is noted that ad hoc data collections can be effective in filling some data gap for policymakers. The SF-MST can then play a foundational role in supporting the integration and co-ordination of such ad-hoc data collections and support filling data gaps using other related and complementary data.

- Eighth, 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.
- 6.19. 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, for the data that *is* produced 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.
- 6.20. 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 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 by supporting a coordinated approach to compiling statistics across multiple local tourism destinations within a country. Public administration at different levels, national and regional statistical institutes, universities and other stakeholders may also 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.
- 6.21. On the basis of the concepts and definitions described in the SF-MST, it is envisaged that a range of materials to support implementation will be developed progressively, including the development of an MST Compilation Guide and the design of capacity development programs. These could include more detailed methodological guidance on the derivation of indicators or more detailed descriptions of data collection techniques, such as the use of big data. Such materials would supplement the wide range of information that is currently available to support implementation of statistics across the economic, environmental and social dimensions. Although much of this material may not be specifically targeted at tourism, the SF-MST should provide appropriate initial guidance on how measurement may be tailored to a tourism context.
- 6.22. As part of the ongoing process of implementation, there will likely be a high focus on the potential to use new and emerging data sources, such as mobile phone data and remote sensing and satellite data, in the compilation of estimates. The investigation of the potential of these data sources and their integration with existing data will be an important part of an implementation program. To support the use of these data, consideration should be given to data governance and interoperability, for example through the use of standard classifications.

6.4. Expectations concerning data quality

- 6.23. Tourism statistics are the end product of a complex process comprising many stages, from the collection and processing of raw data to dissemination of data in standardized format. To ensure that the published data are considered credible and hence used widely as the appropriate reflection of the economic, environmental and social dimensions of tourism, it is important that a focus is placed on assessing the quality of the data and implementing process to ensure data quality. There are a number of supporting references and materials concerning statistical quality that are available, including through the UN Statistical Division¹⁰⁸. This section provides an overview of relevant considerations.
- 6.24. Data quality is commonly understood as referring to the accuracy of data, i.e. the degree to which the data correctly estimate or describe the quantities or characteristics they are designed to measure. However, while accuracy is important there are in fact many factors to be considered in assessing the quality of data and putting in place systems and structures that support the compilation and dissemination of high quality data. In short, quality is a multi-dimensional phenomenon.
- 6.25. For SF-MST, as for all statistical frameworks, it is intended that the statistics that are derived from its use are compiled and released in a manner that is consistent with the UN Fundamental Principles of Official Statistics¹⁰⁹. These principles adopted in 1994 and reaffirmed in 2013 require the compilation of statistics: (i) to be relevant, impartial and equally accessible; (ii) to apply professional standards, scientific principles and professional ethics; (iii) to demonstrate accountability and transparency; (iv) to prevent the misuse of statistics; (v) to involve data from many sources considering quality, timeliness, costs and respondent burden; (vi) to maintain confidentiality of individual data; (vii) to operate under publicly available legislation; (viii) to co-ordinate across agencies as part of a statistical system; (ix) to apply international standards; and (x) to support international cooperation.
- 6.26. To support the implementation of these principles, the UN has also established a National Quality Assurance Framework (NQAF) adopted in 2012 and supported by the release of a manual and associated recommendations in 2019¹¹⁰. The framework identifies 19 principles under four levels of management – managing the statistical system; managing the institutional environment; managing statistical processes; and managing statistical outputs. For compilers of statistics all of these aspects are relevant. For users of statistics, most common focus is placed on the six principles concerning statistical outputs namely: relevance; accuracy and reliability; timeliness and punctuality; accessibility and clarity; coherence and comparability; and metadata. All of these principles should be considered and applied in the implementation of SF-MST¹¹¹.

¹⁰⁸ See <https://unstats.un.org/unsd/methodology/dataquality/un-nqaf-manual/> and

<https://unstats.un.org/unsd/methodology/dataquality/meetings/Workshop-on-the-implementation-of-NQAF-and-GSBPM>

