Comments to:

Statistical Framework for Measuring Sustainable Tourism

Consultation Draft

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

February 2018
Demi Kotsovos (Satellite Accounts and Special Studies, National Economic Accounts Division, Statistics Canada, Canada)

Chapter 1 presents the context of MST quite well. The rationale for MST could be more explicitly stated - maybe a section could be includes on why this framework is important from policy perspective.

With respect to chapter 3 - we look forward to the discussion of the consumption versus the production perspectives. As well as further elaboration of the allocation of environmental flows to transportation - especially once one starts looking at spatial measurement at lower level such as local / tourism destination.

Chapter 5 is heading in the right direction. Defining the spatial area is definitely an important first step to integrating and interpreting data. The challenge will be articulating environmental dimension at these sub-national spatial areas such as local / tourism destination- maybe this area can be elaborated. How would a national table and tourist destination table reconcile. Pilot studies at lower levels of geography may be of interest.

A few of comments on how Statistics Canada’s Physical Flow Accounts (PFA) would currently be able to respond to the data requirements prescribed in the framework are included below.

- In section, 3.3.2 - For example, “Of particular interest for sustainable tourism are the seasonal patterns in water use since in specific locations there will be peaks in the demand for water that may not correspond to the patterns of water supply, e.g. across dry and rainy seasons.” (3.3.2 pg 40) . Currently the PFA do not have sub-annual flows. For the source data that does publish monthly water intake estimates “tourism industries” are not covered.
- For 3.3.3 , in example on the energy flows for tourism industries: “It contains information on the supply and use of energy by type of energy product including energy from renewable and non-renewable sources.” Energy from renewable sources (wind, solar, etc.) is currently not accounted for in the PFA. The PFA currently only includes own-account generation from non-renewable fuels.
- Estimates physical flows are produced at annual data as they are based on the supply and use tables,

Some minor points - on pg. 45: in Table 5.2: Tourism industries energy flow account, should the flows from the environment from natural resource inputs be highlighted red as a cell of “most likely importance”. On pg. 47: in Table 5.3: Tourism industries GHG emissions account, would Total CO2 equivalent not be a more “important” estimate to include on the supply side, both in terms on comparability as well as measuring the overall impact in the environment.
Miriam Blumers (Member of Academic Staff, Sustainable Development Indicators, Federal Statistical Office of Germany, Germany)

Views on Statistical Framework for Measuring Sustainable Tourism (SF-MST)

Structure

Overall, the structure of the framework is clear and comprehensive. At some points, links to tables or pursuing chapters are not correct and need to be revised at a final stage (e.g. p.20 link to chapter 6, which is chapter 5; p. 25 link to table 2 which is table 1 etc.). Furthermore, the intention of chapter “1.5 Structure of the SF-MST” document is not clear.

Approach

To base SF-MST on national accounting standards is beneficial and meaningful. The framework takes advantage of the common origin of the SEEA and the TSA which allows the environmental dimension of sustainable tourism to be coherently integrated with the economic dimension.

Even though the conceptual base is founded on existing statistics and accounting systems, the practical implementation is not straightforward. Practical challenges should be named and further practical assistance would be expedient. For example, the assets accounts are conceptually difficult. It would be problematic to distinguish between flows which are used by tourists and by residents.

In general, explanations on how the accounts will be compiled, data sources, compilation process etc. would be useful. Besides, a chart showing the interactions between the three dimensions economic, environmental and social would be helpful as well.

In particular, the exact formulation of the social dimension is not straightforward and the feasibility is currently questionable as in contrast to national and environmental accounts a “social accounting” does not exist in official statistics. A more explicit reference to the compilation would allow a better understanding.

Interpretation of the results

In general, the framework and the corresponding results can/will be “exemplary” for countries with a top-down approach of National Accounts. This is due to the assumptions that would have to be made. As a consequence, interpretations and analyses of the results of the MST have the potential of misleading in terms of

- Increasing size dimension of effects
- Responsibility of sustainable tourism for specific effect (e.g. shift of sectors)

Thus, the robustness of the results needs to be examined closely over time. Furthermore, it is advisable to add a section in which information and examples on result interpretation for policy makers and other user without deeper statistical knowledge is provided.

Spatial scale

It needs to be clarified if these accounts should be integrated in the economic, environmental and social dimension or if it is seen as a partial solution. Is the intention to set sustainable tourism of a region in relation to the one of the overall economy?

Recording the dimension at different spatial scales (regional, municipal or city-region, local) might not be feasible for many countries.
Ayad Aljbouri, Iraq

I would like to make some observations about the mechanism by which tourism sustainability can be achieved on the economic side.

In accordance with the basic ideas of schools in the economy of the relationship between producers and consumers, which are achieved through production and consumption through factors of production by labor, capital, land and organization, which represent the supply side and in which producers seek to maximize their revenues through the factors of wages and benefits and rent and profits, The factors of production depend on the demand side represented by the consumers of these products.

Therefore, I believe that starting to support sustainable tourism on its economic side can start from sustainability in factors of production through sustainability in its elements of work and capital, as well as land sustainability and regulation, to develop existing products or to produce new products.
Gerry Brady (Senior Statistician, Environment Statistics and Accounts Division, Central Statistics Office, Ireland)

1. A short section could discuss the type of data that are required. The text notes that time-series data are needed but this could be emphasised more. For example, there was a billboard poster in Manila that expressed concern that the average age of Filipino farmers was 57 (who will feed us in the future!). What we need to know is what was the average age 10 and 20 years ago. If it was 52 and 47 years then there is cause for concern but not if it was 56 and 55 years. The tourism industry may by default be looking for short-term very timely data.

2. Does there need to be a section that discusses climate change. If sea levels rise, snowfall amounts change, etc. then these would have a serious impact on some tourism destinations such as low lying islands and Winter ski resorts. Badly located new hotels etc. because of a shortage of development space would become problematic if there is an increase in the frequency of extreme weather events e.g. higher sea levels.

3. On page 17 paragraph 1.3.3, there is a statement that sustainability can be inferred if the total wealth has not declined. This may be true but any degradation of the environment may be slower than the rate of recovery possible in the economic and social dimensions.

4. There are references to the marine and coastal areas throughout the framework but I think there should be a more focused reference to the marine ecosystem e.g. listing it separately in Table 1. There are many signs of degradation such as plastic pollution and damage to coral reefs. This would affect the attractiveness of marine recreation.

5. Some tourism destinations can cope better with increased demand by increasing capacity e.g. larger waste water treatment plants or introducing tertiary treatment. This notion of increasing or upgrading capacity as a means of managing rapid development is not really mentioned.

6. On page 52 paragraph 3.4.2, there is a reference to a list of assets that do not directly support tourism activity. Minerals is included in the list but the local availability of non-metallic minerals such as sand and gravel are important to the construction of new roads and hotels.
They were elaborated by the colleagues in the European Topic Centre on Urban Land and Soil of the European Environment Agency which is supporting the TOUERM work already mentioned in the paper.

In particular sections on land (3.4.5) and ecosystem (3.4.6) accounting are very relevant to TOUERM work (e.g. impact of golf courses/ski areas on land cover).

Since you asked for "suggestions for additional (a) areas of research and (b) relevant literature" we would suggest to include:

- (a) the need to improve land cover/use classification systems, including tourism specific uses (such as golf courses, marinas) as already done in some national land classifications and Copernicus components
- (b) references to
  - TOUERM report (http://uls.eionet.europa.eu/Reports)
  - the Copernicus Land programme (land.copernicus.eu) and its products, particularly the upcoming coastal service.

Additionally, for chapter 5 (Defining spatial areas) the TOUERM work also provides interesting aspects such as on downscaling of tourism statistics, data on grid level that can be aggregated at different administrative units (NUTS3, NUTS2, municipality), integration of environmental and socio-economic data.
Statistical Framework for Measuring Sustainable Tourism

Consultation Draft

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

February 2018
Foreword

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

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

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

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

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

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

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

Chapter 1 provides an explanation of the rationale for the development of a statistical framework for measuring sustainable tourism from a sustainable development perspective, an overview of the SF-MST and a short discussion on implementation and potential applications. It is intended to provide a general entry point for compilers since there will be

Comment [CC1]: Experts involved in discussions on “sustainable tourism” are familiar with this label. Commonly, however - outside this community - the same expression indicates either a factual situation or a model showing a tourism sector that operates in a way deemed sustainable. It may be appropriate, therefore, not to use this expression at the beginning of the SF-MST document.
a wide variety of experts involved in the development of the SF-MST, many who are not official statisticians. Chapter 1 should provide a common understanding and reference point for the implementation and application of the framework.

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

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

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

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

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

1: <<Insert text from UNSC meeting – resolution>>
Acknowledgements (TBC)

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<td>ILO</td>
<td>International Labour Organization</td>
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<td>MST</td>
<td>Measuring Sustainable Tourism</td>
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<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<tr>
<td>SEEA</td>
<td>System of Environmental-Economic Accounting 2012; this includes SEEA CF, SEEA AE and SEEA EEA</td>
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<tr>
<td>SEEA CF</td>
<td>System of Environmental-Economic Accounting 2012 Central framework</td>
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<td>SF-MST</td>
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1 Introduction

1.1 What is sustainable tourism?

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

i. make optimal use of environmental resources, and helping to conserve natural resources and biodiversity

ii. respect the socio-cultural authenticity of host communities and contribute to inter-cultural understanding

iii. ensure viable, long-term economic operations, including stable employment and contributions to reducing poverty providing fairly distributed socio-economic benefits to all stakeholders, including host communities.²

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

Box 1: Defining sustainable tourism

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

Thus, sustainable tourism should:

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

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

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

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

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

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

i. the reality that, in contributing a larger share of economic activity in most countries, tourism activity is contributing more to the use of environmental resources and its impact on the natural environment is increasingly significant

ii. the idea that tourism activity might provide a path by which lower income countries and region might improve their standard of living

iii. the recognition of the dependence of tourism activity on its environmental and social contexts and the need to keep these underpinning supports in good condition.

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

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

Within this broader SDG context, In the context of the United Nations 2030 Agenda and the SDGs, IY2017 aimed to foster a change in policies, business practices and consumer behavior for a more sustainable tourism sector. It explored and highlighted tourism’s role in five key areas:

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

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

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

1.2 A statistical approach to measuring sustainable tourism

1.2.1 Measuring sustainability

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

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

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

Composite/weighted indexes: The second approach is to combine a selection of indicators into a composite or weighted index of some type, generally through the initial identification of specific themes relevant to the sustainability context of interest. A well-known example is the UNDP Human Development Index which combines data on life expectancy, education and per capita income\(^1\). While this approach does provide an overall sense of direction through a single number, there is no definitive list of themes (and related indicators), the relative importance (or weighting) of each indicator is predetermined and open to question, and commonly these indexes tend to smooth out the effects of internal variations present in the component indicators.

Wealth accounting: The third approach is to apply economic theory about the relationship between income and wealth to demonstrate that the sustainability of income, defined broadly to encompass all types of benefits received by people, requires the maintenance of total wealth, where wealth includes all types of capital, as well as assets generally referred to as human and social capital. This approach is generally referred to as wealth accounting and has been the subject of increasing interest, for example in the UNU-IHDP and UNEP IHDP-IHDP work on Inclusive Wealth Accounting\(^4\). Wealth accounting is in particular a combination and aggregation of different types of asset accounting; it provides a theoretical approach to the integration of data across multiple dimensions to provide insights into sustainability. An extension to wealth accounting (which is relatively static in its consideration of sustainability), is to apply systems dynamics and hence take into consideration the feedback loops between the various stocks and flows within a given system over time.

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For SF-MST, the approach to measuring sustainability is to recognize the potential inherent in wealth accounting and systems dynamics based approaches and to provide a statistical framework that supports a systems perspective.

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

While there are conceptual challenges in wealth accounting-based approaches, these reflect a willingness to engage with the complexity inherent in the description and measurement of sustainable development. Hence, taking into account these approaches helps to provide a pathway through which the development of statistics can also engage with this complexity and hence best support the real challenges faced by decision makers.

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

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\(^1\) http://hdr.undp.org/en/content/human-development-index-hdi
\(^4\) http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDKM_2014.pdf
dynamics approaches can be directly tailored to individual contexts but are difficult to standardize in a way that supports ongoing measurement and comparison.

Recognizing the potential inherent in wealth accounting and system dynamics based approaches, for SF-MST the approach to measuring sustainability does not coincide, however, with those approaches. In fact, the aim of SF-MST is to provide a statistical framework that supports a systems perspective in assessment of sustainability by having national accounting as a core element of the rationale adopted and by recognizing that, in order for people to be able to get benefits - not only in economic terms - in a sustainable way, there is a need to maintain all relevant assets that are the basis for generating benefits.

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

1.2.2 A history of measuring tourism

UNWTO, as the specialized agency responsible for the promotion of responsible, sustainable and universally accessible tourism, is committed to ensure that tourism plays a key role in progress towards sustainable development. Using a focus on tourism destinations, UNWTO has articulated a definition of sustainable tourism (UNWTO & UNEP, 2005), provided a guide to the set of relevant policy themes (UNWTO & UNEP, 2005) and described a comprehensive range of indicators that may be used in measuring progress towards sustainable tourism at destination level (UNWTO, 2004).
UNWTO also has a mandate for the collection and dissemination of tourism statistics and as well as for the development and implementation of the associated international statistical standards. The work dates back as far 1937 and the first definition of an “international tourist”, and extends through the following 80 years with provisional guidelines on tourism statistics released in 1978; initial developments on tourism economic accounts in the 1980s and 1990s; the 1993 Recommendations on Tourism Statistics in 1993; and the 2001 Tourism Satellite Account: Recommended Methodological Framework. The most recent advances are reflected in the International Recommendations for Tourism Statistics 2008 (IRTS, 2008) (UNWTO, et al, 2008) and the Tourism Satellite Account: Recommended Methodological Framework 2008 (TSA:RMF 2008) (UNWTO & UN et al, 2010).

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

Notwithstanding the importance of identifying indicators for sustainable tourism, what is clear is that there is a significant gap from an official statistical perspective in defining standards for a framework that integrates economic, environmental and social statistics at relevant spatial levels (including local, national and global) that are required for assessment of sustainable tourism. This gap was recognised in both the IRTS 2008 and the TSA:RMF 2008. With the aim of closing this statistical gap, in 2015 the UNWTO launched the Towards a Statistical Framework for Measuring Sustainable Tourism (MST) initiative (http://cf.cdn.unwto.org/sites/all/files/docpdf/brochurees.pdf).

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

A feature in the development of tourism statistics has been the role of international conferences in providing launching platforms for each stage of development. The developments in measuring sustainable tourism are no exception, with the profile of work being significantly raised 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 participants (see Annex 1). Among a range of actions, the Manila Call to Action explicit requests the development of the SF-MST, a call that had been endorsed at the United Nations Statistical Commission meeting in March 2017 and that was reinforced as a key area of work at the UNWTO General Assembly in September 2017.

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5 IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of tourism statistics.
1.2.3 The role of statistical frameworks

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

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

Figure 2: Using statistical frameworks to link data and policy

Over time, the importance of statistical frameworks becomes more apparent since while the concepts and definitions can be kept relatively stable, it is likely that (i) data sources will change over time – witness for example the emergence of big data and spatially rich data sets – and (ii) there will be ongoing changes in policy themes, aspirations and targets.
Maintaining a stable statistical framework at the heart of measurement ensures that data and policy can be meaningfully linked and effective comparisons can be made on an ongoing basis, notwithstanding the ongoing changes in data sources and policy needs.

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

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

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

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

1.2.4 The benefits of a statistical approach

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

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

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

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

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

The importance of developing a common language to support comparison cannot be overstated. It may appear that integration of information for a single group of decision makers is sufficient, for example for local/destination managers, or for national tourism administrators. However, it is clear that decisions by different groups are inter-connected.

For example, local and national policy choices affect each other. Given this reality, there may be considerable barriers to progress if different stakeholders have information based on varying definitions and measurement boundaries. A statistical approach as recommended in the MST project works to overcome these information barriers and support more engaged and inclusive decision making.

1.3 Overview of the SF-MST

1.3.1 Introduction

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

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

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

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

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

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

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

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

An important aspect of the SF-MST is the development of data at a sub-national or destination level. In concept, all of the statistical standards and guidelines just described, including the national accounts, can be applied at all levels of spatial detail, in the same way.

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*As described below, the SEEA consists of three parts: System of Environmental-Economic Accounting 2012 Central framework, System of Environmental-Economic Accounting 2012 Experimental Ecosystem Accounting and System of Environmental-Economic Accounting 2012 Applications and Extensions. Key aspects of the SEEA framework are discussed in chapter 3.*

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as statistical standards are equally applicable for very large and very small countries. In most cases, the challenges of spatial scale are not conceptual but rather whether it is feasible and relevant to collect information at sub-national levels. At the same time, there are a range of measurement considerations and, given, the importance of spatial detail to the assessment of tourism, Chapter 6 is devoted to a discussion of the relevant issues.

1.3.2 Coverage of SF-MST

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

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

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

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

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

As introduced above, the conceptual framing of sustainability that underpins the SF-MST emerges from the literature on wealth accounting. The basic logic is that sustainability can be inferred where the overall capital base, measured in terms of total wealth, does not decline over time. The information needs of approaches based on wealth accounting are then thoroughly considered and taken into account, as well as the basic logic according to which sustainability can be inferred where the overall capital basis, measured in terms of total wealth, does not decline over time (see, for example, Hamilton and Hartwick (2014)).

It is noted that this measurement approach implies the idea that the loss of any type of component of the asset basis - including other than produced assets - can be compensated by an increase in another component of the same asset basis. In other words, under this approach there is no reference to the so-called strong sustainability concept. Importantly, the approach of summing up different kinds of assets - all measured in monetary terms - to get a measure of the overall capital basis is controversial among experts.

 Nevertheless, as already stressed, the literature on wealth accounting-based approaches provides a crucial reference as to the demand of the statistical information needed to best support users interested in sustainability assessments. To incorporate the information needs of the theory of wealth accounting into a statistical framework focused on sustainability is to encompass measurement of a broad set of capital assets – often referred to as produced, natural, human and social capital - and the related flows of incomes and benefits. While this seems a very large task, in fact a wide range of statistical guidance is available.

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

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

Comment [C18]: Already indicated with the acronym (and the correct reference in brackets - not UN 2008).

7 For example, the preservation of a natural asset providing environmental services deemed crucial is not accounted for as essential for ensuring sustainability even where those services disappear with the decline of the functioning of the same natural asset. This may contrast with scientific perspective on the matter. In addition, there may be cases where the need of preserving certain assets, e.g. in the cultural sphere, may be very much a matter of political confrontation rather than scientific knowledge; this suggests in a sense that using the concept of weak sustainability - as opposed to strong sustainability - for these assets even more may be an issue.
With respect to natural capital, the System of Environmental-Economic Accounting 2012 (SEEA) is the overall international standard statistical framework for the measurement of the environment and its relationship to the economy. It has four key elements: accounting for environmental flows, accounting for natural resources, accounting for environmental-economic transactions related to the environment and accounting for ecosystem assets and services. The first three elements are described in the System of Environmental-Economic Accounting SEEA—2012 Central Framework - which is an international statistical standard - and the fourth element is described in the System of Environmental-Economic Accounting SEEA—2012 Experimental Ecosystem Accounting.

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

The human capital component is captured in the SF-MST in two main ways. First, using information on the composition of tourism employment building on existing statistical work in this area by UNWTO and ILO. Second, the SF-MST will demonstrate discuss the potential for the measurement of human capital in tourism following accounting based approaches that have been developed over the past 30 years (e.g. Jorgenson and Fraumeni, 1989) and being further advanced in a number countries and the OECD. Nonetheless, since statistical information related to human capital is quite varied worldwide, with national statistical systems experiencing each its own stage of development in this area, and also in the light of potential issues characterizing income-based approaches, it is recognized, as concerns the human capital, that the accounting approach in the SF-MST is to be complemented with other approaches, such as e.g. those focused on education performance.

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

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

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

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

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

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

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

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

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

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

**National**

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

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

**Municipal** - referring to the level of administrative units corresponding to localised but relatively small populations.

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

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

The intent in the MST is to integrate economic, environmental and social data. For many of these data, the scales listed above would be relevant, in the sense that data should be able to be attributed to a location and hence also aggregable and meaningful at other, larger scales. However, for some types of data, for example relating to transportation activity or environmental condition, simple aggregation may not be appropriate and the relevant spatial boundaries for measurement and analysis will require further discussion.
A detailed description of the way in which spatial aspects are considered within the framework is contained in Chapter 6.

1.3.5 Base accounts and tables

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

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

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

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

In addition, there will be other complementary information required to support understanding sustainable tourism that will not fit directly into these accounting structures. Examples include information on employment, demographics of tourism establishments, visitor movements and indicators in the social dimension. To ensure consistency and comparability of data, these other data are grouped and classified using the same classifications as used in the SUT and asset accounts. This will support the integration of data and enhanced data analysis. The relevant classifications are documented in chapters 3, 4 and 5.

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

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

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Base accounts</th>
<th>Base tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Tourism activity SUT</td>
<td>Visitor movements</td>
</tr>
<tr>
<td></td>
<td>Tourism infrastructure asset account</td>
<td>Tourism expenditure</td>
</tr>
<tr>
<td></td>
<td>Employment in tourism</td>
<td>Demographics of tourism establishments</td>
</tr>
</tbody>
</table>
Environmental
- Water SUT
- Energy SUT
- GHG emissions SUT
- Solid waste SUT
- Land use asset account
- Land cover asset account
- Ecosystem condition account
- Ecosystem services SUT

Social
- Social and community indicators (e.g., crime, health, congestion, perceptions of tourism)
- Visitor perception indicators
- Tourism governance indicators

The base accounts described in the SF-MST are based on the existing accounting standards the TSA:RMF 2008 and the SEEA CF and adopting relevant accounting principles from the SNA as appropriate. The relevant accounting principles concerning, for example, the definition of economic territory, time of recording, and monetary valuation, are not summarized here. Compilers are encouraged to read the relevant sections of the accounting standards just listed.