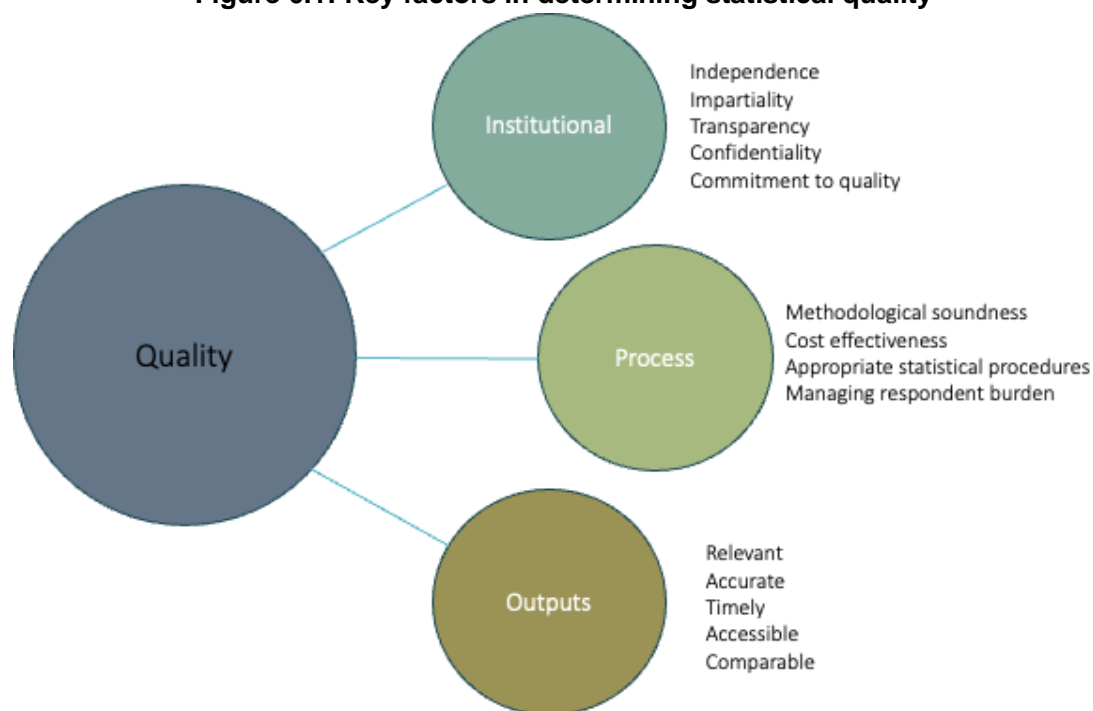
¹⁰⁹ https://unstats.un.org/unsd/dnss/hb/E-fundamental%20principles_A4-WEB.pdf

¹¹⁰ <https://unstats.un.org/unsd/methodology/dataquality/>

¹¹¹ The European Statistics Code of Practice (CoP) is the cornerstone of the quality framework and sets the standards for developing, producing and disseminating European statistics. It comprises 16 principles concerning the institutional environment, statistical processes and statistical outputs (<https://ec.europa.eu/eurostat/documents/4031688/8971242/KS-02-18-142-EN-N.pdf/e7f85f07-91db-4312-8118-f729c75878c7?t=1528447068000>).

- 6.27. Figure 6.1 below provides a general overview of the relevant factors. At a first level, a distinction should be made between the institutional setting in which statistics are compiled, the processes by which statistics are generated and the outputs that emerge from a statistical process. Then for each of these high level factors, there are a number of sub-factors. It is not the role of this overview to provide an in-depth description of the factors and sub-factors and compilers are encouraged to read the relevant materials available on the UN Statistics Division website.

Figure 6.1: Key factors in determining statistical quality



Adapted from UNSD

- 6.28. As a general commentary, it should be readily seen that each of these factors are important considerations. For example, accurate data are excellent but if they concern topics that are not relevant to decision making, they are released a long time after decisions are taken and they cannot be readily accessed by different stakeholders then, just from an output perspective, the quality of the data for decision making may be considered poor even if they are accurate.
- 6.29. The wider message in this description is that quality must be assessed in relation to a particular decision making context – i.e. the data and statistics should be fit for purpose. By way of example, it might be appropriate for decisions on the size of investment in airports to consider monthly patterns of total visitor flows. However, for decisions on the type of accommodation and facilities that should be supplied, additional detail would be relevant on the characteristics of those visitors, for example their age, purpose of travel and income levels.
- 6.30. In terms of institutional quality, the underlying driver for establishing levels of quality here concerns the credibility and authority of the statistics that are disseminated. To the extent that users are concerned that the data may be adjusted or affected by political concerns, then there is less likelihood that the data will be considered useful for decision making. In this sense, the factors of independence, impartiality, transparency, confidentiality and

commitment to quality of the institutions that are compiling and releasing statistics are critical. The UN Fundamental Principles of Official Statistics have been developed with this aspect of quality in mind.