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

The base tables described in the SF-MST provide important information that can be incorporated within the broader accounting framing of sustainability that underlies the SF-MST approach. In the economic dimension, the tables are aligned with, or adaptations of, tables developed in the IRTS 2008 and TSA:RMF 2008.

In the social dimension, these are indicative tables designed based on the developing information to support the measurement of the social dimension in the context of social capital. Particular note has been taken of the types of information on the social dimension that has been described in the measurement of sustainable tourism, including in the area of governance.

1.3.6 Combined presentations

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

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

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

Comment [CC27]: Or, perhaps, “about the ways in which their data can be organized for dissemination”, or something like that. Correct?
Table 2: Examples of combined presentations for sustainable tourism (illustrative examples only)

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

<table>
<thead>
<tr>
<th>ECONOMIC DIMENSION OF TOURISM INDUSTRIES</th>
<th>Tourism industries</th>
<th>Total all industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage serving</td>
</tr>
<tr>
<td></td>
<td>Tourism Total</td>
<td>Tourism Total</td>
</tr>
<tr>
<td>1. Income and costs</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Gross</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Operating profit</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Compensation of employees (labour costs)</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Intermediaries’ consumption</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Total</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Wages</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Energy</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Waste treatment</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>Expenditure on tourism characteristic products</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>2. Business demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of establishments</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally owned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign owned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location - by tourism region</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment in tourism</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>Total (jobs or employees)</td>
<td>hours worked</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age / experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education/skill set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Investment and infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross fixed capital formation</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Capital stock</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>Available capacity (accommodation)</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>Net financial position</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2b: Combined presentation – Environmental dimension for tourism industries

<table>
<thead>
<tr>
<th>ENVIRONMENTAL DIMENSION OF TOURISM INDUSTRIES</th>
<th>Tourism industries</th>
<th>Total all industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accommodation for</td>
<td>Total tourism</td>
</tr>
<tr>
<td></td>
<td>visitors</td>
<td>industries</td>
</tr>
<tr>
<td></td>
<td>Food &amp; beverage</td>
<td>Tourism</td>
</tr>
<tr>
<td></td>
<td>serving</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Passenger</td>
<td>Tourism</td>
</tr>
<tr>
<td></td>
<td>transport</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Travel agencies</td>
<td>Tourism</td>
</tr>
<tr>
<td></td>
<td>&amp; reservation</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>services</td>
<td>Tourism</td>
</tr>
<tr>
<td></td>
<td>Other tourism</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>industries</td>
<td>Tourism</td>
</tr>
</tbody>
</table>

**UNIT**

1. Environmental flows

<table>
<thead>
<tr>
<th></th>
<th>m^3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own-account water abstract</td>
<td>m^3</td>
</tr>
<tr>
<td>Irrigation water generated</td>
<td>m^3</td>
</tr>
<tr>
<td>Net energy use</td>
<td>g</td>
</tr>
<tr>
<td>Use of energy from non-renew</td>
<td>g</td>
</tr>
<tr>
<td>GHG emissions</td>
<td>tonnes</td>
</tr>
<tr>
<td>Solid waste generation</td>
<td>tonnes</td>
</tr>
</tbody>
</table>

2. Environmental assets

<table>
<thead>
<tr>
<th>Land</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Land use</td>
<td>ha</td>
</tr>
<tr>
<td>Land value</td>
<td>$</td>
</tr>
</tbody>
</table>

Table 5c: Combined presentation – Demand perspective

<table>
<thead>
<tr>
<th>DEMAND PERSPECTIVE</th>
<th>Total</th>
<th>Same-day visitors</th>
<th>Overnight visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total by country of residence</td>
</tr>
<tr>
<td></td>
<td>UNIT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Number of visitors**

<table>
<thead>
<tr>
<th></th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>by age</td>
<td></td>
</tr>
</tbody>
</table>

**Inbound arrivals**

<table>
<thead>
<tr>
<th></th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>by mode of transport</td>
<td></td>
</tr>
</tbody>
</table>

**Number of overnights**

<table>
<thead>
<tr>
<th></th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

**Tourism expenditure**

<table>
<thead>
<tr>
<th></th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Passenger transport</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td></td>
</tr>
<tr>
<td>Business/professional</td>
<td></td>
</tr>
</tbody>
</table>

**Visitor satisfaction**

<table>
<thead>
<tr>
<th></th>
<th>index</th>
</tr>
</thead>
</table>

**Attendance at events, sites and cultural assets**

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

### 1.4 Implementation and application of the SF-MST

#### 1.4.1 Implementation of the SF-MST

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

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

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

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

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

1.4.2 The role of national statistical offices in implementation

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

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

1. As organisations that work with large and various datasets, NSO are well placed to contribute their expertise in the collection and organisation of data from a range of different sources.

2. A core part of the role of NSO is the establishment and maintenance of relevant definitions of concepts and classifications aligned with international standards. The SF-MST incorporates a range of such concepts and classifications and the ongoing involvement of NSO in this area of work will be valuable.

3. Beyond the organisation of information, NSO have capabilities to integrate data from various sources to build coherent pictures of relevant concepts. Most commonly, NSO focus on providing coherent pictures in relation to socio-economic information and this capability is increasingly extending to include environmental information. Given the multi-disciplinary nature of SF-MST, data integration is an important requirement.

4. NSO work within broad national and international data quality frameworks that enable the assessment and accreditation of various information sources and the associated methodologies in a consistent and complete manner.

5. NSO have a national coverage. The focus of the SF-MST is on the provision of information that supports integrated measurement at both national and sub-national scales. Creating national economic, social and environmental pictures is a
relatively unique role undertaken by NSO and incorporates an implicit understanding of scaling data. SF-MST implementation would benefit substantially from consideration of how standard statistical techniques used for official statistics may be applied at different scales, in particular in the context of geo-spatial statistics.

6. NSO can present an authoritative voice by virtue of the application of standard measurement approaches, data quality frameworks and their relatively unique role within government, including in many countries, leadership of the National Statistical System. Further, their legal mandate may often facilitate access to data sources that are unavailable to others.

7. A large number of NSO are involved in the compilation of national accounts and related outputs including TSA and SEEA accounts. The application of national accounting expertise will be important in the implementation of the SF-MST particularly in the context of efforts to understand the most appropriate ways in which physical and monetary measures on the various aspects of sustainable tourism can be integrated with information from the standard national accounts.

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

1.4.3 Application of the SF-MST

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

i. indicators of the state and trends in sustainable tourism

ii. models that use statistically based data to estimate likely outcomes in the future or in alternative scenarios, e.g. under alternative taxation arrangements.

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

Information to support economic and social modeling is the second important output from statistical frameworks. Discussion of many policy questions cannot be supported simply through the use of indicators. Instead, data relating to a number of different areas must be brought together to underpin analysis. Examples include analyzing the relationship between tourism demand and employment, assessing visitor numbers and water use, and comparing
the location of tourism establishments and changes in condition of local waterways. In each of these cases, ensuring that the data from the different areas are compatibly defined helps ensures the relevance and accuracy of the analysis.

1.4.4 Indicators: Sustainable tourism indicators for the SDGs

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

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

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

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

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

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

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

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

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

The development of indicator sets for the measurement of sustainable tourism has been an active area of work for many years. Short summaries of a range of initiatives are presented below (Box 2) with a focus on indicator sets being developed by international agencies and within the private sector.
Country and regional level work on measuring sustainable tourism, sometimes led by academic researchers, has also been in evidence over the past 25 years. Documentation on some of these country experiences, as well as the work currently being carried out by in the pilot studies in the specific framework of MST, can be found on the MST website.

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

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

Box 2: Examples of Sustainable Tourism indicator sets

<table>
<thead>
<tr>
<th>UNWTO’s International Network of Sustainable Tourism Observatories (INSTO) brings together tourism observatories from around the world. Tourism observatories have been established in many destinations with the aim to better understand, monitor and advise on policy towards more sustainable development of tourism. The design, implementation and analysis of indicators are a fundamental part of their work. INSTO proposes an institutional framework, nine issue areas considered to be of highest relevant to observatories, and an economic data sheet for reporting. It encourages the systematic application of monitoring, evaluation and information management techniques, as key tools for the formulation and implementation of sustainable tourism policies, strategies, plans and management processes.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eurostat</strong> released a comprehensive review of the measurement of sustainable tourism in 2006. The review proposed 20 indicators, primarily from economic and environmental domains, and a further set of possible social/cultural indicators, all set within the Driving force-Pressure-State-Impact-Response (DPSIR) indicator framework. The indicator set was intended to be applied at regional/sub-national level.</td>
</tr>
<tr>
<td><strong>OECD</strong> work in measurement was reflected in 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 work.</td>
</tr>
</tbody>
</table>

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8 [http://statistics.unwto.org/studies_experiences](http://statistics.unwto.org/studies_experiences)


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

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

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

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

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

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

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

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13 Network of European Regions for a Sustainable and Competitive Tourism (NECSTouR).
14 The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate the shift towards SCP. It aims at developing, replicating and scaling up SCP and resource efficiency initiatives, at national and regional levels, decoupling environmental degradation from economic growth, and thus increasing the net contribution of economic activities to poverty eradication and social development. It has six initial programmes: Consumer Information; Sustainable Buildings and Construction; Sustainable Food Systems; Sustainable Lifestyles and Education; Sustainable Public Procurement; and Sustainable Tourism.
15 20 general pilot indicators have been identified for the four 10YFP objectives, including 7 on Objective 4 (Contribute to resource efficiency and decoupling economic growth from environmental degradation and resource use, while creating jobs and economic opportunities and contributing to poverty eradication and shared prosperity); energy efficiency, mitigation of GHG and other atmosphere, soil and water pollutants, material use reduction, waste reduction, water-use efficiency, sustainable land-use, and decent employment.
18 [https://www.wttc.org/Sustainability-Reporting#undefined](https://www.wttc.org/Sustainability-Reporting#undefined)
There are many examples of the use of environmental flow information in connection with standard input-output tables and an introduction to the principles and summary of the relevant literature is provided in SEEA Applications and Extensions (ref). Examples already exist in the area of tourism, for example the work for Wales on the connections of tourism and GHG emissions and tourism and employment (refs needed). Advancing the measurement of integrated TSA and SEEA accounts will further support these efforts in understanding the broader connections between tourism activity and the environment and ensuring that environmental data can be taken into account in economic modeling of tourism.

1.5 Structure of the SF-MST document
<<To be drafted following further discussion on the coverage and structure of the draft SF-MST.>>
2 Accounting for the economic dimension of sustainable tourism

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

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

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

2.1 Introduction
<< To be drafted>>

2.2 Key aspects of tourism statistics and the TSA framework

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

Topics to be covered include:

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

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

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

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

Key aspects of the TSA are:

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

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

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

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

Box 3 presents the top level categories for tourism products and tourism industries. There is clearly a close link between the descriptions since an activity is defined in relation to a primary product. However, in practice, a single tourism establishment may produce a range of products even if it is classified to its main or primary product. For example, many hotels
will be categorized to the activity “Accommodation for visitors” but will produce a range of products including accommodation services and food and beverage serving services.

Box 3. Categories of tourism characteristic consumption products and activities (tourism industries)

<table>
<thead>
<tr>
<th>Consumption products</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accommodation services for visitors</td>
<td>1. Accommodation for visitors</td>
</tr>
<tr>
<td>2. Food and beverage serving services</td>
<td>2. Food and beverage serving activities</td>
</tr>
<tr>
<td>3. Railway passenger transport services</td>
<td>3. Railway passenger transport</td>
</tr>
<tr>
<td>4. Road passenger transport services</td>
<td>4. Road passenger transport</td>
</tr>
<tr>
<td>5. Water passenger transport services</td>
<td>5. Water passenger transport</td>
</tr>
<tr>
<td>6. Air passenger transport services</td>
<td>6. Air passenger transport</td>
</tr>
<tr>
<td>7. Transport equipment rental services</td>
<td>7. Transport equipment rental</td>
</tr>
<tr>
<td>8. Travel agencies and other reservation services</td>
<td>8. Travel agencies and other reservation services activities</td>
</tr>
<tr>
<td>9. Cultural services</td>
<td>9. Cultural activities</td>
</tr>
<tr>
<td>10. Sports and recreational services</td>
<td>10. Sports and recreational activities</td>
</tr>
<tr>
<td>12. Country-specific tourism characteristic services</td>
<td>12. Other country-specific tourism characteristic activities</td>
</tr>
</tbody>
</table>


2.3 Measuring economic activity of tourism

2.3.1 Accounting for tourism activity at aggregate level

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

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

19 Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. Target 14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.
Extensions in the form of additional detail within TSA core tables, might be considered to integrate information on specific market segments such as relating to human resources\textsuperscript{20}, cruise ships, eco-tourism, meetings industries (sometimes referred to as MICE\textsuperscript{21}), etc. Data can also be organized to highlight macro-economic indicators of tourism activity such as tourism expenditure per visitor and foreign exchange earnings. Each of these different views will inform on the past trends and current structure in an integrated way in which all of the data are confronted.

\subsection*{2.3.2 Accounting for characteristics of tourism industries}

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

By using basic information provided by business registers, for those establishments classified to industries corresponding to tourism characteristic activities it should be possible to assess the structure of tourism by size of establishment (e.g. in terms of turnover or employment)\textsuperscript{22}, by ownership (resident or non-resident), by legal entity (corporation, household business), and by other characteristics, depending on the range of information held. By combining this data with information on the value added, employment, tourism share and other data from TSA core tables, a rich picture of tourism activity can then be developed which may be significant in a sustainability perspective. It is worth noting that such a result can be obtained from a standard statistical infrastructure that brings coherence of data across all economic statistics.

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

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

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

\textsuperscript{20} This has been developed in Canada where TSA Table 7 has been considerably expanded to include, for example, tourism occupations. See \url{http://cthrc.ca/en/labour_market_information/human_resource_module}

\textsuperscript{21} Meetings, incentives, conventions, exhibitions.

\textsuperscript{22} For example, the UNWTO \textit{Compendium of Tourism Statistics} compiles a selection of such information from countries worldwide; see: \url{http://statistics.unwto.org/content/compendium-tourism-statistics}
2.3.3  Accounting for tourism infrastructure and investment

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

2.3.4  Assessing seasonality

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

2.3.5  Measuring the sharing economy

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

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

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

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

In broad terms, the recording of environmental transactions and the identification of environmental activities is designed to provide information that supports tracking the
response of business and government to environmental challenges. By developing these data for tourism industries, indicators could be developed that show the response of tourism industries to environmental challenges both in absolute terms and relative to other sectors.

2.4 Measuring the employment aspects of tourism

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

Topics to be incorporated:

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

2.5 Accounting for the economic dimension at sub-national level

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

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

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

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

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

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

3.1 Introduction
<<To be drafted>>

3.2 Key aspects of the SEEA framework

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

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

- **Accounting for environmental flows** in physical terms; into, within and from the economy. This includes accounting for flows of water, energy, air emissions, solid waste and emissions to water; and can be extended to account for individual elements and substances such as carbon and nitrogen.

- **Accounting for natural resources** in terms of stocks and changes in stocks (e.g. discoveries of resources, depletion). This includes accounting for stocks of mineral and energy resources, timber, fish, water and soil.

- **Accounting for environmental transactions** that are included in the SNA but not specifically identified as “environmental”. This includes accounting for environmental protection and resource management expenditure, environmental taxes and subsidies and the supply and use of environmental goods and services.

- **Accounting for land and ecosystems.** In this type of accounting the focus is on understanding the changing composition of the area of a country in terms of land use and land cover and the quality of the land in terms of the condition of its ecosystems. Accounting for ecosystem also involves the measurement of ecosystem services and evaluating the capacity of ecosystem to continue to generate market and non-market ecosystem services.

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

### 3.3 Accounts for environmental flows for tourism industries

#### 3.3.1 Introduction

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

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

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

The accounts described here are presented in terms of compilation for annual frequencies and at national level. While this is a suitable basis for description of the accounts, for
sustainable tourism both sub-national and sub-annual compilation of accounts is likely to be relevant. In general, the same conceptual considerations will apply, and there may be additional data and compilation issues to take into account.

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

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

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

3.3.2 Accounts for water flows for tourism industries

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

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

Consistent with the advice in the SEEA Central Framework, it would be preferable for the tables to be compiled for individual catchments since the pressures on water supply will vary by location. It is noted that the nature of water supply will also vary by location with different combinations of surface water, groundwater and desalinated water being used. Although the table below does not distinguish between these different sources of water, additional rows can be incorporated to record this detail.
The breakdown of economic activities identified in the tourism industries water flow account distinguishes the main tourism industries and the main industries associated with water supply and use. Recognizing that in any given industry not all water flows will be attributable to tourism, the distinction between tourism and non-tourism flows should be made following the methodological advice discussed below.

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

For the purposes of describing the application to tourism, the full set of entries has been reduced to provide a focus on those entries expected to be of most relevance to the analysis of water flows for tourism industries. Ideally, the accounting for these flows would be undertaken as part of an economy wide accounting for water and the structure described supports this approach.
### Table 5.1: Tourism industries water flow account (cubic metres)

#### Physical supply table for water

<table>
<thead>
<tr>
<th>Physical supply table for water</th>
<th>Abstraction of water; Production of water; Generation of return flows</th>
<th>Flows from the Rest of the World</th>
<th>Flows from the Environment</th>
<th>Total supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tourism Industries</td>
<td>Water collection, treatment, and supply</td>
<td>Sewerage</td>
<td>Other industries</td>
</tr>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage services</td>
<td>Passenger transport</td>
<td>Culture, sports &amp; recreation</td>
</tr>
<tr>
<td>1. Sources of abstracted water</td>
<td>Total supply abstracted water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Water                       Distribution of abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Own use of abstracted water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Wastewater and re-used water</td>
<td>Wastewater to treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Own treatment of wastewater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Re-used water produced (for distribution)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Wastewater and re-used water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Return flows of water</td>
<td>Total Return flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL SUPPLY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Physical use table for water

<table>
<thead>
<tr>
<th>Physical use table for water</th>
<th>Abstraction of water; Intermediate consumption; Return flows</th>
<th>Accumulation</th>
<th>Flows to the Rest of the World</th>
<th>Flows to the Environment</th>
<th>Total use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tourism Industries</td>
<td>Water collection, treatment, and supply</td>
<td>Sewerage</td>
<td>Other industries</td>
<td>Households</td>
</tr>
<tr>
<td>1. Sources of abstracted water</td>
<td>Total supply abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Water                     Distribution of abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Own use of abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Wastewater and re-used water</td>
<td>Total Wastewater and re-used water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Return flows of water</td>
<td>Total Return flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL USE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance
3.3.3 Accounts for energy flows for tourism industries

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

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

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

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

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

A useful extension is to distinguish the use of energy products between energy from renewable and non-renewable sources.
Table 5.2: Tourism industries energy flow account (joules)

<table>
<thead>
<tr>
<th>Physical supply table for energy</th>
<th>Production energy products &amp; Generation of residuals</th>
<th>Accumulation</th>
<th>Flows from the rest of the world</th>
<th>Flows from the environment</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

The third core account is a physical supply and use table for flows of GHG emissions. It contains information on the generation of GHG emissions by tourism industries by type of GHG emissions and is adapted from the air emissions account in the SEEA Central Framework (Table 3.7). Key cells for the compilation of this account are highlighted in red and focus on release of carbon dioxide emissions by tourism industries.

In general, the generation of GHG emissions will be “used”/received by the atmosphere directly. Of particular interest will be the GHG emissions associated with transport. In this regard the method for attributing emissions to individual countries, particularly in the case of air and water transport is of direct interest. This is discussed in more detail below.

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

Table 5.3: Tourism industries GHG emissions account (tonnes)

<table>
<thead>
<tr>
<th>Supply table for GHG emissions</th>
<th>Other industries</th>
<th>Accumulation from the environment</th>
<th>Total supply of emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tourism industries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of substance</td>
<td>Generation of emissions</td>
<td>Accumulation from the environment</td>
<td>Total supply of emissions</td>
</tr>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food &amp; beverage</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Passenger transport</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other tourism</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance

3.3.5 Accounts for solid waste for tourism industries

The fourth core account is a physical supply and use table for flows of solid waste. It contains information on the generation, collection and disposal of solid waste by type of waste. It is likely that, in practice, only a few cells in the table will be of significance and these should form the focus of initial development. These cells are highlighted in red.

In both the supply table and the use table, the rows are grouped into two sections, corresponding to the fact that while the materials at issue appear in the economy as “residuals”, they may also be purchased. These sections follow the structure of the physical supply and use table for solid waste presented in Table 3.9 Solid waste account in the SEEA Central Framework. The items selected for the categories of solid waste are those deemed relevant for tourism industries and for the activities of other industries that meet visitors’ demand.

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

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

Table 5.4: Tourism industries solid waste account (tonnes)

### Physical supply table for solid waste

<table>
<thead>
<tr>
<th></th>
<th>Generation of solid waste</th>
<th>Flows from the rest of the world</th>
<th>Flows from the Environment</th>
<th>Total supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tourism Industries</td>
<td>Other Industries</td>
<td>Households</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage serving</td>
<td>Passenger transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism ind.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total tourism Ind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

A. Generation of solid waste residuals

- Metallic waste and other recyclables
- Decorated equipment and vehicles
- Mixed residential and commercial wastes
- Other wastes
- Total solid waste

B. Generation of solid waste products

- Total solid waste

### Physical use table for solid waste

<table>
<thead>
<tr>
<th></th>
<th>Intermediate consumption</th>
<th>Collection of residuals</th>
<th>Final consumption</th>
<th>Flows to the rest of the world</th>
<th>Flows to the Environment</th>
<th>Total use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Waste collection, treatment, and disposal industry</td>
<td>Tourism Industries</td>
<td>Other Industries</td>
<td>Households</td>
<td>Exports of solid waste</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Landfill</td>
<td>Incineration and reuse</td>
<td>Other Treatment</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

C. Collection and disposal of solid waste residuals

- Total solid waste

D. Use of solid waste products

- Total solid waste

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

### 3.3.6 Estimating the tourism share of environmental flows

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

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

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

- **Output ratios** – calculated by dividing an industry’s output sold to visitors by its total output.
- **Value added ratios** – calculated by dividing an industry’s value added attributable to sales of output to visitors by its total value added.
- **Intermediate consumption ratios** – calculated by dividing an industry’s intermediate consumption for the production of output sold to visitors by its total intermediate consumption.

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

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

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

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

The more general assumption in estimating tourism shares of environmental flows by means of TSA-derived ratios is that the production function (mix of outputs and inputs) for an industry is the same for visitors and non-visitors. For example, the amount of water used to make a restaurant meal is invariant between consumers. In concept, this assumption is likely reasonable provided that information is available at a relatively fine level of industry detail.

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

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

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

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

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

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

A conceptual issue lies in appropriately defining the spatial boundaries for consumption. This is especially so since environmental boundaries are open, and visitors travel between countries. The aim here is thus to describe possible methods of presenting a consumption perspective in relation to the environmental flows under investigation. It is quite likely that different approaches are relevant for different flows. Ultimately there should be an alignment of methods here with the delineation of spatial boundaries for destinations but at this stage it should be possible to develop relevant criteria for presenting the consumption perspective without knowing precisely how destinations might be defined.
This discussion provides a brief introduction to the topic and further investigation and discussion of this topic should be undertaken to support compilation activities. It is recommended that initial estimates be undertaken using the production approach since this is generally well aligned with data available through the TSA and SEEA based data sets.

3.3.8 Allocating environmental flows associated with transport activity

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

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

3.4 General features of measuring environmental assets

3.4.1 Introduction

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

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

(para 2.17).

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

Given the range of environmental assets, it is not surprising that many perspectives and associated measurement approaches are adopted. Indeed, in the biophysical sciences, it is clear that there are many specialties including hydrology, geology, climatology, and ecology, and specialisations concerning specific types of ecosystems (e.g. marine areas, forests, deserts) and species (insects, mammals, conifers). Given this variety and the associated breadth of methods and areas of focus, it is perhaps not surprising that there has been, to date, relatively little integration of environmental data into standard national statistical operations.

Nonetheless, there is a very substantial quantity of data and expertise about environmental assets. The challenge from an ongoing measurement perspective is to find ways of...
3.4.2 Approaches to accounting for environmental assets

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

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

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

Environmental asset accounts

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

The second step involves measuring changes in the stock of the asset, both additions and reductions, over an accounting period. Ideally, measurement would be undertaken each year but, for many environmental assets, monitoring over 3-5 year periods might be sufficient to support policy discussion.

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

Table 5.5: Basic form of an asset account

<table>
<thead>
<tr>
<th>Opening stock of environmental assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additions to stock</td>
</tr>
<tr>
<td>Growth in stock</td>
</tr>
<tr>
<td>Discoveries of new stock</td>
</tr>
<tr>
<td>Upward reappraisals</td>
</tr>
<tr>
<td>Reclassifications</td>
</tr>
<tr>
<td><strong>Total additions of stock</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reductions of stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extractions</td>
</tr>
<tr>
<td>Normal loss of stock</td>
</tr>
<tr>
<td>Catastrophic losses</td>
</tr>
<tr>
<td>Downward reappraisals</td>
</tr>
<tr>
<td>Reclassifications</td>
</tr>
<tr>
<td><strong>Total reductions in stock</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revaluation of the stock*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closing stock of environmental assets</td>
</tr>
</tbody>
</table>

* Only applicable for asset accounts in monetary terms.

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

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

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

3.4.3 Accounting for water resources

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

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

Table 5.6: Water resources asset account (cubic metres)

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

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

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

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

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

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

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

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

### 3.4.4 Accounting for wildlife and key species

Another individual asset for which asset accounts might be developed are accounts for selected species of wild animals, for example, animal species that provide the focus for safari and related activities in national parks and species that are a focus for recreational hunting and fishing.
Recording changes in the stock of such key species over time would support an understanding of the environmental assets supporting tourism activities. Related areas of measurement such as measurement of biodiversity and protected areas are considered under the topic of land and ecosystem accounting (see following sections).

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

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

<table>
<thead>
<tr>
<th>Accounting entries</th>
<th>Species</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Line</td>
<td>African elephant</td>
<td>Cape buffalo</td>
<td>Leopard</td>
<td>Black rhino</td>
</tr>
<tr>
<td></td>
<td>Total in Protected areas</td>
<td>Total in Protected areas</td>
<td>Total in Protected areas</td>
<td>Total in Protected areas</td>
<td>Total in Protected areas</td>
</tr>
<tr>
<td>Opening stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additions to stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural births</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeding programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other additions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reductions in stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural losses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other reductions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net change in stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closing stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information of this type for key species may well be available to managers of national parks and protected areas or from active research programs. The aim of accounting is to provide a platform for this information to be placed in context alongside information on visitors and tourism activity and hence provide a more complete picture for decision makers. Indeed, the relevance of this type of information has been highlighted in a recent UNWTO briefing paper Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa (UNWTO, 2015).

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

### 3.4.5 Land accounts for tourism

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

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

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

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

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

For tourism purposes, the land account structure that is likely to be of most value is an account that shows an integration of land use and land cover classes. This would involve starting from a land cover account with broad classes, as suggested above (forest, grasslands, etc.) and within the class of built-up areas breaking this down further into various tourism industry use of land and non-tourism uses. Further, within the non-urban land cover classes it would be logical to determine the area of land that was most relevant for tourism activities – e.g. beaches. A map of these various classes, produced on a regular basis, would provide substantive input to planning and other tourism related discussions.

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

Table 5.8: Tourism land account (hectares)

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

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

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

3.4.6 Accounting for tourism related ecosystem assets

Introduction

The final type of environmental asset to consider is ecosystem assets. While ecosystems are not new concepts, the logic of fully incorporating ecosystems into an accounting structure is quite recent. In a statistical context, this was first presented in the SEEA EEA. The approach involves identifying (delineating) separate spatial areas within a country each representing an ecosystem asset. Most commonly, these separate areas are determined on the basis of different vegetation types but other factors can be incorporated. In effect, each spatial area – referred to as an ecosystem asset – is a statistical representation of an ecosystem as understood by an ecologist.
Ecosystem extent

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

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

Ecosystem condition

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

Ecosystem services

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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4 Accounting for the social and cultural dimension of sustainable tourism

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

4.1 Introduction

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

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

- The different conceptual approaches to the social dimension including concepts of social capital, social inclusion and exclusion, social equity and welfare, social cohesion and well-being.

- The different perspectives on the social dimension that arise in the case of tourism activity namely the visitor, the host community and tourism businesses.

- The different aspects of the social dimension such as health, education, decent work, etc.

- The different population groups including children and youth, the elderly, people with disabilities, etc.

The blending of these four parts in the chapter is aimed at placing relevant data in context and providing a pathway for compilers to make decisions about which data requires collection and for users to understand which data are of most relevance.
The framing provided in this chapter also goes some way towards suggesting possible relationships between different social data sets but this is limited to answering questions of the appropriate statistical description of the social dimension to support discussion and decision making. There is no intention or ambition to articulate causal relationships between social variables.

4.2 Concepts in the measurement of the social dimension

A range of different concepts have been developed in relation to the social dimension. Given the accounting based nature of the SF-MST, of particular interest is the concept of social capital, noting that, as commonly recognized - e.g. in discussions within OECD initiatives - this form of capital resides very much in relationships between individuals rather than in something they own, thus having a peculiar meaning as compared to the more conventional concept of capital. But other concepts such as social inclusion and exclusion, social equity and welfare, social cohesion and well-being are also relevant.

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

The extent to which engagement in tourism (both direct and indirect) influences social development.

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

In general, it is intended to make the distinction between the stock of social capital that underpins social development (as reflected in the extent and quality of networks, shared values, institutions, etc.) and the measures that reflect the performance of the social system including, for example measures of poverty, health, education, etc.

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

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

To appropriately capture the various aspects of the social dimension it is important to consider multiple perspectives. Three main perspectives are considered exhaustive for sustainable tourism – the visitor, the host community and tourism businesses\(^\text{25}\). Each represents a different way in which people engage with tourism, either directly or indirectly, and hence each will have different perspectives on tourism’s influence on social development.

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

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

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

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

4.4 Aspects of the social dimension

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

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

Potential aspects of the social dimension for sustainable tourism

- Income and wealth distribution; Poverty
- Health; Nutrition
- Education; Skills, Training
- Housing
- Personal security, safety, crime, peace
- Social capital
  - Social connections and networks
  - Community and individual levels of trust / tolerance
  - Civic engagement and participation
  - Institutions and governance
  - Corruption
- Subjective well-being of host communities; of visitors
- Visitor perceptions of destinations
- Human rights – discrimination, empowerment
- Decent work
  - Employment opportunities
  - Decent hours
  - Adequate earnings and productive work/life balance
  - Child and forced labour
  - Work security
  - Equal opportunity and remuneration
  - Safe working environments
  - Social security
  - Social dialogue and representation
• Accessibility and use of infrastructure
  o Roads, transport systems
  o Congestion and noise
  o Basic services (water, energy)
  o Perception of public facilities and services
  o Environmental space (green space, national parks, beaches)

• Culture and heritage
  o Participation in production (cultural products, employment, income)
  o Festivals and events
  o Protection of heritage incl language, arts, etc.

4.5 Population groups

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

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

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

Proposed population groups

• Women; gender
• Children and Youth
• Elderly
• Persons with a disability
• Indigenous groups
• Ethnic and religious minorities
• Migrant workers
• Families
• Lesbian, Gay, Bisexual, Transgender, Queer, Questioning and Intersex (LBGTQI)

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

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

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

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

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

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

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

5.1   Introduction

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

As described in Framing Sustainable Tourism26 this small spatial area perspective is very distinct from the broader national perspective that has been the focus of official tourism statistics. The significant statistical developments of the International Recommendations on Tourism Statistics (IRTS) and the Tourism Satellite Accounts: Recommended Methodological Framework (TSA:RMF) in 2008 provide an excellent platform for measuring tourism activity in a comparable and credible way. However, as both documents have a national and global focus, they do not provide direct guidance for sub-national measurement although they continue to provide an underlying conceptual reference for measurement at sub-national levels.

26 Discussion paper drafted or the Meeting of the Working Group of Experts on MST, Madrid, 20-21 October, 2016
The purpose of this chapter is to describe how a bridge can be built between these two perspectives – the smaller scale sustainable tourism perspective and the larger scale official tourism statistics perspective. It is important to recognize however that building a bridge is not simply a case of examining the extent to which currently available national level data can be "downscaled" to provide information at a destination level. Or whether the type of data desired at a destination level can be collected using statistical processes. Rather, the ambition is to describe how both detailed spatial data and national level data may be best integrated to provide a “single best picture” of tourism activity that is of most use to decision makers and other stakeholders at different scales.

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

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

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

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

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

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

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

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

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

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

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

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

**Municipal** - referring to the level of administrative units corresponding to localised but relatively small populations.

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

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

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

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

5.3 The statistical challenge in defining spatial areas

The need for coherent spatial boundaries

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

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

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

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

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

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

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

Unfortunately, this area-specific approach limits the potential to compare data between similar types of spatial area, since they may be delineated in overlapping ways. More significantly it limits the potential to compare data across spatial scales. Thus, unless there is

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27 The focus in this discussion is on methodological issues surrounding spatial data. In addition, it should be recognized that there are likely to be significant institutional challenges to be faced in developing spatial data sets including establishing co-ordination and management across levels of government and ensuring appropriate data sharing and use arrangements are in place.
an agreed and nested structure to spatial areas it is not possible for national level analysis to easily integrate information available at smaller municipal and local type scales if these have been defined in alternative, non-nested ways.

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

**The application of statistical and accounting principles**

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

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

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

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

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

5.4 The feasibility and relevance of compiling sub-national data

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

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

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

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

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

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

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

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

Box 5.1: Destination management definition

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

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

Box 5.2: INRouTe sub-national classes

**REGIONAL**
- Region
- Multi-regional (supre-national)
- Multi-regional (intra-national)
- Other administrative units
- Analytical units

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

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

Perhaps the most established approach to sub-national area classification is the European NUTS classification (Eurostat, 2015) that was originally established in 1970. It has four levels and two additional levels that allow for further disaggregation. The boundaries are established based on the three principles of population thresholds, administrative divisions and stability through limited amendments over time (http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics). The fully nested nature of the NUTS classification scheme perhaps provides a structure within which tourism destinations can be identified.

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

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

The System of National Accounts briefly discusses the idea of sub-national/regional accounting systems, a topic also picked up by Eurostat (2010). The System of Environmental-Economic Accounting 2012 (SEEA)-Central Framework (UN et al, 2014a) focuses almost exclusively on national level statistics although recognizes that environmental assets and flows will be recorded in relation to a specific location. The SEEA Experimental Ecosystem Accounting (UN et al., 2014b) explicitly takes a spatial perspective in defining ecosystem assets wherein the assets are defined in terms of the area of different ecosystem types, e.g. forests, wetlands, grasslands, etc. 28

5.6 Pathways forward in defining spatial areas for measuring sustainable tourism

Overall, there are a number of examples of statistically based classifications of sub-national spatial areas. On the whole, aside from the ecosystem accounting approach, the approaches used start from administratively defined areas and have a nested delineation of

progressively smaller areas. At the same time, complementary areas may also be defined for the purposes of being able to present statistics in reference to different spatial areas.

Finding a pathway forward will require reconciling the general motivation of statisticians to provide data based on administratively defined spatial boundaries and the reality that the spatial areas of most relevance for the analysis of sustainable tourism do may not conform to these boundaries. There is thus a balance to be found between feasibility on the one hand and relevance on the other, recognizing that comparability among spatial areas is likely a key feature of relevance given the inter-linkages both within and across spatial scales.

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

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

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

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

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

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

Given the multi-faceted nature of tourism that is encompassed by tourism statistics there are two perspectives to be considered – (i) a tourism supply perspective in which the focus is on the location and concentration of tourism industries and (ii) a visitor demand perspective in which the focus is on the places visited.
The supply perspective is perhaps the most tractable pathway to delineating smaller spatial areas. This would involve using information on the location of tourism characteristic industries and determining a boundary around particular concentrations of these industries. In many cases it is likely that such areas are relatively well known and evidenced by known concentrations of hotels and associated restaurants. In some areas, it may be a concentration of, for example, theme parks and similar attractions. For statistical purposes, it would be relevant to provide methodological guidance on how relevant concentration thresholds may be estimated at sub-national and national levels (as distinct from proposing universal standards to be applied which would not be appropriate). This would be developed as part of the SF-MST.

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

To initiate discussion the following possibilities are listed:

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

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

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

Manila Call to action

Relevant classifications
Glossary
<<To be developed>>

References and links (to be finalized)

SNA 2008: System of National Accounts


https://unstats.un.org/wiki/display/IRTSCG

Eurostat (20xx) European Implementation Manual on Tourism Satellite Accounts


SEEA

http://unstats.un.org/unsd/envaccounting/seearev/

UN et al (2014b) System of Environmental-Economic Accounting SEEA—2012 Experimental Ecosystem Accounting


Water

UNSD (2016) SEEA Technical note: Water accounting, Draft to UNCEEA

UN (2012) System of Environmental-Economic Accounting for Water. UN. Series F No. 100 (ST/ESA/SER.F/100)

http://unstats.un.org/unsd/envaccounting/irws/


Energy
UNSD (201x) International Recommendations on Energy Statistics (IRES)

GHG emissions
UNSD (2016) SEEA Technical note: Air emissions accounting, Draft for UNCEEA.

Solid waste


Country examples of integrating TSA and SEEA


MST documentation

UNWTO – MST website http://statistics.unwto.org/mst


Papers for the 1st meeting of the Working Group of Experts on Measuring Sustainable Tourism http://statistics.unwto.org/wg_meeting

1. The Global Code of Ethics for Tourism (GCET) is a comprehensive set of principles designed to guide key-players in tourism development and as a fundamental frame of reference for responsible and sustainable tourism. However, it is not be mentioned in this report.

2. Asides explaining the meaning or definition of sustainable tourism, it is also suggested to mention the importance of sustainable tourism and the long-standing work of UNWTO in advocating the sustainable tourism, for example, the history of sustainable tourism by listing out those milestone years when some relevant guidebook or policy being launched or implemented by UNWTO such as “The Global Code of Ethics for Tourism” and “Sustainable Development Goals (SDGs)”

3. At 2.3.3 Accounting for tourism infrastructure and investment, agreed that physical carrying capacity of tourism infrastructure is considered as a key aspect in assessing the sustainability of tourism activity. However, asides physical capacity, the social carrying capacity also importance to measure the tourism sustainability in social and cultural dimension, so suggest to include.
We support the work done by UNTWO in drafting Statistical Framework for Measuring Sustainable Tourism (ST-MST) that will integrate statistics on the economic, environmental and social dimensions of sustainable tourism. ST-MST also has been further discussed during Seventh Meeting of the Technical Advisory Board (TAB) & Eighteenth Meeting of the UNWTO Committee on Statistics and TSA at Madrid, Spain. It also good that ST-MST is streamlining the Tourism Statistics and TSA with SEEA. The ST-MST initiatives will facilitate countries in measuring the use of environmental flows, such as water and energy in tourism activity and the generation of environmental flows, such as GHG emissions, solid waste, wastewater and other pollutants, by tourism activity. Currently DOSM has developed two SEEA Physical Supply & Use Table (PSUT) for Water and Energy accounts compiled based on 5 main economic sectors namely agriculture, mining and quarrying, construction, manufacturing and services.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Comments/Suggestion</th>
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<tbody>
<tr>
<td>1.</td>
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<td>Formatting for Table of Content – page no. (Annex #1)</td>
</tr>
<tr>
<td>2.</td>
<td>Page 5</td>
<td>Formatting for Table of Content - alignment (Annex #2)</td>
</tr>
<tr>
<td>3.</td>
<td>Page 8</td>
<td>Definition of Sustainable Tourism (suggested to be included in Box 1 under UNWTO definition) The capability of tourism to be sustained in term of economic development/growth with the contribution of positive impact on the environment and local culture, while helping to generate income, job creation/employment, and the conservation of local ecosystems.</td>
</tr>
<tr>
<td>4.</td>
<td>Page 15</td>
<td>To present the overview of SF-MST in diagram/infographic as presented in the 27-28 Feb 2018 meeting for better understanding. Comprehensive MST’s framework that can show all the linkages of indicator is integrated should be developed.</td>
</tr>
<tr>
<td>5.</td>
<td>Page 21</td>
<td>To add Labor Input (hours worked) in Social Dimension, Table 1 for Base Accounts. Labor Input (hours worked) as compiled in the SUT (refer page 290, System of National Accounts (SNA) 2008).</td>
</tr>
<tr>
<td>6.</td>
<td>Page 23</td>
<td>Suggestion to breakdown the category of age/experience and education/skill set in Table 2a (Annex #3) e.g : Experience: 0-5 yrs; 6-10 yrs; 11-15 yrs;..... Education: certificate; diploma, degree;.....</td>
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<td>7.</td>
<td>Page 24</td>
<td>Incomplete words in Table 2b (Annex #4) To add safety and security index for Visitor Satisfaction in Table 5c</td>
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<td>8.</td>
<td>Page 21, 23, 24, 25, 42, 44, 45, 46, 52, 54, 56</td>
<td>Suggestion to attach table completed with figure in each framework discussed (insert real country example with data &amp; the interpretation of the data) Table 2a, 2b, 2c, 2d, 5.1, 5.2, 5.3, 5.4, 5.6, 5.7 and 5.8. (Annex #5) For instance manual with complete figure and interpretation: SNA 2008 and Eurostat Manual of Supply, Use and Input-Output Tables</td>
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<td>9.</td>
<td>Para 3 Page 38 &amp; 39</td>
<td>We suggest SEEA CF and SEEA-EEA accounts are illustrated in the diagram to facilitate the users’ understanding (e.g. Attachment)</td>
</tr>
<tr>
<td>10.</td>
<td>Para 3.3.2 – 3.3.8 Page 40</td>
<td>This manual will be useful for SEEA PSUT if the step-by-step of estimation and adjustment procedure/methodology of the tourism data, including the treatment on how to split data for the international transport, tourism activity and flows from jointly owned assets is described.</td>
</tr>
</tbody>
</table>
| 11. | Page 66 | • Based on UNWTO presentation, we suggested to have standard concept and definition in measuring the social indicators for MST (monetary/non monetary social indicators).  
• To add job creation in tourism activity for potential aspects in social dimension. |
Main Accounts & Tables of The SEEA Central Framework

1. Supply & Use Table (SUT)
   i. Energy
   ii. Water
   iii. Emission (Gas, air, waste, water)

2. Asset Account
   i. Mineral & energy resources
   ii. Land
   iii. Soil resources
   iv. Timber/forest resources
   v. Aquatic resources
   vi. Water

3. Functional account
   i. Environmental Protection Expenditure Account (EPEA)
   ii. Environmental Goods & Services Sector (EGSS)

4. Sequence of economic account

   - Production Account (elaborated in SUT)
   - Distribution and Use of Income Accounts
   - Capital Account
   - Financial Account

   Less depletion of natural resources
   Add back depletion of natural resources

Note: SEEA applies the accounting concepts, structures, rules and principles of the SNA to environmental information in term of Production boundary, Definition of products and Territory/residential approach.
SEEA-EEA accounts, tools and linkages

1. Ecosystem extent account
2. Ecosystem condition account
3. Ecosystem services supply and use account - physical
4. Ecosystem services supply and use account - monetary
5. Ecosystem monetary asset account

Tools:
- Classifications
- Spatial units, scaling & aggregation
- Biophysical modelling

Tools: Valuation techniques

Integrated accounts:
- Combined presentations
- Extended supply and use accounts
- Sequence of accounts
- Balance sheets

Thematic accounts:
- Land
- Water
- Carbon
- Biodiversity
Mat. Ariel Juárez Morales (Director General, Dirección General de Integración de Información Sectorial, Secretaría de Turismo, México)

In general, it is an excellent effort for the purpose of reflecting on and analysing the existing gaps between the available statistical information and the desirable information that could provide answers for the measurement of the sustainability of tourism destinations, countries and entities with respect to its three dimensions: economic, environmental and social.