- 6.31. The dimensions of quality that are listed above are overlapping and interrelated. Any action taken to address or modify one aspect of quality will tend to affect other elements of quality. Further, it is recognized that direct quality measures are difficult to develop. For example, in the case of accuracy, it is almost impossible to measure non-response bias as the characteristics of non-respondents can be difficult and costly to ascertain. In this instance, the response rate is often used as a proxy quality indicator which provides a measure of the possible extent of non-response bias. Thus, when determining the quality indicators for tourism statistics it is recommended that the following criteria be satisfied: (a) indicators cover part or all of the dimensions of quality as defined previously; (b) the methodology for their compilation is well established; and (c) the indicators are easy to interpret.
- 6.32. Because deriving a single quantitative measure of quality for tourism statistics is not possible, countries are encouraged to develop a tourism statistics quality framework based on the above mentioned dimensions and to regularly issue quality reports as part of their metadata. Such reports should contain a system of quality indicators appropriate under the country circumstances and will allow users to judge for themselves whether any given data set meets their particular quality requirements. It is recommended that a quality review of tourism statistics be undertaken every four to five years or more frequently if significant methodological changes or changes in the data sources occur.

6.5. Potential applications and extensions of SF-MST

6.5.1. Introduction

- 6.33. This section introduces a range of applications and extensions that may be undertaken using data compiled following the SF-MST. Consistent with the advice that the SF-MST should be implemented in a flexible and modular way in line with available resources and national information demands, it is not expected that countries seek to undertake all of the possible applications and extensions of SF-MST.
- 6.34. Further, a number of the applications and extensions will involve the use of assumptions about relationships between and thresholds concerning economic, environmental and social variables, require the design of scenarios and projections, or apply modelling of various types. The SF-MST does not prescribe any assumptions, modelling approaches or the collection of information required for analysis and intends only to indicate the common requirements and considerations.
- 6.35. An initial focus in applying SF-MST may be on describing measurement and analysis at a broad, national level on specific policy areas such as tourism resource use (e.g. water and energy), tourism intensity and carrying capacity, the tourism employment market, tourism infrastructure requirements, etc. There is also potential for analysis and extension at sub-national scales and in this context there are strong areas of synergy with the developments in geo-spatial information systems (GIS) and related datasets.

- 6.36. Analysis in these specific areas can also feed into discussion of broader, cross cutting policy areas such as tourism's contribution to sustainable development, mitigation of and adaptation to the effects of climate change, circular economy and sustainable production and consumption, and land management and planning. In all of these cross-cutting areas connections are required between economic, environmental and social dimensions and the SF_MST is well suited to placing the relevant data in context. Further, SF-MST data may be relevant at different stages of the policy cycle including the development and design of policy solutions, the articulation of policy targets, and the monitoring and evaluation of policies, in particular assessment of the effectiveness of specific policy instruments.
- 6.37. For the analyst of tourism's sustainability, the application of the SF-MST can provide benefits—mainly in the form of comparability and harmonization—that come from utilizing a common, integrated framework, reflected in the compilation of accounts, for the organization of environmental, social and economic data.

6.5.2. Measurement of indirect and induced environmental flows

- 6.38. 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 establishments. 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 ensures that there is no double counting of data and to support comparability across locations and countries. Through the systematic organization of data on direct flows between the environment and tourism establishments, SF-MST established a coherent database for further analysis and modelling.
- 6.39. In particular, there is commonly strong analytical and policy interest in understanding the environmental connection between visitor activity and the associated supply chains that provide goods and services to visitors¹¹². The measurement of these indirect effects can be directly supported through SF-MST. As well, the coherent database of direct flows supports analysis of induced effects that arise, for example, when employees of tourism industries spend their income and drive further economic and environmental effects.
- 6.40. More generally, one of the distinct advantages of organizing and integrating data using the SF-MST is its connections to accounting frameworks, such as the SNA. This supports the connection of tourism data to economic models that use input-output tables which summarize the structure and inter-linkages of the economy. Input-output tables are based on the SNA and making the connection to tourism is possible through the use of consistent definitions of income and production and the use of common industry and product classifications.
- 6.41. In principle, by using the information on the relationships between inputs and outputs of goods and services reflected in standard economic supply and use or input-output 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

¹¹² 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. https://www.oecd.org/dac/aft/AidforTrade_SectorStudy_Tourism.pdf

visitors. For example, it is possible to estimate the quantity of water embodied in the growing of food that is ultimately consumed by visitors. The same logic can be applied for other environmental flows such as energy and GHG emissions. The resulting measures are often referred to as footprints.