However, today’s data only respond to the statistical frameworks for which they were designed, and it is necessary to work on universally applicable concepts, scales and data collection processes of the 3 dimensions that allow comparability over time and between different countries, in order to generate capabilities to develop methodologies for estimating what part corresponds to tourism, for example, measuring the use of natural resources (water, energy, CO2 emissions) only by tourists.

The measurement of the social dimension is the most sensitive part given the dynamism of the same tourist populations in terms of mobility and migration. In turn, the effects can be measured in the long term, so it is not so evident which variables can be used to show the impact of tourism activities in order to implement monitoring. Additionally, measurements related to well-being are still in their very early stages and the results are very subjective, and difficult to standardize in order to achieve replicability and comparability, maintained over time.

Another great challenge is the geographic scope of the information since statistics are regularly produced at the national level. In the best cases they can reach administrative divisions down to the municipal level, but, as is known, they do not necessarily coincide with tourism flows and concentrations; so the indicators do not necessarily reflect the tourism reality.

In conclusion, the measurement of sustainability in tourism can contribute significantly to the Sustainability Goals, however, its complexity leads to an important challenge wherein the part corresponding to tourism must be approximated from the information available and the necessary breakdowns must be incorporated gradually in the information systems of each country in order to create primary information that contributes to the estimates made.

In Mexico we have formed a cross-cutting working group with the institutions in charge of the different variables that are related to the dimensions of sustainability. Initially, the ideal parameters to reflect sustainability were also defined and in a second step, work is being done on approaches to the available information in a given territory in order to identify the scope and information requirements necessary to establish a periodic and consistent measurement of sustainability.
Statistical Framework for Measuring Sustainable Tourism

Consultation Draft

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

February 2018
Foreword

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

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

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

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

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

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

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

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

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

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

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

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

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

---

1 <<Insert text from UNSC meeting – resolution>>
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1 Introduction

1.1 What is sustainable tourism?

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

i. make optimal use of environmental resources and conserve natural resources and biodiversity

ii. respect the socio-cultural authenticity of host communities

iii. ensure viable, long-term economic operations, including stable employment and contributions to reducing poverty.

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

### Box 1: Defining sustainable tourism

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

Thus, sustainable tourism should:

1. Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural resources and biodiversity.

2. Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.

3. Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

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

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

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

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

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

i. The reality that in contributing a larger share of economic activity in most countries, tourism activity is contributing more to the use of environmental resources and its impact on the natural environment is increasingly significant

ii. The idea that tourism activity might provide a path by which lower income countries and region might improve their standard of living

iii. The recognition of the dependence of tourism activity on its environmental and social contexts and the need to keep these underpinning supports in good condition.

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

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

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

i. Inclusive and sustainable economic growth

ii. Social inclusiveness, employment and poverty reduction

iii. Resource efficiency, environmental protection and climate change

iv. Cultural values, diversity and heritage

v. Mutual understanding, peace and security

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

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

1.2.1 Measuring sustainability

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

Indicator sets: The first approach involves the selection of indicators to form sustainable development indicator sets. A most significant recent example is the set of SDG indicators but there is a myriad of sustainability indicator sets for countries, sub-national regions, destinations and sectors. While the selection of indicators is commonly participatory, and will usually encompass the three key dimensions of sustainability – economic, environment and society indicator sets do not describe the interlinkages between the dimensions. Indicators sets can raise the profile of sustainable development and support the setting of expectations and policy targets with respect to individual aspects of sustainable development, but they do not provide any particular statement with respect to overall sustainability. Consequently, the task of assessing sustainability in any given context requires the user to develop their own model of how data from each of the dimensions might be connected.

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

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

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1 http://hdr.undp.org/en/content/human-development-index-hdi
2 http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDM_2014.pdf
For SF-MST, the approach to measuring sustainability is to recognize the potential inherent in wealth accounting and systems dynamics based approaches and to provide a statistical framework that supports a systems perspective. While there are conceptual challenges, accounting-based approaches reflect a willingness to engage with the complexity inherent in the description and measurement of sustainable development. Hence, they provide a pathway through which the development of statistics can also engage with this complexity and hence best support the real challenges faced by decision makers.

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

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

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

### 1.2.2 A history of measuring tourism

UNWTO, as the specialized agency responsible for the promotion of responsible, sustainable and universally accessible tourism, is committed to ensure that tourism plays a key role in progress towards sustainable development. Using a focus on tourism destinations, UNWTO has articulated a definition of sustainable tourism (UNWTO & UNEP, 2005), provided a guide to the set of relevant policy themes (UNWTO & UNEP, 2005) and described a comprehensive
range of indicators that may be used in measuring progress towards sustainable tourism at
destination level (UNWTO, 2004).

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

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

Notwithstanding the importance of identifying indicators for sustainable tourism, what is
clear is that there is a significant gap from a statistical perspective in defining standards for a
framework that integrates economic, environmental and social statistics at relevant spatial
levels (including local, national and global) that are required for assessment of sustainable
tourism. This gap was recognised in both the IRTS and the TSA:RMF. With the aim of closing
this statistical gap, in 2015 the UNWTO launched the Towards a Statistical Framework for

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

A feature in the development of tourism statistics has been the role of international
conferences in providing launching platforms for each stage of development.\(^5\) The
developments in measuring sustainable tourism are no exception, with the profile of work
being significantly raised at the 6\(^{th}\) International Conference on Tourism Statistics held in
Manila in June 2017. A key outcome from the conference was the Manila Call to Action, a
joint declaration of Ministers, Chief Statisticians and other conference participants (see
Annex 1). Among a range of actions, the Manila Call to Action explicit requests the
development of the SF-MST, a call that had been endorsed at the United Nations Statistical
Commission meeting in March 2017 and that was reinforced as a key area of work at the
UNWTO General Assembly in September 2017.

\(^5\) IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of
tourism statistics.
1.2.3 The role of statistical frameworks

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

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

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

Over time, the importance of statistical frameworks becomes more apparent since while the concepts and definitions can be kept relatively stable, it is likely that (i) data sources will change over time – witness for example the emergence of big data and spatially rich data sets – and (ii) there will be ongoing changes in policy themes, aspirations and targets.
Maintaining a stable statistical framework at the heart of measurement ensures that data and policy can be meaningfully linked and effective comparisons can be made on an ongoing basis, notwithstanding the ongoing changes in data sources and policy needs.

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

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

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

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

1.2.4 The benefits of a statistical approach

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

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

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

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

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

The importance of developing a common language to support comparison cannot be overstated. It may appear that integration of information for a single group of decision makers is sufficient, for example for local/destination managers, or for national tourism administrators. However, it is clear that decisions by different groups are inter-connected.

For example, local and national policy choices affect each other. Given this reality, there may be considerable barriers to progress if different stakeholders have information based on varying definitions and measurement boundaries. A statistical approach as recommended in the MST project works to overcome these information barriers and support more engaged and inclusive decision making.

### 1.3 Overview of the SF-MST

#### 1.3.1 Introduction

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

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

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

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

An introduction to decision support tools reflecting the application of the SF-MST is provided in section 1.4.

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

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

Figure 3: The SF-MST in context

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

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

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

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

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

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

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

1.3.3 Applying an accounting approach

As introduced above, the conceptual framing of sustainability that underpins the SF-MST emerges from the literature on wealth accounting. The basic logic is that sustainability can be inferred where the overall capital base, measured in terms of total wealth, does not decline over time (see, for example, Hamilton and Hartwick (2014)).
To incorporate the theory of wealth accounting into a statistical framework focused on sustainability is to encompass measurement of a broad set of capitals – produced, natural, human and social capital - and the related flows of incomes and benefits. While this seems a very large task, in fact a wide range of statistical guidance is available.

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

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

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

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

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

Accounting-based approaches for the measurement of the social dimension are not well developed at this stage. To the extent possible, the SF-MST takes advantage of research and practice concerning cultural satellite accounts that are under development as applications of SNA principles. In other areas of the social dimension, measurement focuses on relevant data and indicators that are based to the extent possible on other statistical guidance and standards. An example is the ILO research on decent work.
More broadly, it is recognized that the application of an accounting approach to the social dimension could ultimately bring into consideration the measurement of social capital. Changes in the extent and quality of social capital over time (for example, in terms of the quality of community networks) could represent an important aspect in the measurement of sustainable tourism.

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

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

1.3.4 Accounting for spatial scale

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

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

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

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

- **Global** – referring to all countries and marine areas
- **Supra-national areas** – referring to groupings of countries
- **National** - is the most common level of statistical measurement and is the level of government that sets the overarching legislative and policy frameworks and engages with other countries.
- **Regional** - referring to the level of administrative unit directly below the national level (corresponds to the NUTS 2 level in the EU territorial classification scheme)
Municipal or city-region - referring to the level of administrative units corresponding to localised but relatively large populations.

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

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

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

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

### 1.3.5 Base accounts and tables

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

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

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

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

In addition, there will be other complementary information required to support understanding sustainable tourism that will not fit directly into these accounting structures. Examples include information on employment, demographics of tourism establishments,
visitor movements and indicators in the social dimension. To ensure consistency and comparability of data, these other data are grouped and classified using the same classifications as used in the SUT and asset accounts. This will support the integration of data and enhanced data analysis. The relevant classifications are documented in chapters 3, 4 and 5.

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

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

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

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

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

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

In the social dimension, these are indicative tables designed based on the developing information to support the measurement of the social dimension in the context of social
capital. Particular note has been taken of the types of information on the social dimension that has been described in the measurement of sustainable tourism, including in the area of governance.

### 1.3.6 Combined presentations

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

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

The following examples of combined presentations are illustrative only. They should be used to introduce and demonstrate the potential applications of the SF-MST and serve as a basis for engagement with different users about their needs and with different data producers about the ways in which their data are being used.
Table 2: Examples of combined presentations for sustainable tourism (illustrative examples only)

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

<table>
<thead>
<tr>
<th>ECONOMIC DIMENSION OF TOURISM INDUSTRIES</th>
<th>Accommodation for visitors</th>
<th>Food &amp; beverage serving</th>
<th>Passenger transport</th>
<th>Travel agencies &amp; reservation services</th>
<th>Other tourism industries</th>
<th>Total tourism Ind.</th>
<th>Total all industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
</tr>
<tr>
<td>1. Income and costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from tourism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditure on tourism characteristic products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Business demographics

<table>
<thead>
<tr>
<th>Total number of establishments</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td></td>
</tr>
<tr>
<td>Locally owned</td>
<td></td>
</tr>
<tr>
<td>Foreign owned</td>
<td></td>
</tr>
<tr>
<td>Location - by tourism region</td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td></td>
</tr>
</tbody>
</table>

3. Employment

<table>
<thead>
<tr>
<th>Employment in tourism</th>
<th>Total (jobs or employees)</th>
<th>Hours worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age / experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education / skill set</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Investment and infrastructure

<table>
<thead>
<tr>
<th>Gross fixed capital formation</th>
<th>Buildings</th>
<th>Equipment</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Capital stock</td>
<td>Buildings</td>
<td>Equipment</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Available capacity (accommodation)</td>
<td>#</td>
<td>rooms / beds</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>ENVIRONMENTAL DIMENSION OF TOURISM INDUSTRIES</th>
<th>Tourism industries</th>
<th>Total all industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage serving</td>
</tr>
<tr>
<td></td>
<td>Tourism</td>
<td>Total</td>
</tr>
<tr>
<td>UNIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Environmental flows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net water use</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Own-account water abstr.</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Irrigation water</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Net energy use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of energy from renewables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHG emissions</td>
<td>tonnes</td>
<td></td>
</tr>
<tr>
<td>Solid waste generation</td>
<td>tonnes</td>
<td></td>
</tr>
<tr>
<td>2. Environmental assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use</td>
<td>ha</td>
<td></td>
</tr>
<tr>
<td>Land value</td>
<td>$</td>
<td></td>
</tr>
</tbody>
</table>

Table 5c: Combined presentation – Demand perspective

<table>
<thead>
<tr>
<th>DEMAND PERSPECTIVE</th>
<th>Total by country of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UNIT</td>
</tr>
<tr>
<td>Number of visitors</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>#</td>
</tr>
<tr>
<td>by age</td>
<td>#</td>
</tr>
<tr>
<td>Inbound arrivals</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>#</td>
</tr>
<tr>
<td>by mode of transport</td>
<td>#</td>
</tr>
<tr>
<td>Number of overnights</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>#</td>
</tr>
<tr>
<td>Tourism expenditure</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$</td>
</tr>
<tr>
<td>Passenger transport</td>
<td>$</td>
</tr>
<tr>
<td>Personal</td>
<td>$</td>
</tr>
<tr>
<td>Business/professional</td>
<td>$</td>
</tr>
<tr>
<td>Visitor satisfaction</td>
<td>index</td>
</tr>
<tr>
<td>Attendance at events, sites and cultural assets</td>
<td>#</td>
</tr>
<tr>
<td>by type of event, site, asset</td>
<td>#</td>
</tr>
</tbody>
</table>
It should be apparent that there are many potential indicators that might be formed from the information contained in the base accounts and tables of the SF-MST through combination with existing information on tourism industries. For example, analysis might be extended to consider environmental flows by size of tourism establishments. The intention in designing combined presentations is to provide a starting point for discussion between compilers of accounts and decision makers to ensure that the measurement and derivation of indicators is both feasible and relevant.

### 1.4 Implementation and application of the SF-MST

#### 1.4.1 Implementation of the SF-MST

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

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

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

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

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

1.4.2 The role of national statistical offices in implementation

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

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

1. As organisations that work with large and various datasets, NSO are well placed to contribute their expertise in the collection and organisation of data from a range of different sources.

2. A core part of the role of NSO is the establishment and maintenance of relevant definitions of concepts and classifications aligned with international standards. The SF-MST incorporates a range of such concepts and classifications and the ongoing involvement of NSO in this area of work will be valuable.

3. Beyond the organisation of information, NSO have capabilities to integrate data from various sources to build coherent pictures of relevant concepts. Most commonly, NSO focus on providing coherent pictures in relation to socio-economic information and this capability is increasingly extending to include environmental information. Given the multi-disciplinary nature of SF-MST, data integration is an important requirement.

4. NSO work within broad national and international data quality frameworks that enable the assessment and accreditation of various information sources and the associated methodologies in a consistent and complete manner.

5. NSO have a national coverage. The focus of the SF-MST is on the provision of information that supports integrated measurement at both national and sub-national scales. Creating national economic, social and environmental pictures is a
relatively unique role undertaken by NSO and incorporates an implicit understanding of scaling data. SF-MST implementation would benefit substantially from consideration of how standard statistical techniques used for official statistics may be applied at different scales, in particular in the context of geo-spatial statistics.

6. NSO can present an authoritative voice by virtue of the application of standard measurement approaches, data quality frameworks and their relatively unique role within government, including in many countries, leadership of the National Statistical System. Further, their legal mandate may often facilitate access to data sources that are unavailable to others.

7. A large number of NSO are involved in the compilation of national accounts and related outputs including TSA and SEEA accounts. The application of national accounting expertise will be important in the implementation of the SF-MST particularly in the context of efforts to understand the most appropriate ways in which physical and monetary measures on the various aspects of sustainable tourism can be integrated with information from the standard national accounts.

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

1.4.3 Application of the SF-MST

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

i. **indicators** of the state and trends in sustainable tourism

ii. **models** that use statistically based data to estimate likely outcomes in the future or in alternative scenarios, e.g. under alternative taxation arrangements.

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

Information to support economic and social modeling is the second important output from statistical frameworks. Discussion of many policy questions cannot be supported simply through the use of indicators. Instead, data relating to a number of different areas must be brought together to underpin analysis. Examples include analyzing the relationship between tourism demand and employment, assessing visitor numbers and water use, and comparing
the location of tourism establishments and changes in condition of local waterways. In each of these cases, ensuring that the data from the different areas are compatibly defined helps ensures the relevance and accuracy of the analysis.

1.4.4 Indicators: Sustainable tourism indicators for the SDGs

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

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

- **Target 8.9:** By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
- **Target 12.b:** Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.
- **Target 14.7:** By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

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

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

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

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

The development of indicator sets for the measurement of sustainable tourism has been an active area of work for many years. Short summaries of a range of initiatives are presented below (Box 2) with a focus on indicator sets being developed by international agencies and within the private sector.
Country and regional level work on measuring sustainable tourism, sometimes led by academic researchers, has also been in evidence over the past 25 years. Documentation on some of these country experiences, as well as the work currently being carried out by in the pilot studies in the specific framework of MST, can be found on the MST website.

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

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

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

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

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

**OECD** work in measurement was reflected in 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 work.

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European Commission’s initiative on a European Tourism Indicators System (ETIS) for sustainable
destination management\(^{10}\). ETIS has defined 43 core indicators and has been trialed in a number of
destinations, including NECSTouR\(^{11}\) regions. To frame the indicators, they have identified four main
themes: Destination management, Social / cultural impact, Economic value, Environmental impact.

United Nations 10 Year Forward Program (10YFP) on Sustainable Consumption and
Consumption (SCP)\(^ {12}\) has initiated the development of a flexible monitoring and evaluation
framework to provide directions and vision and measure its progress on capacity enhancement for
the shift towards SCP\(^ {13}\) and incorporates a Sustainable Tourism Program (STP) within this broader
framing.

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

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

- Voluntary certification standards around sustainable tourism operation with the Global Sustainable Tourism Council (GSTC) being a leading facilitator.
- Hilton hotels sustainability measurement platform\(^ {14}\)
- Hotel Water Measurement Initiative (HWMI), and its equivalent for carbon, promoted by the International Tourism Partnership (ITP) of Business in the Community\(^ {15}\).
- The World Travel and Tourism Council (WTTC), with Griffith University and the University of Surrey, has released research on sustainability reporting in the context of the UN SDGs\(^ {16}\).

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

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

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\(^{10}\) See: \url{http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en}.

\(^{11}\) Network of European Regions for a Sustainable and Competitive Tourism (NECSTouR).

\(^{12}\) The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate
the shift towards SCP. It aims at developing, replicating and scaling up SCP and resource efficiency initiatives, at
national and regional levels, decoupling environmental degradation from economic growth, and thus increasing
the net contribution of economic activities to poverty eradication and social development. It has six initial
programmes: Consumer Information; Sustainable Buildings and Construction; Sustainable Food Systems;
Sustainable Lifestyles and Education; Sustainable Public Procurement; and Sustainable Tourism.

\(^{13}\) 20 general pilot indicators have been identified for the four 10YFP objectives, including 7 on Objective 4
(Contribute to resource efficiency and decoupling economic growth from environmental degradation and
resource use, while creating jobs and economic opportunities and contributing to poverty eradication and shared
prosperity); energy efficiency, mitigation of GHG and other atmosphere, soil and water pollutants, material use
reduction, waste reduction, water-use efficiency, sustainable land-use, and decent employment.


\(^{15}\) \url{http://tourismpartnership.org/water-stewardship/}

\(^{16}\) \url{https://www.wttc.org/Sustainability-Reporting#undefined}
There are many examples of the use of environmental flow information in connection with standard input-output tables and an introduction to the principles and summary of the relevant literature is provided in SEEA Applications and Extensions (ref). Examples already exist in the area of tourism, for example the work for Wales on the connections of tourism and GHG emissions and tourism and employment (refs needed). Advancing the measurement of integrated TSA and SEEA accounts will further support these efforts in understanding the broader connections between tourism activity and the environment and ensuring that environmental data can be taken into account in economic modeling of tourism.

1.5 Structure of the SF-MST document

<<To be drafted following further discussion on the coverage and structure of the draft SF-MST.>>
2 Accounting for the economic dimension of sustainable tourism

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

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

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

2.1 Introduction
<< To be drafted>>

2.2 Key aspects of tourism statistics and the TSA framework

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

Topics to be covered include:

- Visitors and the usual environment
- Visitor movements – inbound, outbound, domestic – purpose
- Visitor consumption
2.2.2 The TSA framework

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

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

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

Key aspects of the TSA are:

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

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

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

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

Box 3 presents the top level categories for tourism products and tourism industries. There is clearly a close link between the descriptions since an activity is defined in relation to a primary product. However, in practice, a single tourism establishment may produce a range of products even if it is classified to its main or primary product. For example, many hotels
will be categorized to the activity “Accommodation for visitors” but will produce a range of products including accommodation services and food and beverage serving services.

<table>
<thead>
<tr>
<th>Consumption products</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accommodation services for visitors</td>
<td>1. Accommodation for visitors</td>
</tr>
<tr>
<td>2. Food and beverage serving services</td>
<td>2. Food and beverage serving activities</td>
</tr>
<tr>
<td>3. Railway passenger transport services</td>
<td>3. Railway passenger transport</td>
</tr>
<tr>
<td>4. Road passenger transport services</td>
<td>4. Road passenger transport</td>
</tr>
<tr>
<td>5. Water passenger transport services</td>
<td>5. Water passenger transport</td>
</tr>
<tr>
<td>6. Air passenger transport services</td>
<td>6. Air passenger transport</td>
</tr>
<tr>
<td>7. Transport equipment rental services</td>
<td>7. Transport equipment rental</td>
</tr>
<tr>
<td>8. Travel agencies and other reservation services</td>
<td>8. Travel agencies and other reservation services activities</td>
</tr>
<tr>
<td>9. Cultural services</td>
<td>9. Cultural activities</td>
</tr>
<tr>
<td>10. Sports and recreational services</td>
<td>10. Sports and recreational activities</td>
</tr>
<tr>
<td>12. Country-specific tourism characteristic services</td>
<td>12. Other country-specific tourism characteristic activities</td>
</tr>
</tbody>
</table>


### 2.3 Measuring economic activity of tourism

#### 2.3.1 Accounting for tourism activity at aggregate level

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

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

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17 Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. Target 14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.
Extensions in the form of additional detail within TSA core tables, might be considered to integrate information on specific market segments such as relating to human resources\textsuperscript{18}, cruise ships, eco-tourism, meetings industries (sometimes referred to as MICE\textsuperscript{19}), etc. Data can also be organized to highlight macro-economic indicators of tourism activity such as tourism expenditure per visitor and foreign exchange earnings. Each of these different views will inform on the past trends and current structure in an integrated way in which all of the data are confronted.

\subsection*{2.3.2 Accounting for characteristics of tourism industries}

The compilation of TSA accounts can be undertaken using a number of different approaches but generally it will be based on a combination of information from business surveys and visitor surveys. For business surveys, it is expected statistical practice that these are conducted using a common or central business register that lists all establishments in the economy and classifies them to standard industry classes. By using basic information provided by business registers, for those establishments classified to industries corresponding to tourism characteristic activities it should be possible to assess the structure of tourism by size of establishment (e.g. in terms of turnover or employment)\textsuperscript{20}, by ownership (resident or non-resident), by legal entity (corporation, household business), and by other characteristics, depending on the range of information held. By combining this data with information on the value added, employment, tourism share and other data from TSA core tables, a rich picture of tourism activity can then be developed which may be significant in a sustainability perspective. It is worth noting that such a result can be obtained from a standard statistical infrastructure that brings coherence of data across all economic statistics.

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

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

\textsuperscript{18} This has been developed in Canada where TSA Table 7 has been considerably expanded to include, for example tourism occupations. See \url{http://cthrc.ca/en/labour\_market\_information/human\_resource\_module}

\textsuperscript{19} Meetings, incentives, conventions, exhibitions.

\textsuperscript{20} For example, the UNWTO \textit{Compendium of Tourism Statistics} compiles a selection of such information from countries worldwide; see: \url{http://statistics.unwto.org/content/compendium-tourism-statistics}
2.3.3 Accounting for tourism infrastructure and investment

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

2.3.4 Assessing seasonality

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

2.3.5 Measuring the sharing economy

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

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

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

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

In broad terms, the recording of environmental transactions and the identification of environmental activities is designed to provide information that supports tracking the
response of business and government to environmental challenges. By developing these data for tourism industries, indicators could be developed that show the response of tourism industries to environmental challenges both in absolute terms and relative to other sectors.

2.4 Measuring the employment aspects of tourism

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

Topics to be incorporated:

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

2.5 Accounting for the economic dimension at sub-national level

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

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

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

- Accounting for environmental flows for tourism industries
  - Water
  - Energy
  - GHG emissions
  - Solid waste

- Accounting for tourism related environmental assets and their use
  - Tourism land accounts, including protected areas and national parks
  - Accounting for tourism related ecosystems and biodiversity
  - Accounting for tourism related natural resources including stocks of water resources

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

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

3.1 Introduction
<<To be drafted>>

3.2 Key aspects of the SEEA framework

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

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

- **Accounting for environmental flows** in physical terms; into, within and from the economy. This includes accounting for flows of water, energy, air emissions, solid waste and emissions to water; and can be extended to account for individual elements and substances such as carbon and nitrogen.

- **Accounting for natural resources** in terms of stocks and changes in stocks (e.g. discoveries of resources, depletion). This includes accounting for stocks of mineral and energy resources, timber, fish, water and soil.

- **Accounting for environmental transactions** that are included in the SNA but not specifically identified as “environmental”. This includes accounting for environmental protection and resource management expenditure, environmental taxes and subsidies and the supply and use of environmental goods and services.

- **Accounting for land and ecosystems**. In this type of accounting the focus is on understanding the changing composition of the area of a country in terms of land use and land cover and the quality of the land in terms of the condition of its ecosystems. Accounting for ecosystem also involves the measurement of ecosystem services and evaluating the capacity of ecosystem to continue to generate market and non-market ecosystem services.

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

### 3.3 Accounts for environmental flows for tourism industries

#### 3.3.1 Introduction

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

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

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

The accounts described here are presented in terms of compilation for annual frequencies and at national level. While this is a suitable basis for description of the accounts, for
sustainable tourism both sub-national and sub-annual compilation of accounts is likely to be relevant. In general, the same conceptual considerations will apply, and there may be additional data and compilation issues to take into account.

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

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

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

### 3.3.2 Accounts for water flows for tourism industries

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

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

Consistent with the advice in the SEEA Central Framework, it would be preferable for the tables to be compiled for individual catchments since the pressures on water supply will vary by location. It is noted that the nature of water supply will also vary by location with different combinations of surface water, groundwater and desalinated water being used. Although the table below does not distinguish between these different sources of water, additional rows can be incorporated to record this detail.
The breakdown of economic activities identified in the tourism industries water flow account distinguishes the main tourism industries and the main industries associated with water supply and use. Recognizing that in any given industry not all water flows will be attributable to tourism, the distinction between tourism and non-tourism flows should be made following the methodological advice discussed below.

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

For the purposes of describing the application to tourism, the full set of entries has been reduced to provide a focus on those entries expected to be of most relevance to the analysis of water flows for tourism industries. Ideally, the accounting for these flows would be undertaken as part of an economy wide accounting for water and the structure described supports this approach.
### Table 5.1: Tourism industries water flow account (cubic metres)

<table>
<thead>
<tr>
<th>Physical supply table for water</th>
<th>Abstraction of water; Production of water; Generation of return flows</th>
<th>Water collection, treatment, and supply</th>
<th>Sewerage</th>
<th>Other industries</th>
<th>Households</th>
<th>Flows from the rest of the world</th>
<th>Flows from the Environment</th>
<th>Total supply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tourism industries</strong></td>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage services</td>
<td>Passenger transport &amp; tourism</td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism</td>
<td>Total tourism end</td>
<td><strong>Accumulation</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>1. Sources of abstracted water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>2. Water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>3. Wastewater and re-used water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>4. Return flows of water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL SUPPLY**

<table>
<thead>
<tr>
<th>Physical use table for water</th>
<th>Abstraction of water; Intermediate consumption; Return flows</th>
<th>Water collection, treatment, and supply</th>
<th>Sewerage</th>
<th>Other industries</th>
<th>Households</th>
<th>Flows to the rest of the world</th>
<th>Flows to the Environment</th>
<th>Total use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tourism industries</strong></td>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage services</td>
<td>Passenger transport &amp; tourism</td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism</td>
<td>Total tourism end</td>
<td><strong>Accumulation</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>1. Sources of abstracted water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>2. Water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>3. Wastewater and re-used water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>4. Return flows of water</td>
<td></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
<td><strong>Total</strong></td>
<td>**Year</td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL USE**

NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance
3.3.3 Accounts for energy flows for tourism industries

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

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

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

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

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

A useful extension is to distinguish the use of energy products between energy from renewable and non-renewable sources.
<table>
<thead>
<tr>
<th>Table 5.2: Tourism industries energy flow account (joules)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical supply table for energy</strong></td>
</tr>
<tr>
<td><strong>Production energy products &amp; Generation of residuals</strong></td>
</tr>
<tr>
<td>Tourism industries</td>
</tr>
<tr>
<td>Assimilation for visitors</td>
</tr>
<tr>
<td>Food &amp; beverage serving</td>
</tr>
<tr>
<td>Passenger transport</td>
</tr>
<tr>
<td>Culture, sports &amp; recreation</td>
</tr>
<tr>
<td>Other tourism Ind.</td>
</tr>
<tr>
<td>Total tourism Ind.</td>
</tr>
</tbody>
</table>

1. **Energy from natural inputs**
   - Natural resource inputs: Inputs of energy from renewable sources, other natural inputs
   - NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance
   - According to the International Recommendations for Energy Statistics (IRES), energy statistics are supposed to be compiled by converting physical measures of mass and volume such as tonnes, litres and cubic metres into a common unit representing energy content in net calorific terms. Joule is the common unit generally used for expressing energy flows.

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

The third core account is a physical supply and use table for flows of GHG emissions. It contains information on the generation of GHG emissions by tourism industries by type of GHG emissions and is adapted from the air emissions account in the SEEA Central Framework (Table 3.7). Key cells for the compilation of this account are highlighted in red and focus on release of carbon dioxide emissions by tourism industries.

In general, the generation of GHG emissions will be “used”/received by the atmosphere directly. Of particular interest will be the GHG emissions associated with transport. In this regard the method for attributing emissions to individual countries, particularly in the case of air and water transport is of direct interest. This is discussed in more detail below.

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

Table 5.3: Tourism industries GHG emissions account (tonnes)

<table>
<thead>
<tr>
<th>Type of substance</th>
<th>Tourism industries</th>
<th>Other Industries</th>
<th>Households</th>
<th>Flows from the Environment</th>
<th>Total supply of emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Generation of emissions</td>
<td>Accumulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>Accommodation</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Food &amp; beverage</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Passenger transport</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Culture, sports &amp; recreation</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Other tourism</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Total tourism</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3.5 Accounts for solid waste for tourism industries

The fourth core account is a physical supply and use table for flows of solid waste. It contains information on the generation, collection and disposal of solid waste by type of waste. It is likely that, in practice, only a few cells in the table will be of significance and these should form the focus of initial development. These cells are highlighted in red.

In both the supply table and the use table, the rows are grouped into two sections, corresponding to the fact that while the materials at issue appear in the economy as “residuals”, they may also be purchased. These sections follow the structure of the physical supply and use table for solid waste presented in Table 3.9 Solid waste account in the SEEA Central Framework. The items selected for the categories of solid waste are those deemed relevant for tourism industries and for the activities of other industries that meet visitors’ demand.

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

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

According to the SEEA CF, solid waste generated by tourists will generally be attributed to local enterprises (e.g., hotels and restaurants).

Table 5.4: Tourism industries solid waste account (tonnes)

<table>
<thead>
<tr>
<th>Physical supply table for solid waste</th>
<th>Generation of solid waste</th>
<th>Flows from the rest of the world</th>
<th>Flows from the environment</th>
<th>Total supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tourism industries</td>
<td>Other industries</td>
<td>Households</td>
<td>Total solid waste</td>
</tr>
<tr>
<td>Accommodation</td>
<td>Total &amp; beverage serving</td>
<td>Passenger transport</td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism ind.</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

A. Generation of solid waste residuals

<table>
<thead>
<tr>
<th>Metallic waste and other recyclables</th>
<th>Discarded equipment and vehicles</th>
<th>Mixed residential and commercial wastes</th>
<th>Other wastes</th>
<th>Total solid waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3.6 Estimating the tourism share of environmental flows

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

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

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

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

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

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

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

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

The more general assumption in estimating tourism shares is that the production function (mix of outputs and inputs) for an industry is the same for visitors and non-visitors. For example, the amount of water used to make a restaurant meal is invariant between consumers. In concept, this assumption is likely reasonable provided that information is available at a relatively fine level of industry detail. For example, estimates of energy use may vary between air freight and air passenger transport and more accuracy in the tourism shares will be obtained if calculations can be completed at the finer level. However, in practice it may be difficult to source suitably fine levels of industry detail in which case the appropriateness of the assumption will depend on the extent of differences in the
consumption patterns of visitors compared to residents and the mix of products within the industry.

3.3.7 Distinguishing the consumption and the production perspectives

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

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

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

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

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

A conceptual issue lies in appropriately defining the spatial boundaries for consumption. This is especially so since environmental boundaries are open, and visitors travel between countries. The aim here is thus to describe possible methods of presenting a consumption perspective in relation to the environmental flows under investigation. It is quite likely that different approaches are relevant for different flows. Ultimately there should be an alignment of methods here with the delineation of spatial boundaries for destinations but at
this stage it should be possible to develop relevant criteria for presenting the consumption perspective without knowing precisely how destinations might be defined.

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

3.3.8 Allocating environmental flows associated with transport activity

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

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

3.4 General features of measuring environmental assets

3.4.1 Introduction

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

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

(para 2.17).

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

Given the range of environmental assets, it is not surprising that many perspectives and associated measurement approaches are adopted. Indeed, in the biophysical sciences, it is clear that there are many specialties including hydrology, geology, climatology, and ecology, and specialisations concerning specific types of ecosystems (e.g. marine areas, forests, deserts) and species (insects, mammals, conifers). Given this variety and the associated breadth of methods and areas of focus, it is perhaps not surprising that there has been, to date, relatively little integration of environmental data into standard national statistical operations.
Nonetheless, there is a very substantial quantity of data and expertise about environmental assets. The challenge from an ongoing measurement perspective is to find ways of gathering, standardizing and presenting the information in a manner that (i) can be integrated with economic and social data, (ii) is useful for policy making, and (iii) respects the underlying science. The accounting framework of the SEEA is designed to provide a platform to meet this challenge.

3.4.2 Approaches to accounting for environmental assets

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

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

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

Environmental asset accounts

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

The second step involves measuring changes in the stock of the asset, both additions and reductions, over an accounting period. Ideally, measurement would be undertaken each year but, for many environmental assets, monitoring over 3-5 year periods might be sufficient to support policy discussion.

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

Table 5.5: Basic form of an asset account

<table>
<thead>
<tr>
<th>Opening stock of environmental assets</th>
<th>Additions to stock</th>
<th>Reductions of stock</th>
<th>Revaluation of the stock*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Growth in stock</td>
<td>Extractions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discoveries of new stock</td>
<td>Normal loss of stock</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upward reappraisals</td>
<td>Catastrophic losses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reclassifications</td>
<td>Downward reappraisals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reclassifications</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total reductions in stock</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total additions of stock</td>
<td></td>
</tr>
</tbody>
</table>

* Only applicable for asset accounts in monetary terms.

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

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

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

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

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

Table 5.6: Water resources asset account (cubic metres)

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

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

Comment [DGACN3]: It is suggested to specify that these are catchments potentially associated with tourism
Commonly, the estimates of stocks and changes in stocks of water will be based on hydrological monitoring and associated models concerning precipitation, evaporation, runoff and other flows. Direct measurement of stocks of water, particularly with respect to surface water is more challenging but is likely to be relevant where abstraction from groundwater is a primary source.

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

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

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

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

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

### 3.4.4 Accounting for wildlife and key species

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

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

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

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

<table>
<thead>
<tr>
<th>Accounting entries</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lion</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Opening stock</td>
<td></td>
</tr>
<tr>
<td>Additions to stock</td>
<td></td>
</tr>
<tr>
<td>Natural births</td>
<td></td>
</tr>
<tr>
<td>Breeding programs</td>
<td></td>
</tr>
<tr>
<td>Other additions</td>
<td></td>
</tr>
<tr>
<td>Reductions in stock</td>
<td></td>
</tr>
<tr>
<td>Natural losses</td>
<td></td>
</tr>
<tr>
<td>Poaching</td>
<td></td>
</tr>
<tr>
<td>Other reductions</td>
<td></td>
</tr>
<tr>
<td>Net change in stock</td>
<td></td>
</tr>
<tr>
<td>Closing stock</td>
<td></td>
</tr>
<tr>
<td>Opening stock</td>
<td></td>
</tr>
<tr>
<td>Additions to stock</td>
<td></td>
</tr>
<tr>
<td>Reductions in stock</td>
<td></td>
</tr>
<tr>
<td>Closing stock</td>
<td></td>
</tr>
</tbody>
</table>

Information of this type for key species may well be available to managers of national parks and protected areas or from active research programs. The aim of accounting is to provide a platform for this information to be placed in context alongside information on visitors and tourism activity and hence provide a more complete picture for decision makers. Indeed, the relevance of this type of information has been highlighted in a recent UNWTO briefing paper Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa (UNWTO, 2015).

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

3.4.5 Land accounts for tourism

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

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

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

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

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

For tourism purposes, the land account structure that is likely to be of most value is an account that shows an integration of land use and land cover classes. This would involve starting from a land cover account with broad classes, as suggested above (forest, grasslands, etc.) and within the class of built-up areas breaking this down further into various tourism industry use of land and non-tourism uses. Further, within the non-urban land cover classes it would be logical to determine the area of land that was most relevant for tourism activities – e.g. beaches. A map of these various classes, produced on a regular basis, would provide substantive input to planning and other tourism related discussions.

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

Table 5.8: Tourism land account (hectares)

<table>
<thead>
<tr>
<th>Land classes</th>
<th>Accounting entries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Opening stock</td>
</tr>
<tr>
<td>Built-up areas / artificial surfaces</td>
<td></td>
</tr>
<tr>
<td>Transport and storage</td>
<td></td>
</tr>
<tr>
<td>Commercial, financial and public services</td>
<td></td>
</tr>
<tr>
<td>Hotel and catering services</td>
<td></td>
</tr>
<tr>
<td>Retail trade</td>
<td></td>
</tr>
<tr>
<td>Other commercial services</td>
<td></td>
</tr>
<tr>
<td>Recreational facilities</td>
<td></td>
</tr>
<tr>
<td>Residential areas</td>
<td></td>
</tr>
<tr>
<td>Other built-up areas</td>
<td></td>
</tr>
<tr>
<td>Crops (heaveous, woody, other)</td>
<td></td>
</tr>
<tr>
<td>Grassland</td>
<td></td>
</tr>
<tr>
<td>Tree-covered areas</td>
<td></td>
</tr>
<tr>
<td>Mangroves</td>
<td></td>
</tr>
<tr>
<td>Shrub-covered areas</td>
<td></td>
</tr>
<tr>
<td>Shrub and other vegetation, aquatic and regularly flooded (incl wetlands)</td>
<td></td>
</tr>
<tr>
<td>Sparsely natural vegetated areas</td>
<td></td>
</tr>
<tr>
<td>Terrestrial barren land</td>
<td></td>
</tr>
<tr>
<td>Permanent snow and glaciers</td>
<td></td>
</tr>
<tr>
<td>Inland water bodies</td>
<td></td>
</tr>
<tr>
<td>Coastal water bodies and intertidal areas</td>
<td></td>
</tr>
<tr>
<td>Total area</td>
<td></td>
</tr>
</tbody>
</table>

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

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

3.4.6 Accounting for tourism related ecosystem assets

Introduction

The final type of environmental asset to consider is ecosystem assets. While ecosystems are not new concepts, the logic of fully incorporating ecosystems into an accounting structure is quite recent. In a statistical context, this was first presented in the SEEA EEA. The approach involves identifying (delineating) separate spatial areas within a country each representing an ecosystem asset. Most commonly, these separate areas are determined on the basis of different vegetation types but other factors can be incorporated. In effect, each spatial area – referred to as an ecosystem asset – is a statistical representation of an ecosystem as understood by an ecologist.
Ecosystem extent

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

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

Ecosystem condition

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

Ecosystem services

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

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

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

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

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

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

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

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

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

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

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

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

In the first instance, ecosystem accounting in physical terms would be a likely focus. However, there may be interest in the valuation of ecosystem services and related ecosystem assets. To this end, the fact that much information on tourism can be attributed to specific destinations may provide data to support direct valuation of ecosystem services. There is a rapidly growing body of work in this area with more than 50 countries involved in ecosystem accounting projects or initiatives.22

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

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4 Accounting for the social and cultural dimension of sustainable tourism

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

4.1 Introduction

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

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

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

The blending of these four parts in the chapter is aimed at placing relevant data in context and providing a pathway for compilers to make decisions about which data requires collection and for users to understand which data are of most relevance.
The framing provided in this chapter also goes some way towards suggesting possible
topics between different social data sets but this is limited to answering questions of
the appropriate description of the social dimension to support discussion and decision
making. There is no intention or ambition to articulate causal relationships between social
variables.

4.2 Concepts in the measurement of the social dimension

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

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

The extent to which engagement in tourism (both direct and indirect) influences
social development.

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

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

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

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

4.3 Tourism perspectives on the social dimension

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

The visitor perspective can be separated into the social dimension at the place/s visited and
within their usual environment. Key features of the social dimension at the place visited will
include visitor perceptions, visitor experiences (e.g. of health, crime, congestion),
engagement with local communities (e.g. cultural experiences, heritage, local products) and
issues of accessibility (for example with respect to age, disability, or to infrastructure)
Within their usual environment, it may be relevant to consider the extent to which
engagement in tourism provides visitors with improved overall well-being, improved social
networks, educational outcomes, or more negatively, experience limited access to tourism
opportunities (e.g. due to cost, ethnicity).