- 6.42. 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 visitors¹¹³. 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.
- 6.43. It is further noted that given the range of assumptions about pathways and connections that are required to estimate indirect and induced effects, and the fact that these effects will operate across national boundaries, it is not possible to obtain international comparability for indirect and induced effects. That is, the indirect and induced effects measured in relation to one country will overlap with the estimates for another country. This overlap, or double-counting, problem can be overcome in the measurement of direct effects through careful application of statistical concepts and measurement boundaries as described in the SF-MST and hence international comparability of direct effects is possible.
- 6.44. There are many examples of the use of environmental flow information in connection with standard input-output tables and an introduction to the principles and summary of the relevant literature is provided in SEEA Applications and Extensions as already noted. Examples already exist in the area of tourism, for example the work for Wales on the connections of tourism and GHG emissions (Jones, 2023¹¹⁴). Advancing the measurement of integrated TSA and SEEA accounts will further support these efforts in understanding the broader connections between tourism activity and the environment and ensuring that environmental data can be taken into account in the economic modeling of tourism.

6.5.3. Other areas of application and extension

- 6.45. There are a number of other applications and extensions in which data compiled following the SF-MST can be used. These are summarized briefly here recognizing that those mentioned here are indicative only. It is also noted that given the potential for SF-MST to be used at local, regional and national scales, there may be particular applications that are specific to those scales. The focus here is largely on national level applications but finer level uses should not be forgotten.
- 6.46. A direct application of the data from SF-MST is in support of reporting on international agreements such as SDGs and the Convention on Biological Diversity. While it will be the case that most of the indicators are not defined solely with respect to tourism, the data from

¹¹³ Eurostat makes available footprint calculation tools (<https://ec.europa.eu/eurostat/web/environment/methodology>).

¹¹⁴ Calvin Jones (2023) The carbon footprint of regional tourism trips: insights from environmentally extended regional input output analysis, *Journal of Sustainable Tourism* (in press) <https://www.tandfonline.com/doi/full/10.1080/09669582.2023.2254949>

SF-MST can be used to demonstrate the links between tourism and progress towards the SDGs and also identify areas where investments in tourism may be an important component of the policy response in different locations. The spatial component of SF-MST will also support the general measurement ambition of reporting on the SDGs to provide disaggregations of the national level indicators.

- 6.47. A particular requirement as part of tourism policy development is projecting future patterns of tourism supply and demand. Such projections require assumptions about future states which is not within the scope of statistical measurement. However, data from the SF-MST can provide the robust baseline and past trend information that is used to underpin such projections. Further, the connections described in SF-MST across economic, environmental and social dimensions can be used to consider the wider effects of changes in tourism supply and demand, for example on local environments and host communities. Across these dimensions, the SF-MST also provides a common baseline for all stakeholders to participate in discussions about potential implications of tourism activity.
- 6.48. In making projections, it will be relevant to consider economic, environmental and social thresholds that may limit the potential for tourism activity to increase. These thresholds may relate to limits including water consumption, land for development and the supply of labour. Under the general concept of tourism carrying capacity all of these types of issues may be analyzed with the support of an SF-MST data set. The SF-MST does not inherently establish relevant thresholds since these will vary by location and over time. However, the concepts and definitions of SF-MST can be used to describe the thresholds and to monitor whether they are being approached or passed.
- 6.49. More broadly, the framing of thresholds can be considered from a perspective of risk, i.e. the likelihood and the expected effect of going beyond certain thresholds. Again, the SF-MST does not supply the full range of assumptions required for risk analysis but the dataset provides a robust and common baseline of information and can support coherent assessment of risks across different locations and different scales.
- 6.50. The final area discussed here is the potential for SF-MST data and the general framework itself to support the measurement of sustainability at the corporate level, for example in the area of Environmental, Social and Governance (ESG) measurement and reporting. Aside from providing a clear and internationally agreed framing for the measurement of these aspects of sustainability, SF-MST can also support corporate measurement and reporting by providing data on areas outside the direct management and control of individual establishments. For example, information on sea water and beach quality and water resources in tourism connected catchments can inform the environmental reporting of local establishments. Building connections between SF-MST and corporate level measurement can also support more co-ordinated planning and investments at local scales towards sustainability objectives.

6.6. Introduction to the Research agenda

- 6.51. The SF-MST provides a framework for measuring the economic, environmental and social dimensions of tourism. Data compiled following the SF-MST are invaluable inputs for the evaluation of policy and analysis of many tourism issues. Nonetheless, as the

environmental, social and economic circumstances change, as understanding of the links between the environment, society and the economy develops, and as policy and analytical requirements evolve, the SF-MST must be reviewed to assure its ongoing relevance.