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

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

### 4.4 Aspects of the social dimension

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

<<The following list is for discussion. Pending that discussion, it is intended to
provide a short description of each aspect, its connection to the social dimension

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and links to relevant to statistical or measurement definition and advice. It is noted
that all of the following aspects have been proposed for measurement across a
range of international initiatives over the past 10-15 years, including through the
SDGs. >>

Potential aspects of the social dimension for sustainable tourism

- Income and wealth distribution; Poverty
- Health; Nutrition
- Education; Skills, Training
- Housing
- Personal security, safety, crime, peace
- Social capital
  - Social connections and networks
  - Community and individual levels of trust / tolerance
  - Civic engagement and participation
  - Institutions and governance
  - Corruption
- Subjective well-being of host communities; of visitors
- Visitor perceptions of destinations
- Human rights – discrimination, empowerment
- Decent work
  - Employment opportunities
  - Decent hours
  - Adequate earnings and productive work/life balance
  - Child and forced labour
  - Work security
  - Equal opportunity and remuneration
  - Safe working environments
  - Social security
  - Social dialogue and representation
- Accessibility and use of infrastructure
  - Roads, transport systems
  - Congestion and noise
  - Basic services (water, energy)
  - Environmental space (green space, national parks, beaches)
- Culture and heritage
Participation in production (cultural products like handicrafts, traditional toys, typical clothes, other), employment, income

- Talking about Taking into account the UNESCO Framework for cultural statistics the linkage between tourism and culture is not a certain focus, in due to because tourism represents activities that may have a cultural character but their main component is not cultural.

- Festivals and events

  - Although it is difficult into the national accounts frame to measure the economic contribution of festivals, feasts and fairs in a certain indicator-the economic contribution of festivals, feasts and fairs, nevertheless, there are less breakdown levels where we could find it. In Mexico, the Culture satellite account (CSCM) shows information about Material and Natural Heritage, and it is breakdown broken down in the following areas: Material, Natural, Library, Museums and Public management on heritage. Into these areas are included activities such as associations devoted to cultural, animal and environmental protection; archaeological and historical places; public ministries and offices whose that provides monetary support on heritage, among others.

  - There are many culture ministries which has have cultural statistics where have described the festivals are developed in their countries. In Mexico, the Culture Ministry has the Cultural Information System which shows the cultural resources by a wide breakdown of topics and georeferenced to local level. Some examples are: Cultural facilities; Heritage; Festivals, feasts and fairs; Intangible cultural heritage and Indigenous popular culture.

- Protection of heritage including language, arts, etc.

  - As well as we mentioned before, the CSCM shows an specific line which shows the public expenditure in heritage, that includes ministries and offices devoted to attend a specific matter on naturel (natural protected areas and wild life, naturale parks and reserves, zoos, aquaria and botanical gardens); intangible (indigenous and ethnic groups, including their folklore, language and traditions) and material (archaeological and historical places, museums and libraries) heritage.

4.5 Population groups

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

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

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

It would be helpful to consider the measurement of the expenditure from public ministries whose that provides monetary support to these communities.

Proposed population groups:

**Ideal:**
- **Women**
- By gender: male and female.

**Complementary:**
- Women:gender
- Children and Youth
- Elderly
- Persons with a disability
- Indigenous groups
- Ethnic and religious minorities
- Migrant workers
- Families
- LGBTQI

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

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

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

4.6.1 Tables of cultural and social dimension of tourism

The next tables are proposed to measuring the cultural and social dimension of tourism:

Social and cultural dimension of sustainable tourism
Cultural resources related to tourism (National and subnational total)

<table>
<thead>
<tr>
<th>Cultural resources</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Area Protected</td>
<td>XXX</td>
</tr>
<tr>
<td>Craft houses</td>
<td></td>
</tr>
<tr>
<td>Festivities</td>
<td></td>
</tr>
<tr>
<td>Museums</td>
<td></td>
</tr>
<tr>
<td>Historical sites</td>
<td></td>
</tr>
</tbody>
</table>

Social and cultural dimension of sustainable tourism
Natural and cultural heritage

<table>
<thead>
<tr>
<th>Year 2017</th>
<th>Natural</th>
<th>Heritage</th>
<th>Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural</td>
<td>Cultural</td>
<td>Heritage</td>
</tr>
<tr>
<td></td>
<td>Natural</td>
<td>Natural</td>
<td>Natural</td>
</tr>
<tr>
<td></td>
<td>Park</td>
<td>Park</td>
<td>Park</td>
</tr>
<tr>
<td></td>
<td>Zoos</td>
<td>Zoos</td>
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<tr>
<td></td>
<td>Other historical sites</td>
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</tr>
</tbody>
</table>

Assists
Total
Gender
Male
Female
Age groups
3 to 12
13 to 18
19 to 25
26 to 40
41 to 59
60 and more
Origin
National
Foreign
## Social and cultural dimension of sustainable tourism

Public management in patrimony (National and subnational)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>National total</td>
<td>XXXX</td>
</tr>
<tr>
<td>Current expenditure (millions of pesos)</td>
<td></td>
</tr>
<tr>
<td>Capital expenditure (millions of pesos)</td>
<td></td>
</tr>
<tr>
<td>Jobs (units)</td>
<td></td>
</tr>
</tbody>
</table>

| By region                        |      |
| Current expenditure (millions of pesos) |      |
| Capital expenditure (millions of pesos) |      |
| Jobs (units)                      |      |
## Social and cultural dimension of sustainable tourism

Expenditure of non-residents by selected areas of the culture sector (National and subnational)

<table>
<thead>
<tr>
<th>Year</th>
<th>Visual and plastic arts</th>
<th>Performing arts and shows</th>
<th>Music and concerts</th>
<th>Books, prints and press</th>
<th>Audiovisual media</th>
<th>Handicrafts</th>
<th>Design and creative services</th>
<th>Material and natural heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>(millions of pesos)</td>
<td>(%)</td>
<td>(millions of pesos)</td>
<td>(%)</td>
<td>(millions of pesos)</td>
<td>(%)</td>
<td>(millions of pesos)</td>
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<tr>
<td>Total</td>
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</tbody>
</table>
5 Defining spatial areas for the measurement of sustainable tourism

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

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

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

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

5.1 Introduction

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

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

23 Discussion paper drafted or the Meeting of the Working Group of Experts on MST, Madrid, 20-21 October, 2016
The purpose of this chapter is to describe how a bridge can be built between these two perspectives – the smaller scale sustainable tourism perspective and the larger scale official tourism statistics perspective. It is important to recognize however that building a bridge is not simply a case of examining the extent to which currently available national level data can be "downscaled" to provide information at a destination level. Or whether the type of data desired at a destination level can be collected using statistical processes. Rather, the ambition is to describe how both detailed spatial data and national level data may be best integrated to provide a “single best picture” of tourism activity that is of most use to decision makers and other stakeholders at different scales.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The need for coherent spatial boundaries

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

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

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

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

i. ensuring that for each data set the spatial boundaries are internally coherent

ii. determining which spatial boundaries should be used to facilitate comparison across data sets.

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

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

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

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24The focus in this discussion is on methodological issues surrounding spatial data. In addition, it should be recognized that there are likely to be significant institutional challenges to be faced in developing spatial data sets including establishing co-ordination and management across levels of government and ensuring appropriate data sharing and use arrangements are in place.
Thus, for the purpose of official statistics, it is important that a set of commonly agreed spatial boundaries are delineated for different datasets. This is not to say however that the process of reaching such a common set of spatial boundaries must be top-down. Instead, it will be essential that those working at the various sub-national levels are involved in the discussion and their insights into how spatial areas are defined can generate information that are suitable for analysis and policy at those sub-national level. One pathway forward in reconciling top-down and bottom-up perspectives may be the delineation of spatial areas at very fine levels that can then be aggregated to form different intermediate spatial areas for analysis and reporting. For example, a combination of small spatial areas may be used to represent a single tourism destination.

The application of statistical and accounting principles

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

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

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

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

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

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

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

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

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

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

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

5.5 Current definitions of spatial areas for tourism

From a statistical perspective, there is little standardized advice on sub-national tourism statistics. The IRTS has a brief mention of the need for sub-national tourism statistics but provides no guidance on how sub-national areas might be delineated. The TSA:RMF does not consider sub-national measurement.
The concept of a tourism destination is not defined from a statistical perspective although it has been defined by UNWTO for tourism management purposes (see Box 5.1). Unfortunately, this definition, while clearly linked to a spatial concept, does not provide the means by which a standardized approach to delineating sub-national tourism areas can be established within a national context.

Box 5.1: Destination management definition

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

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

Box 5.2: INRouTe sub-national classes

**REGIONAL**
- Region
- Multi-regional (supre-national)
- Multi-regional (intra-national)
- Other administrative units
- Analytical units

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

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

Perhaps the most established approach to sub-national area classification is the European NUTS classification (Eurostat, 2015) that was originally established in 1970. It has four levels and two additional levels that allow for further disaggregation. The boundaries are established based on the three principles of population thresholds, administrative divisions
and stability through limited amendments over time (http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics). The fully nested nature of the NUTS classification scheme perhaps provides a structure within which tourism destinations can be identified.

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

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

The System of National Accounts briefly discusses the idea of sub-national/regional accounting systems, a topic also picked up by Eurostat (2010). The System of Environmental-Economic Accounting (SEEA) Central Framework (UN et al, 2014a) focuses almost exclusively on national level statistics although recognizes that environmental assets and flows will be recorded in relation to a specific location. The SEEA Experimental Ecosystem Accounting (UN et al., 2014b) explicitly takes a spatial perspective in defining ecosystem assets wherein the assets are defined in terms of the area of different ecosystem types, e.g. forests, wetlands, grasslands, etc.25

5.6 Pathways forward in defining spatial areas for measuring sustainable tourism

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

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

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

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

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

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

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

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

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

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

The supply perspective is perhaps the most tractable pathway to delineating smaller spatial areas. This would involve using information on the location of tourism characteristic industries and determining a boundary around particular concentrations of these industries. In many cases it is likely that such areas are relatively well known and evidenced by known concentrations of hotels and associated restaurants. In some areas, it may be a concentration of, for example, theme parks and similar attractions. For statistical purposes, it would be relevant to provide methodological guidance on how relevant concentration
thresholds may be estimated at sub-national and national levels (as distinct from proposing universal standards to be applied which would not be appropriate). This would be developed as part of the SF-MST.

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

To initiate discussion the following possibilities are listed:

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

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

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

Manila Call to action

Relevant classifications
Glossary

<<To be developed>>

References and links (to be finalized)

SNA 2008: System of National Accounts


Compilation guide https://unstats.un.org/wiki/display/IRTSCG

Eurostat (20xx) European Implementation Manual on Tourism Satellite Accounts


SEEA

http://unstats.un.org/unsd/envaccounting/seearev/

UN et al (2014) SEEA 2012 Experimental Ecosystem Accounting


Water

UNSD (2016) SEEA Technical note: Water accounting, Draft to UNCEEA

UN (2012) System of Environmental-Economic Accounting for Water. UN. Series F No. 100 (ST/ESA/SER.F/100)


Comment [CCC4]: It is important to consider to develop a glossary to support the filling of the tables.


Energy
UNSD (201x) International Recommendations on Energy Statistics (IRES)

GHG emissions
UNSD (2016) SEEA Technical note: Air emissions accounting, Draft for UNCEEA.

Solid waste


**Country examples of integrating TSA and SEEA**


**MST documentation**

UNWTO – MST website http://statistics.unwto.org/mst


Papers for the 1st meeting of the Working Group of Experts on Measuring Sustainable Tourism http://statistics.unwto.org/wg_meeting

Additional comments

Mexico carried out a "quickly assessment" of MST tables (a few days ago), in order to assess the possibility that countries with availability of Tourism Satellite Account, Environmental Accounts and Culture Satellite Accounts, fill these tables. (http://cf.cdn.unwto.org/sites/all/files/pdf/18thmeeting_item_4.4.1.pdf)

In addition:

- It is suggested to include the cultural and social approaches of sustainable tourism (within the Word file, the proposal is included in track changes)

It is suggested to specify in which tables and variables it will be possible to develop and monitor the related SDGs indicators
The document of the World Tourism Organization (UNWTO) called “Statistical Framework for Measuring Sustainable Tourism. Consultation Draft. January 2018” had to cover three dimensions of study: economic, environmental and social, which seeks to compile coherent and comparable statistical information to develop, implement and evaluate policies and activities related to sustainable tourism.

In this regard we consider the following:

1) Economic dimension: Economic indicators to measure sustainable tourism, according to the document in mention, can be obtained from the Tourism Satellite Account (TSA). In Peru, through the MINCETUR and with the Multisectoral Working Group (GTM), four TSA have been prepared, whose evaluation years are 2001, 2002, 2007 and 2011. The importance of these works are based in the main indicators of tourism that would be used in the statistical framework of sustainable tourism such as Tourist GDP, Tourist Added Value, Tourism Spending and Employment in tourism.

2) Environmental dimension: In this regard, it is proposed to work together with institutions specializing in the environment. Particularly, in the Peruvian case, Ministry of Foreign Trade and Tourism (MINCETUR) could combine its efforts with the National Institute of Statistics and Informatic (INEI), responsible of producing and disseminating the country’s statistics, including environmental statistics, and Ministry of the Environment, whose mission is “to ensure the sustainable use, conservation of natural resources and environmental quality for the benefit of people and environment, in a normative, effective, decentralized manner and articulated with public and private organizations and civil society, within the framework of green growth and environmental governance” and that in turn is part of the Sustainable Development Goals (SDG) by 2030 of the United Nations and the implementation of the recommendations of the Organization for Economic Cooperation and Development (OECD).

3) Dimension social: In this case, there are several variables that the SF-MSM propose. According to this point, joint work with specialized institutions that can contribute with information about poverty, health, education, employment, human rights, access and use of infrastructure, culture and heritage, visitors’ perceptions on destinations and provide the methodology for measuring each one of them in such a way that it incorporates measurements aimed at sustainable tourism.

4) Fictitious or real cases or models of measurement should be added as annexes to get an idea of what UNWTO expects from the countries on sustainable tourism, mainly with the variables that determine the concept, for example, the use of water, recycling, shrinkage of products, greenhouse effect, etc. Each country will make the pertinent measurements with the available data or will appeal to the sources with indirect information.

It is everything for the corresponding purposes.
The importance of sustainability and the importance of measuring it is beyond discussion; the discussion usually follows on the method.

The Statistical Framework for Measuring Sustainable Tourism (SF-MST) presented in the document is a good picture of what a perfect statistical system to measure sustainability (within the tourism context) should be. Thus, it looks like a distant goal. It is predictable that even countries with somehow developed Tourism Satellite Account (TSA) and System of Environmental-Economic Accounting (SEEA) will find the SF-MST a comprehensive but also very ambitious and demanding framework.

2. The rationale and context of the Statistical Framework for Measuring Sustainable Tourism (Chapter 1);

Realizing that sustainability isn’t a “one dimension issue” makes the SF-MST the natural answer to measure it, since it appears as being “an organizing structure for integrating statistics on the economic, environmental and social dimensions of sustainable tourism”. It also, as the document mentions, “responds directly to the increasing demands for information that takes in account the various aspects of sustainable development and is relevant at different scales of analysis from local to global levels. These demands are most highlighted in the need for measures of progress towards the internationally agreed Sustainable Development Goals (SDGs) as part of the 2030 Development Agenda.”

3. The structure and the coverage of issues;
(These comments overcome those on the coverage of topics on point 4)

4. “The rationale of adopting an accounting and system based approach”
The reference to an accounting system is a very useful approach since it is the easiest way of “merging” the several accounting systems or frameworks in which is based: the tourism satellite account, the environmental accounts (and other possible to assess the social dimension). Those frameworks have in common the National Accounts (NA) references (concepts, accounting rules and classifications), that are a good anchor for a new framework; many issues are answered within the system of accounts and do not need to be addressed within this specific framework.

5. The coverage of topics in Chapters 2 (economic), 3 (environmental) and 4 (social) and whether you have suggestions for additional areas of research and relevant literature;

As already mentioned, SF-MST is a very comprehensive framework, it has a great coverage. However, for the same reason it is also very ambitious and demanding. All the transactions that already exist within the existing frameworks (TSA, SEEA) are reasonable to ask for in a short term, but those are few cases; those that fall out of the central core tables and ask for “extra-projects” efforts need to be carefully addressed and assess the amount of resources that they would take.

Only a case-by-case analysis to a specific indicator/set of indicators will allow assessing the possibility of compiling it. Although knowing that the project is not mandatory, it would be useful to know which are the most relevant indicators or information (as those references to the red cells within the tables). Alternatively, should we simply use the SDGs as a reference to determine the most important ones?
In Portugal, for instance, there is no Water flow account or Solid waste account. Therefore, tables 5.1 or 5.4 (page 42 and 46) will not be possible to compile at all, presently. The GHG emissions account and the Energy flow account are compiled. Therefore Tables 5.3 Tourism industries GHG emissions account (page 45) or table 5.2 Tourism industries energy flow account (page 44) are more viable, even though the definition of the industries would need some adjustments.

Another field of “completely new work”, both in terms of tourism or environment, would be the analysis on the establishment level as pointed out in “2.3.6 Extending the TSA to record environmental transactions and eco-tourism operations” as a possible extension of the TSA.

Also in the case of Gross Fixed Capital Formation (GFCF), mentioned under “2.3.3 Accounting for tourism infrastructure and investment” as a way of measuring sustainability in a simple way, just using the TSA, we must remind that TSA table 8 on GFCF is not a core table. It is not considered a central table to assess tourism impact on the economy; it is itself considered as a TSA extension since it does not comply with the “final demand expenditure” that defines tourism expenditure.

The same comment could be made on Employment, which is seen in the SF-MTS as a potential “source” to explore or expand the social dimension. However, in order to have that social dimension, further breakdowns to what the TSA foresees are needed: gender, education level, etc., that would implicate to use a set of new data sources.

The reference to an environmental asset account, Water resources asset account (page 52), a Tourism land account (page 55), Accounting for tourism related ecosystem assets, is not possible in a near future and, possibly, not within the national statistical offices.

6. Whether discussion of measurement in spatial terms (Chapter 5) is heading in an adequate direction and any comments on this.

- When discussing sustainability, especially within a tourism context, the spatial dimension is an essential part of the analysis. Reaching a common terminology on the spatial scales is, therefore, a natural “first step”, as the document proposes.

- Integrating data that crosses several spatial levels or breaking it down to a specific spatial area in a consistent and coherent way is a statistical challenge. In fact, ecosystems don’t “respect” administrative boundaries and statistical systems do. Even when those terms are clearly defined, some questions may remain. For instance, is it wrong to compare some national statistic of a small country to a sub-national statistic of a big country (supposing that both spatial areas are equivalent in area)?

- Global, national, regional and sub-national (regional, municipal/city-region, local) are the terms proposed under 5.2 Terminology with respect to spatial areas. (Note: there is the reference to “five scales”, in paragraph 8, is not clear since it appears to be only 4.)

- Under “5.3 The statistical challenge in defining spatial areas” the term “data set” is used often, for instance: “... i. ensuring that for each data set the spatial boundaries are internally coherent”; it should be clearer to what “data set” refers to, does it refers to data sources, result tables, both? Examples would probably help.
• Under 5.6, the recommendation or the forwarded pathway in reconciling different spatial levels by “the delineation of spatial areas at very fine levels” should (also) alert to the trade-off between “level of detail” and “data quality” or “data representativeness”. Also the delineation of “fine levels” of spatial areas must be justified by the relevance of the tourism phenomenon/project; statistics are not a final goal by themselves.

• Even if “the accounting principles [in the SNA] are independent of the scale”, that doesn’t mean that the data sources that allow to measure those NA aggregates are. Methodological aspects must be considered in order to have representativeness data whenever smaller/bigger area is to be statistically relevant. The usage of National Accounting principles is not a guarantee per se that the phenomenon or the aggregate is well measured.

• About Possible characteristics and criteria for delineating sub-national spatial areas, it seems that the presented criteria (tourism supply/visitor demand) are complementary and not independent or mutually exclusive, at least within macro statistics context, like the TSA. If there is a visitor demand there is a counterpart of tourism supply; the main goal of the TSA is to find the balance between them within a territory.
Faisal A. Al-Sleemi (Information Department Manager, Tourism Information & Research Center, Saudi Commission for Tourism and National Heritage, Saudi Arabia)

We review the SF-MST and we do not have major notes except this one in Page.37, In Measuring the employment aspects of tourism:

In Tourism Satellite Account: Recommended Methodological Framework 2008 in Para 3.36. Employment is an important variable in the economic analysis of productive activities..etc.).

So, I think if we add the below note for this section:

1. **Compensation.** (to identify quality of life that job gave to employees how work on tourism industries)
2. **National & Non-National.** (to identify the equity of local citizens how tourism impact to his life)

**Another point:**

I think if we have add formula like what is in TSA tables below (Red Color), to understand what is the conclusion index we use after final result of combined index. This will make it clear for countries.

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**Table 1**

<table>
<thead>
<tr>
<th>Products</th>
<th>Induced tourism expenditure</th>
<th>Domestic tourism expenditure</th>
<th>Other components of tourism consumption (**)</th>
<th>Internal tourism consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1.a.</td>
<td>Accommodation services for visitors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1.b.</td>
<td>Accommodation services associated with all types of vacation house ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.2.</td>
<td>Food and beverage serving services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.3.</td>
<td>Railway passenger transport services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.4.</td>
<td>Road passenger transport services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.5.</td>
<td>Water passenger transport services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.6.</td>
<td>Air passenger transport services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.7.</td>
<td>Transport equipment rental services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.8.</td>
<td>Travel agencies and other reservation services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.9.</td>
<td>Cultural services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.10.</td>
<td>Sports and recreational services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.11.</td>
<td>Country-specific tourism, characteristic goods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.12.</td>
<td>Country-specific tourism, characteristic services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.2.1.</td>
<td>Other consumption products (a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.1.</td>
<td>Valuables (a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*) The value of A. Consumption products is net of all gross service charges paid by travel agents, tour operators and other remuneration services.
(**) Components should be separately identified, if possible (see para. 4.45)
(a) If relevant and feasible, countries should separately identify both components (“tourism connected products” and “non-tourism related consumption products”). In both cases, goods and services should be separately identified, if possible (see para. 4.35)

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First of all, we want to send our congratulations for this initiative, which we believe is very interesting, especially for a country like Spain in which the tourism sector has such a relevant and growing weight, which undoubtedly makes it necessary to have consider sustainability at all times.