- 6.52. In addition, as implementation of the SF-MST occurs increasingly across the world, the range of experience gained will offer new insights that should be considered in the conceptualization of the measurement of the sustainability of tourism.
- 6.53. As the SF-MST is founded on a number of existing statistical frameworks, the development and refinement of the SF-MST will, itself, need to be aware of ongoing developments in each of those frameworks.
- 6.54. The process for reviewing and updating the SF-MST will follow standard processes that have developed for the review of international statistical frameworks. Thus, there will be consideration within the United Nations statistical system of (a) the relative importance of updating the framework to ensure its ongoing relevance; (b) the consequences of making any changes and the potential impact on implementation; and (c) the extent to which research into a proposed area of change has been completed. The process for selecting topics for investigation and determining the appropriate changes to the SF-MST will involve widespread consultation and involvement of compilers and users.
- 6.55. It is noted that, because the SF-MST is an integrated measurement system with links between different themes, changing individual areas in response to specific concerns is likely to have broader ramifications. Hence, updating the framework must be completed in a coordinated and integrated fashion.
- 6.56. Listed below are the major topics identified during the preparation of the SF-MST as being those that would benefit from further consideration within the international statistical community. Some of these topics are more conceptual in nature while others concern establishing clear statistical guidance to support implementation. It is expected that this list will evolve over time with different priorities to be determined by the relevant statistical governance process:
- i. **Tourism occupations.** Given the importance of tourism employment as a general topic of measurement, the drafting of the SF-MST identified that measurement of tourism occupations would be a useful complement to other measures. However, at this stage an agreed statistical definition of tourism occupations has not been determined. An interim measurement approach has been presented in Chapter 3 but, in collaboration with ILO, the development of a targeted statistical solution can be envisaged, linking to the wider updating of the International Standard Classification of Occupations (ISCO). As part of this research, consideration can be given to the impact of changing patterns of tourism supply and demand, for example through the platform economy, and the effect that these changes may have on occupations and employment more generally.
 - ii. **Tourism-related produced assets.** Tourism investment in fixed capital is considered an important policy metric. Building on an initial discussion in the TSA:RMF 2008, SF-MST describes a range of measures concerning tourism investment focusing on tourism gross fixed capital formation and non-monetary indicators of the tourism capital stock. Nonetheless, in the drafting process it was identified that further investigation was required to establish improved specifications of tourism related produced assets, to clarify the measurement boundary as it pertains to tourism since a range of assets

related to tourism can be used for non-tourism purposes, and to provide compilation advice. Other relevant topics for consideration include clarifying the recording of investments in short-term accommodation and associated rentals; and identifying levels of foreign direct investment.

- iii. **Ecosystem accounting.** SF-MST provides an introduction to the ways in which ecosystem accounting as described in the SEEA Ecosystem Accounting may be linked to the measurement of tourism. There are a number of connections including measurement of the area of ecosystem assets, the condition of these assets and flows of ecosystem services. However, as this is a new area of statistical measurement, methods and data sources for ecosystem accounting continue to be developed and further development of the links to tourism can be investigated. This should include examining the potential to link spatial areas defined in relation to tourism to the location and extent of ecosystems.
- iv. **Recording and attribution of environmental flows.** SF-MST Annex 4.1 provides an explanation of the way in which environmental flows, including GHG emissions, solid waste, water and energy, can be attributed to tourism activity including recording using consumption and production perspectives. Further investigation is warranted to fully articulate the range of potential aggregations and perspectives in this area of measurement including for example, developing agreed approaches to the measurement of indirect and induced effects with respect to environmental flows and considering appropriate presentations for international passenger transport where multiple countries are involved.
- v. **Development of metrics in the social dimension.** SF-MST provides a comprehensive framing for considering the social dimension of tourism and brings together a range of statistical concepts and other measurement advice. At the same time, it is acknowledged that statistical standards in some of the measurement themes could be further developed in the context of tourism measurement. These themes include visitor satisfaction surveys, host community perception surveys, the collection of time use data about visitors, statistics on tourism governance, measures of the degree of access to tourism by residents and the links to cultural satellite accounts.
- vi. **Connections to international statistical standards.** SF-MST is a framework that demonstrates the connections between a large number of statistical standards. Consequently, while the inherent logic of the connections between these standards within SF-MST will remain robust, some details of the descriptions and associated classifications may change when the underpinning standards undergo their regular updating processes. At the time of release of SF-MST there are updating process underway concerning the System of National Accounts, ISIC Rev 5, CPC 2.0 and various ILO standards. As these processes are finalised the implications for SF-MST will need to be addressed.