As general comments to the document we send you the following:

- The absence of part 1.5 is an important lack in the structure of the document. The content of this part should frame the debate because without this global view some parts of the document might seem unconnected.

- Chapter 5 focuses the analysis of the SF-MST in the definition of the spatial areas, this is a core matter because this definition determine the concept of sustainability, for this reason this part could be better located before chapter 2.

- In this part the definition of tourism destination is very important but this concept is not easy to define, in the context of sustainability some criteria could be added to this reference of “spatial areas defined at the local or municipal level”, (like geographic or climatic criteria, etc.)

- The introduction of a total amount for the whole economy in tables 5.1 to 5.4 implies an estimation of these flows for the economy as a whole, this estimation might not be available and have to be done, and this task may exceed the purpose of the SF-MST. The same consideration is extended to the assets accounting.

- The reference to the ethnic and religious minorities in the proposed population groups involved in the social and cultural dimension of the sustainable tourism, implies the implementation of statistics that collect this type of variables. The compilation of variables related to the privacy, is not straightforward and could be not considered by the law in some countries. In this context the document could include a reference or an alternative way to take into account this groups like establish contact directly to this minorities.

Below we send you some comments that the Unit of environmental statistics of the INE of Spain has sent us. This department is in charge of environmental satellite accounts.

- We see that the manual has focused on the measurement of certain physical flows (water, energy, emissions and solid waste), leaving aside environmental monetary aspects (spending on environmental protection, environmental taxation, ..).

- The environmental accounts proposed for these flows follow the scheme proposed by the United Nations in its manual Environmental and Economic Accounting System 2012, Central Framework (SCAE2012), is a scheme similar to the Tables of Origin-Target of National Accounts, in which the Environment is incorporated as one more sector, focusing on tourism activities. We find it very interesting, especially because of the complete vision given to this type of satellite accounts.

- However, the accounts that we are preparing the INE and the rest of the countries of Europe have a somewhat different scheme. For example, the emissions to the atmosphere account only reflects the origin of the emissions, differentiating between branches of activity and households as final consumers, the destination is not specified, it is understood that it is the
Environment. In the waste account the approach is Generation of waste by activities and households (where the waste is generated or surfaced) and what treatment is given to that waste.

- Another issue that seems important when we want to analyze tourism by regions and want to make accurate estimates of the different variables (water and energy consumption, waste generation, emissions, etc.), it is important to have the equivalent tourist population (ETP). In some surveys, such as water surveys, it is possible that "strange" data may appear for per capita water consumption by autonomous communities, considering only the resident population, without including the tourist population. As there is no internationally accepted methodology for the calculation of ETP, UNWTO could be suggested to address this issue, even to present international recommendations for the calculation of ETP.

- In relation to the environmental accounts related to the assets, of course, they are very interesting, but right now, they are in a very initial phase, although they are metologically part of what we want to measure, right now we see very difficult to have data for to be able to extract the tourist part.
This document provides a highly necessary and relevant framework for the measurement of environmental sustainability of the Tourism Sector at all territorial levels.

It identifies the aspects necessary to measure when it comes to measure tourism environmental sustainability that have already been worked for the development of SEEA (pg.39):

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

- **Accounting for environmental flows** in physical terms, into, within and from the economy. This includes accounting for flows of water, energy, air emissions, solid waste and emissions to water; and can be extended to account for individual elements and substances such as carbon and nitrogen.

- **Accounting for natural resources** in terms of stocks and changes in stocks (e.g., discoveries of resources, depletion). This includes accounting for stocks of mineral and energy resources, timber, fish, water and soil.

- **Accounting for environmental transactions** that are included in the SNA but not specifically identified as “environmental”. This includes accounting for environmental protection and resource management expenditure, environmental taxes and subsidies and the supply and use of environmental goods and services.

- **Accounting for land and ecosystems**. In this type of accounting the focus is on understanding the changing composition of the area of a country in terms of land use and land cover and the quality of the land in terms of the condition of its ecosystems. Accounting for ecosystem also involves the measurement of ecosystem services and evaluating the capacity of ecosystem to continue to generate market and non-market ecosystem services.

The aim of this document that is to include relevant compilation guidance is therefore completely fulfilled.

The same proper identification of aspects to be measured in order to account for social and cultural sustainability could be approach by using the work already developed for other fields and/or sectors, such as Cultural Satellite Accounts, Social Account Matrix, etc...

Therefore, conceptually and with the aim of having a methodological framework, **the integration of different accounting perspectives is extremely useful** in order take full account of the aspects that we need to measure and the necessary guidelines, definitions and methodology. This framework will help the compilation of data and figures more homogeneous.

With respect to the feasibility, the timeliness and, therefore the use for supporting decision makers there are some intermediate steps correctly identified in this document (pg. 10) that would be very interesting also to have support from UNWTO (indicator sets and composite index) in order to have a correct process towards the full wealth accounting framework.

This could be the focus of the forthcoming toolkit, which could provide an integration of simple indicators coherent with this document that provides a Statistical Framework for Measuring Sustainable Tourism.

Following the same very practical logic of the document “Proposals for estimating Tourism Direct GDP with limited data”, some proposals for estimating the relevant indicators that we would have if we had a full integration of TSA-SEEA could be proposed in the toolkit.
Some very relevant information would be incomplete with a simple system of indicators (i.e. not fully accounting for the “tourism share”), but it will provide a more feasible tool easier to use by tourism stakeholder, but with a strong statistical support behind.

This focus for estimates guidelines could also build a bridge between national accounting based figures and sub-national estimations.
Arturo De La Fuente (Environmental Statistics, European Commission)

General comments:

- It is debatable whether the SF-MST is actually about sustainable tourism. It is actually a conceptual framework about the economic dimension of tourism (‘tourism’ defined in the conventional way) supplemented with additional information about environmental and social aspects. Enriching the economic dimension with information on environmental and social aspects is welcome, but it is not strictly speaking about ‘sustainable tourism’. For instance, the SF-MST framework could not answer the question ‘which share of the total tourism is sustainable’. Moreover, it is uncertain to me that it could provide estimates for the SDG indicators listed in section 1.4.4.

While admitting the benefits and the usefulness of the framework SF-MST proposed, a proper framework to measure ‘sustainable tourism’ would require a proper focus on the sub-set of the ‘tourism’ activities fulfilling certain conditions (to be spelled out) taking account of the dimensions economic, environmental and social.

- I wonder if the level of ambition is too high. At this stage it does not seem to make any concession to practical challenges and limits to resources. It is not obvious to me that implementation is feasible even in the most advanced countries.

- I miss explanations more in the SF-MST of how the accounts will be compiled, data sources, compilation processes, etc. in particular for the environmental dimension and social dimension. For the environmental dimension, section 3.3.6 is welcome but it represents a small share of the SF-MST handbook. There is no equivalent to section 3.3.6 for the social dimension in chapter 4. A more explicit reference to the compilation of the system, even if not fully detailed, would allow a better understanding of the feasibility of the framework.

Specific comments:

Pg 10: “wealth accounting”. The statistical language on this page looks very far apart from section 1.2.3. The latter looks much better.

Also in this paragraph, better known examples than the IHDP-UNU may be the SEEA or SNA.

Pg 16: Sentence “all of the statistical standards and guidelines just described, including the national accounts, can be applied at all levels of spatial detail”. This is not fully true. Try to compile GDP at the level of one city or one street. Some statistical standards, including the national accounts, assume that the entity under study is big enough to make sense as a self-contain entity (say, a country or a region) and afterwards it can be considered as interacting with other similar entities (say, other countries or regions) with imports, exports, income flows, etc. If the entity under study is very small, say a street, there are conceptual problems because hardly any variable under study, say production or consumption, can take place integrally inside the entity under study. E.g. residents in the street will go to work to other streets, earn their income in other streets and consume or invest in yet other streets, thus their economic behavior inside the street is very limited. All this may sound very academic but the problem is real when attempting an accounting framework at very local scale.

Pg 18: The ILO research on decent work is rather recent and it is unproven yet that it is operational and feasible (i.e. how to operationalize the measurement of ‘decent work’). Dir F may want to comment on it (or may not).
Section 1.3.4 or 1.3.5: integration of spatial information: I would propose to use an approach similar to SEEA Experimental Ecosystem Accounts. This consists of starting with raw data geolocalised, which can be visualized in maps being part of the standard, and then the information is aggregated in base accounts and tables (having supply-use tables and asset accounts as proposed in section 1.3.5 is OK to me).

Pg 21: Not fully clear if the distinction between base accounts and base tables is relevant or justified. It seems to be a device to make clearer distinction between the status of development of accounting in the economic and environmental domains and the social domain. In the former there are proper national accounts and environmental accounts (methodologies and data) whereas in the social domain where there is no comparable social accounting.

Pg 27: indicators vs models. I would propose to talk about ‘model-based estimates’ rather than ‘models’. I see the models as an input to produce an output, but not as an output themselves. Instead the indicators are an output.

Pg 38 and section 3.4: the accounts on water, energy, GHG emissions and solid waste are clear to me. They are all flows created by tourism activities (or is it ‘sustainable tourism’, see my general comment above?). However the asset accounts are more problematic, from a conceptual viewpoint. A certain asset, say a stock of water resources or an ecosystem, can be used for tourism-related activities (flows) or for non-tourism activities (e.g. water consumption by local residents). How are they going to be distinguished? Which part of the asset or its use is to be recorded in the SF-MST? Idenm for land accounts: I see uncontroversial the land extension occupied by hotels, some blur borderline in special areas, e.g. national parks (which may be used by tourists and non-tourists) but how to account e.g. the streets in a typically touristic city? Which part is accounted to tourists and to non-tourists? I find it an impossible task.

Chp 3: PSUT for water, energy, GHG emissions, solid waste: the columns for Households are not necessary, because all the flows are attributed to the industries producing tourism activities, but it is probably OK to leave them in the tables to enhance resemblance with other frameworks such as SEEA. The column ‘flows to the rest of the world’ would be meant for international tourists, which would require knowing the share of international tourists over the total tourists, as part of the SF-MST.

Pg 45: account for GHG emissions: it would be useful for compilation (see e.g. section 3.3.8) and for analysis to distinguish in the rows the emissions by type of emitter, e.g. road transport vehicles (rented by tourists), international aviation (tourist flights), accommodation facilities (for heating), etc.

Chp 3: The proposed PSUT for water, energy, etc. for tourism activities are by themselves not too informative if they are not transformed into derived indicators such as share of the GHG emissions in the country stemming from tourism, emissions per visitor (compared to emissions per resident), etc. The framework proposed is good but without summary indicators it will not be fully informative. Those indicators would require similar PSUT for the non-tourism activities in the country, which in principle is no problem if PSUT for (whole economy) emissions exist and for the tourism activities exist.
Statistical Framework for Measuring Sustainable Tourism

Consultation Draft

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

February 2018

Comment [MB1]: Overall, very good and useful. It may spend too much time explaining the challenges rather than solutions. It could say more about applying “new” data sources and NSDI. Perhaps the title should be “towards a statistical framework…”
Foreword

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

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

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

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

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

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

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

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

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

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

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

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

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

\[1\] <<Insert text from UNSC meeting – resolution>>
Acknowledgements (TBC)

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<td>International Labour Organization</td>
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<td>Measuring Sustainable Tourism</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<td>WGE-MST</td>
<td>Working Group of Experts on Measuring Sustainable Tourism</td>
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1 Introduction

1.1 What is sustainable tourism?

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

i. make optimal use of environmental resources and conserve natural resources and biodiversity

ii. respect the socio-cultural authenticity of host communities

iii. ensure viable, long-term economic operations, including stable employment and contributions to reducing poverty.

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

<table>
<thead>
<tr>
<th>Box 1: Defining sustainable tourism</th>
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**UNWTO definition:**

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

Thus, sustainable tourism should:

1. Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural resources and biodiversity.

2. Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.

3. Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

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

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

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

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

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

i. the reality that in contributing a larger share of economic activity in most countries, tourism activity is contributing more to the use of environmental resources and its impact on the natural environment is increasingly significant

ii. the idea that tourism activity might provide a path by which lower income countries and region might improve their standard of living

iii. the recognition of the dependence of tourism activity on its environmental and social contexts and the need to keep these underpinning supports in good condition.

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

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

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

i. Inclusive and sustainable economic growth

ii. Social inclusiveness, employment and poverty reduction

iii. Resource efficiency, environmental protection and climate change

iv. Cultural values, diversity and heritage

v. Mutual understanding, peace and security

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

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

1.2.1 Measuring sustainability

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

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

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

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

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

Comment [MB3]: Non-statisticians may not get the point. It could use a more detailed explanation (or a footnote: SD is a relative concept, over what period, wealth accounting is “weak sustainability” i.e., capitals are substitutable, maybe refer to ECE Measuring Sustainable Development...

Comment [MB4]: Needs some commas.

Comment [MB5]: Again, an explanation for non-statisticians would be useful (e.g., some components go up, others go down, on average, they don't change.)

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1 http://hdr.undp.org/en/content/human-development-index-hdi
2 http://www.ihdp.unu.edu/docs/Publications/Secretariat/Reports/SDMs/IWR_SDMSDM_2014.pdf
For SF-MST, the approach to measuring sustainability is to recognize the potential inherent in wealth accounting and systems dynamics based approaches and to provide a statistical framework that supports a systems perspective. While there are conceptual challenges, accounting-based approaches reflect a willingness to engage with the complexity inherent in the description and measurement of sustainable development. Hence, they provide a pathway through which the development of statistics can also engage with this complexity and hence best support the real challenges faced by decision makers.

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

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

1.2.2 A history of measuring tourism

UNWTO, as the specialized agency responsible for the promotion of responsible, sustainable and universally accessible tourism, is committed to ensure that tourism plays a key role in progress towards sustainable development. Using a focus on tourism destinations, UNWTO has articulated a definition of sustainable tourism (UNWTO & UNEP, 2005), provided a guide to the set of relevant policy themes (UNWTO & UNEP, 2005) and described a comprehensive
range of indicators that may be used in measuring progress towards sustainable tourism at destination level (UNWTO, 2004).

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

With respect to the measurement of sustainable tourism, the main contribution of the UNWTO has been the ongoing work to develop relevant sets of indicators that respond to policy needs, most notably the 2004 UNWTO Guidebook for Indicators of Sustainable Development for Tourism Destinations. Building on earlier work, the Guidebook for Indicators identified a very large number of indicators (over 700) across 13 issues. Notwithstanding the importance of identifying indicators for sustainable tourism, what is clear is that there is a significant gap from a statistical perspective in defining standards for a framework that integrates economic, environmental and social statistics at relevant spatial levels (including local, national and global) that are required for assessment of sustainable tourism. This gap was recognised in both the IRTS and the TSA:RMF. With the aim of closing this statistical gap, in 2015 the UNWTO launched the Towards a Statistical Framework for Measuring Sustainable Tourism (MST) initiative (http://cf.cdn.unwto.org/sites/all/files/docpdf/brochurees.pdf).

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

A feature in the development of tourism statistics has been the role of international conferences in providing launching platforms for each stage of development. The developments in measuring sustainable tourism are no exception, with the profile of work being significantly raised 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 participants (see Annex 1). Among a range of actions, the Manila Call to Action explicit requests the development of the SF-MST, a call that had been endorsed at the United Nations Statistical Commission meeting in March 2017 and that was reinforced as a key area of work at the UNWTO General Assembly in September 2017.

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5 IRTS, 2008 Chapter 1 (UNWTO, 2010) provides a description of the historical development of tourism statistics.
1.2.3 The role of statistical frameworks

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

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

Figure 2: Using statistical frameworks to link data and policy

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

Comment [MB8]: This could use an example as well: GDP and population measures are combined to calculate GDP/capita, both need the same period and coverage...
Maintaining a stable statistical framework at the heart of measurement ensures that data and policy can be meaningfully linked and effective comparisons can be made on an ongoing basis, notwithstanding the ongoing changes in data sources and policy needs.

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

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

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

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

1.2.4 The benefits of a statistical approach

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

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

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

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

Comment [MB9]: SNA may be a useful example.

Comment [MB10]: For sustainable tourism or other subjects? It would be good to have some references.
institutional arrangements for the governance and management of statistics on sustainable tourism;

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

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

1.3 Overview of the SF-MST

1.3.1 Introduction

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

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

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

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

The scope of the SF-MST itself is the description of
- standard definitions, classifications and measurement boundaries
- base accounts and tables
- combined presentations.

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

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

![Decision support tools](image)

**Statistical Framework for MST**
- Combined presentations
- Base accounts and tables
- Standard definitions, classifications & measurement boundaries

**Data sources**

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

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

1.3.2 Coverage of SF-MST

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

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

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

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

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

1.3.3 Applying an accounting approach

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

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

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

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

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

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

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

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

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

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

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

1.3.4 Accounting for spatial scale

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

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

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

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

- **Global** – referring to all countries and marine areas
- **Supra-national areas** – referring to groupings of countries
- **National**

Comment [MB17]: The word “balance” does imply a strong(er) sustainability. The terms should be explained.
Regional - referring to the level of administrative unit directly below the national level (corresponds to the NUTS 2 level in the EU territorial classification scheme)

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

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

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

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

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

1.3.5 Base accounts and tables

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

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

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

Each base account stands alone in the sense of applying specific accounting identities such that there is a complete and balanced set of information in each account. At the same time, each account operates as part of an overall system of accounts in which linkages can be made among different accounts each focusing on a specific aspect. The SF-MST thus comprises a series of accounts and tables, each covering specific aspects of sustainable tourism, but defined in an aligned and coherent fashion.
In addition, there will be other complementary information required to support understanding sustainable tourism that will not fit directly into these accounting structures. Examples include information on employment, demographics of tourism establishments, visitor movements and indicators in the social dimension. To ensure consistency and comparability of data, these other data are grouped and classified using the same classifications as used in the SUT and asset accounts. This will support the integration of data and enhanced data analysis. The relevant classifications are documented in chapters 3, 4 and 5.

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

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

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

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

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

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

In the social dimension, these are indicative tables designed based on the developing information to support the measurement of the social dimension in the context of social capital. Particular note has been taken of the types of information on the social dimension that has been described in the measurement of sustainable tourism, including in the area of governance.

1.3.6 Combined presentations

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

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

The following examples of combined presentations are illustrative only. They should be used to introduce and demonstrate the potential applications of the SF-MST and serve as a basis for engagement with different users about their needs and with different data producers about the ways in which their data are being used.
Table 2: Examples of combined presentations for sustainable tourism (illustrative examples only)

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

<table>
<thead>
<tr>
<th>ECONOMIC DIMENSION OF TOURISM INDUSTRIES</th>
<th>Tourism industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accommodation for visitors</td>
</tr>
<tr>
<td>1. Income and costs</td>
<td>Tourism Total</td>
</tr>
<tr>
<td>Output</td>
<td>$</td>
</tr>
<tr>
<td>Gross national income</td>
<td>$</td>
</tr>
<tr>
<td>Compensation of employees (Labour costs)</td>
<td>$</td>
</tr>
<tr>
<td>Intermediate consumption</td>
<td>$</td>
</tr>
<tr>
<td>Total</td>
<td>$</td>
</tr>
<tr>
<td>Wages</td>
<td>$</td>
</tr>
<tr>
<td>Energy</td>
<td>$</td>
</tr>
<tr>
<td>Waste Treatment</td>
<td>$</td>
</tr>
<tr>
<td>Expenditure on tourism characteristic</td>
<td>$</td>
</tr>
</tbody>
</table>

2. Business demographics

<table>
<thead>
<tr>
<th>Total number of establishments</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>#</td>
</tr>
<tr>
<td>Medium</td>
<td>#</td>
</tr>
<tr>
<td>Large</td>
<td>#</td>
</tr>
<tr>
<td>Locally owned</td>
<td>#</td>
</tr>
<tr>
<td>Foreign owned</td>
<td>#</td>
</tr>
<tr>
<td>Location - by tourism region</td>
<td>#</td>
</tr>
<tr>
<td>#1</td>
<td>#</td>
</tr>
<tr>
<td>#2</td>
<td>#</td>
</tr>
<tr>
<td>#3</td>
<td>#</td>
</tr>
</tbody>
</table>

3. Employment

| Employment in tourism          | Hours worked |
| Total (jobs or employees)      | #            |
| Male                          | #            |
| Female                        | #            |
| Part time                     | #            |
| Full time                     | #            |
| Employees                     | #            |
| Self-employed                 | #            |
| Age / experience              | #            |
| Education/skill set           | #            |

4. Investment and infrastructure

| Gross fixed capital formation  | $            |
| Buildings                      | $            |
| Equipment                      | $            |
| Other                          | $            |
| Capital stock                  | $            |
| Buildings                      | $            |
| Equipment                      | $            |
| Other                          | $            |
| Available capacity (accommodation) | # #rooms / beds |

Net financial position
### Table 2b: Combined presentation – Environmental dimension for tourism industries

<table>
<thead>
<tr>
<th>ENVIRONMENTAL DIMENSION OF TOURISM INDUSTRIES</th>
<th>Tourism industries</th>
<th>Total all industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accommodation for visitors</td>
<td>Food &amp; beverage serving</td>
</tr>
<tr>
<td>UNIT</td>
<td>Tourism Total</td>
<td>Tourism Total</td>
</tr>
<tr>
<td>1. Environmental flows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net water use</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Own-account water abstract</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Blackwater generated</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Net energy use</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>Use of energy from renew</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>GHG emissions</td>
<td>tonnes</td>
<td></td>
</tr>
<tr>
<td>Solid waste generation</td>
<td>tonnes</td>
<td></td>
</tr>
<tr>
<td>2. Environmental assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use</td>
<td>ha</td>
<td></td>
</tr>
<tr>
<td>Land value</td>
<td>$</td>
<td></td>
</tr>
</tbody>
</table>

### Table 5c: Combined presentation – Demand perspective

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

24
It should be apparent that there are many potential indicators that might be formed from the information contained in the base accounts and tables of the SF-MST through combination with existing information on tourism industries. For example, analysis might be extended to consider environmental flows by size of tourism establishments. The intention in designing combined presentations is to provide a starting point for discussion between compilers of accounts and decision makers to ensure that the measurement and derivation of indicators is both feasible and relevant.

1.4 Implementation and application of the SF-MST

1.4.1 Implementation of the SF-MST

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

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

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

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

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

1.4.2 The role of national statistical offices in implementation

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

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

1. As organisations that work with large and various datasets, NSO are well placed to contribute their expertise in the collection and organisation of data from a range of different sources.

2. A core part of the role of NSO is the establishment and maintenance of relevant definitions of concepts and classifications aligned with international standards. The SF-MST incorporates a range of such concepts and classifications and the ongoing involvement of NSO in this area of work will be valuable.

3. Beyond the organisation of information, NSO have capabilities to integrate data from various sources to build coherent pictures of relevant concepts. Most commonly, NSO focus on providing coherent pictures in relation to socio-economic information and this capability is increasingly extending to include environmental information. Given the multi-disciplinary nature of SF-MST, data integration is an important requirement.

4. NSO work within broad national and international data quality frameworks that enable the assessment and accreditation of various information sources and the associated methodologies in a consistent and complete manner.

5. NSO have a national coverage. The focus of the SF-MST is on the provision of information that supports integrated measurement at both national and sub-national scales. Creating national economic, social and environmental pictures is a
relatively unique role undertaken by NSO and incorporates an implicit understanding of scaling data. SF-MST implementation would benefit substantially from consideration of how standard statistical techniques used for official statistics may be applied at different scales, in particular in the context of geo-spatial statistics.

6. NSO can present an authoritative voice by virtue of the application of standard measurement approaches, data quality frameworks and their relatively unique role within government, including in many countries, leadership of the National Statistical System. Further, their legal mandate may often facilitate access to data sources that are unavailable to others.

7. A large number of NSO are involved in the compilation of national accounts and related outputs including TSA and SEEA accounts. The application of national accounting expertise will be important in the implementation of the SF-MST particularly in the context of efforts to understand the most appropriate ways in which physical and monetary measures on the various aspects of sustainable tourism can be integrated with information from the standard national accounts.

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

1.4.3 Application of the SF-MST
Most commonly, statistical frameworks generate two types of outputs to support policy and analysis:

i. indicators of the state and trends in sustainable tourism

ii. models that use statistically based data to estimate likely outcomes in the future or in alternative scenarios, e.g. under alternative taxation arrangements.

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

Information to support economic and social modeling is the second important output from statistical frameworks. Discussion of many policy questions cannot be supported simply through the use of indicators. Instead, data relating to a number of different areas must be brought together to underpin analysis. Examples include analyzing the relationship between tourism demand and employment, assessing visitor numbers and water use, and comparing
the location of tourism establishments and changes in condition of local waterways. In each of these cases, ensuring that the data from the different areas are compatibly defined helps ensures the relevance and accuracy of the analysis.

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

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

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

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

- **Target 8.9:** By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
- **Target 12.b:** Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.
- **Target 14.7:** By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

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

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

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

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

The development of indicator sets for the measurement of sustainable tourism has been an active area of work for many years. Short summaries of a range of initiatives are presented below (Box 2) with a focus on indicator sets being developed by international agencies and within the private sector.
Country and regional level work on measuring sustainable tourism, sometimes led by academic researchers, has also been in evidence over the past 25 years. Documentation on some of these country experiences, as well as the work currently being carried out by in the pilot studies in the specific framework of MST, can be found on the MST website.

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

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

<table>
<thead>
<tr>
<th>Box 2: Examples of Sustainable Tourism indicator sets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNWTO’s International Network of Sustainable Tourism Observatories</strong> (INSTO) brings together tourism observatories from around the world. Tourism observatories have been established in many destinations with the aim to better understand, monitor and advise on policy towards more sustainable development of tourism. The design, implementation and analysis of indicators are a fundamental part of their work. INSTO proposes an institutional framework, nine issue areas considered to be of highest relevant to observatories, and an economic data sheet for reporting. It encourages the systematic application of monitoring, evaluation and information management techniques, as key tools for the formulation and implementation of sustainable tourism policies, strategies, plans and management processes.</td>
</tr>
<tr>
<td><strong>Eurostat</strong> released a comprehensive review of the measurement of sustainable tourism in 2006. The review proposed 20 indicators, primarily from economic and environmental domains, and a further set of possible social/cultural indicators, all set within the Driving force-Pressure-State-Impact-Response (DPSIR) indicator framework. The indicator set was intended to be applied at regional/sub-national level.</td>
</tr>
<tr>
<td><strong>OECD</strong> work in measurement was reflected in 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 work.</td>
</tr>
</tbody>
</table>

---


8. 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

European Commission’s initiative on a European Tourism Indicators System (ETIS) for sustainable destination management\(^\text{10}\). ETIS has defined 43 core indicators and has been trialed in a number of destinations, including NECSTouR\(^\text{11}\) regions. To frame the indicators, they have identified four main themes: Destination management, Social / cultural impact, Economic value, Environmental impact.

United Nations 10 Year Forward Program (10YFP) on Sustainable Consumption and Production (SCP)\(^\text{12}\) has initiated the development of a flexible monitoring and evaluation framework to provide directions and vision and measure its progress on capacity enhancement for the shift towards SCP\(^\text{13}\) and incorporates a Sustainable Tourism Program (STP) within this broader framing.

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

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

- Voluntary certification standards around sustainable tourism operation with the Global Sustainable Tourism Council (GSTC) being a leading facilitator.
- Hilton hotels sustainability measurement platform\(^\text{14}\).
- Hotel Water Measurement Initiative (HWMI), and its equivalent for carbon, promoted by the International Tourism Partnership (ITP) of Business in the Community\(^\text{15}\).
- The World Travel and Tourism Council (WTTC), with Griffith University and the University of Surrey, has released research on sustainability reporting in the context of the UN SDGs\(^\text{16}\).

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

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


\(^\text{11}\) Network of European Regions for a Sustainable and Competitive Tourism (NECSTouR).

\(^\text{12}\) The 10YFP, an outcome of Rio+20, is a global framework that enhances international cooperation to accelerate the shift towards SCP. It aims at developing, replicating and scaling up SCP and resource efficiency initiatives, at national and regional levels, decoupling environmental degradation from economic growth, and thus increasing the net contribution of economic activities to poverty eradication and social development. It has six initial programmes: Consumer Information; Sustainable Buildings and Construction; Sustainable Food Systems; Sustainable Lifestyles and Education; Sustainable Public Procurement; and Sustainable Tourism.

\(^\text{13}\) 20 general pilot indicators have been identified for the four 10YFP objectives, including 7 on Objective 4 (Contribute to resource efficiency and decoupling economic growth from environmental degradation and resource use, while creating jobs and economic opportunities and contributing to poverty eradication and shared prosperity); energy efficiency, mitigation of GHG and other atmosphere, soil and water pollutants, material use reduction, waste reduction, water-use efficiency, sustainable land-use, and decent employment.


\(^\text{15}\) [http://tourismpartnership.org/water-stewardship/](http://tourismpartnership.org/water-stewardship/)

\(^\text{16}\) [https://www.wttc.org/Sustainability-Reporting#undefined](https://www.wttc.org/Sustainability-Reporting#undefined)
There are many examples of the use of environmental flow information in connection with standard input-output tables and an introduction to the principles and summary of the relevant literature is provided in SEEA Applications and Extensions (ref). Examples already exist in the area of tourism, for example the work for Wales on the connections of tourism and GHG emissions and tourism and employment (refs needed). Advancing the measurement of integrated TSA and SEEA accounts will further support these efforts in understanding the broader connections between tourism activity and the environment and ensuring that environmental data can be taken into account in economic modeling of tourism.

1.5 Structure of the SF-MST document

<<To be drafted following further discussion on the coverage and structure of the draft SF-MST.>>
2 Accounting for the economic dimension of sustainable tourism

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

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

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

2.1 Introduction

<< To be drafted>>

2.2 Key aspects of tourism statistics and the TSA framework

2.2.1 Tourism statistics

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

Topics to be covered include:

- Visitors and the usual environment
- Visitor movements – inbound, outbound, domestic – purpose
- Visitor consumption
2.2.2 The TSA framework

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

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

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

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

Key aspects of the TSA are:

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

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

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

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

Box 3 presents the top level categories for tourism products and tourism industries. There is clearly a close link between the descriptions since an activity is defined in relation to a primary product. However, in practice, a single tourism establishment may produce a range of products even if it is classified to its main or primary product. For example, many hotels...
will be categorized to the activity “Accommodation for visitors” but will produce a range of products including accommodation services and food and beverage serving services.

<table>
<thead>
<tr>
<th>Box 3. Categories of tourism characteristic consumption products and activities (tourism industries)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption products</strong></td>
</tr>
<tr>
<td>1. Accommodation services for visitors</td>
</tr>
<tr>
<td>2. Food and beverage serving services</td>
</tr>
<tr>
<td>3. Railway passenger transport services</td>
</tr>
<tr>
<td>4. Road passenger transport services</td>
</tr>
<tr>
<td>5. Water passenger transport services</td>
</tr>
<tr>
<td>6. Air passenger transport services</td>
</tr>
<tr>
<td>7. Transport equipment rental services</td>
</tr>
<tr>
<td>8. Travel agencies and other reservation services</td>
</tr>
<tr>
<td>9. Cultural services</td>
</tr>
<tr>
<td>10. Sports and recreational services</td>
</tr>
<tr>
<td>12. Country-specific tourism characteristic services</td>
</tr>
</tbody>
</table>


### 2.3 Measuring economic activity of tourism

#### 2.3.1 Accounting for tourism activity at aggregate level

Given the structural information on tourism activity in the TSA, there is data in the core TSA accounts that can be used to inform on sustainability without any particular extension of the core framework. At a global level this has been recognized in the development of indicators for the measurement of progress towards the UN Sustainable Development Goals (SDGs), where indicators relating to Tourism GDP and employment in tourism, both derived from the TSA, are being developed in relation to Targets 8.9 and 14.7.\(^7\)

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

\(^7\) Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. Target 14.7: By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.
Extensions in the form of additional detail within TSA core tables, might be considered to integrate information on specific market segments such as relating to human resources\textsuperscript{18}, cruise ships, eco-tourism, meetings industries (sometimes referred to as MICE\textsuperscript{19}), etc. Data can also be organized to highlight macro-economic indicators of tourism activity such as tourism expenditure per visitor and foreign exchange earnings. Each of these different views will inform on the past trends and current structure in an integrated way in which all of the data are confronted.

\subsection*{2.3.2 Accounting for characteristics of tourism industries}

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

By using basic information provided by business registers, for those establishments classified to industries corresponding to tourism characteristic activities it should be possible to assess the structure of tourism by size of establishment (e.g. in terms of turnover or employment)\textsuperscript{20}, by ownership (resident or non-resident), by legal entity (corporation, household business), and by other characteristics, depending on the range of information held. By combining this data with information on the value added, employment, tourism share and other data from TSA core tables, a rich picture of tourism activity can then be developed which may be significant in a sustainability perspective. It is worth noting that such a result can be obtained from a standard statistical infrastructure that brings coherence of data across all economic statistics.

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

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

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

\begin{itemize}
\item\textsuperscript{18} This has been developed in Canada where TSA Table 7 has been considerably expanded to include, for example tourism occupations. See http://cthrc.ca/en/labour_market_information/human_resource_module
\item\textsuperscript{19} Meetings, incentives, conventions, exhibitions.
\item\textsuperscript{20} For example, the UNWTO Compendium of Tourism Statistics compiles a selection of such information from countries worldwide; see: http://statistics.unwto.org/content/compendium-tourism-statistics
\end{itemize}
2.3.3 Accounting for tourism infrastructure and investment

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

2.3.4 Assessing seasonality

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

2.3.5 Measuring the sharing economy

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

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

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

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

In broad terms, the recording of environmental transactions and the identification of environmental activities is designed to provide information that supports tracking the
response of business and government to environmental challenges. By developing these data for tourism industries, indicators could be developed that show the response of tourism industries to environmental challenges both in absolute terms and relative to other sectors.

2.4 Measuring the employment aspects of tourism

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

Topics to be incorporated:

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

2.5 Accounting for the economic dimension at sub-national level

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

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

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

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

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

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

3.1 Introduction
<<To be drafted>>

3.2 Key aspects of the SEEA framework

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

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

- **Accounting for environmental flows** in physical terms; into, within and from the economy. This includes accounting for flows of water, energy, air emissions, solid waste and emissions to water; and can be extended to account for individual elements and substances such as carbon and nitrogen.

- **Accounting for natural resources** in terms of stocks and changes in stocks (e.g. discoveries of resources, depletion). This includes accounting for stocks of mineral and energy resources, timber, fish, water and soil.

- **Accounting for environmental transactions** that are included in the SNA but not specifically identified as “environmental”. This includes accounting for environmental protection and resource management expenditure, environmental taxes and subsidies and the supply and use of environmental goods and services.

- **Accounting for land and ecosystems**. In this type of accounting the focus is on understanding the changing composition of the area of a country in terms of land use and land cover and the quality of the land in terms of the condition of its ecosystems. Accounting for ecosystem also involves the measurement of ecosystem services and evaluating the capacity of ecosystem to continue to generate market and non-market ecosystem services.

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

### 3.3 Accounts for environmental flows for tourism industries

#### 3.3.1 Introduction

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

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

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

The accounts described here are presented in terms of compilation for annual frequencies and at national level. While this is a suitable basis for description of the accounts, for
sustainable tourism both sub-national and sub-annual compilation of accounts is likely to be relevant. In general, the same conceptual considerations will apply, and there may be additional data and compilation issues to take into account.

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

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

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

### 3.3.2 Accounts for water flows for tourism industries

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

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

Consistent with the advice in the SEEA Central Framework, it would be preferable for the tables to be compiled for individual catchments since the pressures on water supply will vary by location. It is noted that the nature of water supply will also vary by location with different combinations of surface water, groundwater and desalinated water being used. Although the table below does not distinguish between these different sources of water, additional rows can be incorporated to record this detail.
The breakdown of economic activities identified in the tourism industries water flow account distinguishes the main tourism industries and the main industries associated with water supply and use. Recognizing that in any given industry not all water flows will be attributable to tourism, the distinction between tourism and non-tourism flows should be made following the methodological advice discussed below.

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

For the purposes of describing the application to tourism, the full set of entries has been reduced to provide a focus on those entries expected to be of most relevance to the analysis of water flows for tourism industries. Ideally, the accounting for these flows would be undertaken as part of an economy wide accounting for water and the structure described supports this approach.
## Table 5.1: Tourism industries water flow account (cubic metres)

### Physical supply table for water

<table>
<thead>
<tr>
<th>Abstraction of water; Production of water; Generation of return flows</th>
<th>Water collection, treatment, and supply</th>
<th>Other industries</th>
<th>Households</th>
<th>Flows from the foot of the world</th>
<th>Flows from the Environment</th>
<th>Total supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism industries</td>
<td>Accommodation</td>
<td>Food &amp; beverage</td>
<td>Passenger transport</td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism</td>
<td>Total tourism</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
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<tr>
<td>Total supply abstracted water</td>
<td></td>
<td></td>
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<td>1 2 3</td>
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<tr>
<td>1. Sources of abstracted water</td>
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<td>Total supply abstracted water</td>
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<td>2. Water</td>
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<td>1 2 3</td>
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<tr>
<td>Distribution of abstracted water</td>
<td></td>
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<td></td>
<td>1 2 3</td>
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<tr>
<td>Own use of abstracted water</td>
<td></td>
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<td></td>
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<td>1 2 3</td>
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<tr>
<td>3. Wastewater and re-used water</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>1 2 3</td>
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<tr>
<td>Wastewater to treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
</tr>
<tr>
<td>Own treatment of wastewater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
</tr>
<tr>
<td>Re-used water produced (for distribution)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
</tr>
<tr>
<td>Total Wastewater and re-used water</td>
<td></td>
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<td>1 2 3</td>
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<tr>
<td>4. Return flows of water</td>
<td></td>
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<td>1 2 3</td>
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<tr>
<td>Total Return flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td></td>
<td></td>
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<td>1 2 3</td>
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<tr>
<td>Total</td>
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<td>1 2 3</td>
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<tr>
<td><strong>TOTAL SUPPLY</strong></td>
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<td></td>
<td>1 2 3</td>
</tr>
</tbody>
</table>

### Physical use table for water

<table>
<thead>
<tr>
<th>Abstraction of water; Intermediate consumption; Return flows</th>
<th>Water collection, treatment, and supply</th>
<th>Other industries</th>
<th>Households</th>
<th>Accumulation</th>
<th>Flows to the Best of the world</th>
<th>Flows to the Environment</th>
<th>Total use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism industries</td>
<td>Accommodation</td>
<td>Food &amp; beverage</td>
<td>Passenger transport</td>
<td>Culture, sports &amp; recreation</td>
<td>Other tourism</td>
<td>Total tourism</td>
<td>Sewerage</td>
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<td>-----------------------------------------------------------------</td>
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</tr>
<tr>
<td>1. Sources of abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Total water resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Other water sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>Total use abstracted water</td>
<td></td>
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<td></td>
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<td>1 2 3</td>
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</tr>
<tr>
<td>2. Water (use)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Use of distributed water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Own use of abstracted water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>3. Wastewater and re-used water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Total Wastewater and re-used water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>4. Return flows of water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Total Return flows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>5. Evaporation of abstracted water, transpiration and water incorporated into products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL USE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 2 3</td>
<td></td>
</tr>
</tbody>
</table>

NB: Dark grey cells are null by definition; Red cells reflect those of most likely importance
3.3.3 Accounts for energy flows for tourism industries

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

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

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

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

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

A useful extension is to distinguish the use of energy products between energy from renewable and non-renewable sources.
Table 5.2: Tourism industries energy flow account (joules)\textsuperscript{21}

<table>
<thead>
<tr>
<th>Physical supply table for energy</th>
<th>Production energy products &amp; Generation of residuals</th>
<th>Accumulation</th>
<th>Flows from the rest of the world</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism industries</td>
<td>Accommodation for visitors</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>1. Energy from natural inputs</td>
<td>Natural mineral inputs</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Energy from renewable sources</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>2. Energy products</td>
<td>Total production of energy products</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>3. Energy residues</td>
<td>Total energy residues</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>4. Other residual flow</td>
<td>Residuals from end-use for non-energy purposes</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
</tbody>
</table>

| TOTAL SUPPLY                     |                                       | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total | Torn | Total |

<table>
<thead>
<tr>
<th>Physical use table for energy</th>
<th>Intermediate consumption, use of energy resources, receipt of energy flows</th>
<th>Final consumption</th>
<th>Accumulation</th>
<th>Flows to the rest of the world</th>
<th>Flows to the environment</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism industries</td>
<td>Accommodation for visitors</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>1. Energy resources</td>
<td>Natural resource inputs</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Energy from renewable sources</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>2. Energy products</td>
<td>Transformation of energy products</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Product use; energy products (JECIE code)</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Food and drink products</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Textiles and clothing</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Furniture, equipment, leisure goods</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Travel / transport / entertainment</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td></td>
<td>Accommodation and tourism facilities</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>3. Energy residues</td>
<td>Transformation of energy products</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
<tr>
<td>4. Other residual flow</td>
<td>Residuals from end-use for non-energy purposes</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
<td>Total</td>
<td>Torn</td>
</tr>
</tbody>
</table>

TOTAL USE

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

\textsuperscript{21} According to the International Recommendations for Energy Statistics (IRES), energy statistics are supposed to be compiled by converting physical measures of mass and volume such as tonnes, litres and cubic metres into a common unit representing energy content in net calorific terms. Joule is the common unit generally used for expressing energy flows.
3.3.4 Accounts for GHG emissions for tourism industries

The third core account is a physical supply and use table for flows of GHG emissions. It contains information on the generation of GHG emissions by tourism industries by type of GHG emissions and is adapted from the air emissions account in the SEEA Central Framework (Table 3.7). Key cells for the compilation of this account are highlighted in red and focus on release of carbon dioxide emissions by tourism industries.

In general, the generation of GHG emissions will be “used”/received by the atmosphere directly. Of particular interest will be the GHG emissions associated with transport. In this regard the method for attributing emissions to individual countries, particularly in the case of air and water transport is of direct interest. This is discussed in more detail below.

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

Table 5.3: Tourism industries GHG emissions account (tonnes)

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

3.3.5 Accounts for solid waste for tourism industries

The fourth core account is a physical supply and use table for flows of solid waste. It contains information on the generation, collection and disposal of solid waste by type of waste. It is likely that, in practice, only a few cells in the table will be of significance and these should form the focus of initial development. These cells are highlighted in red.

In both the supply table and the use table, the rows are grouped into two sections, corresponding to the fact that while the materials at issue appear in the economy as “residuals”, they may also be purchased. These sections follow the structure of the physical supply and use table for solid waste presented in Table 3.9 Solid waste account in the SEEA Central Framework. The items selected for the categories of solid waste are those deemed relevant for tourism industries and for the activities of other industries that meet visitors’ demand.

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

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

Table 5.4: Tourism industries solid waste account (tonnes)

<table>
<thead>
<tr>
<th>Physical supply table for solid waste</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation of solid waste</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Tourism Industries</td>
<td>Other Industries</td>
<td>Households</td>
<td>Total</td>
</tr>
<tr>
<td>Accommodation for visitors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food &amp; beverage serving</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture, sports &amp; recreation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other tourism ind.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total tourism ind.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Generation of solid waste residuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metallic waste and other recyclables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decorated equipment and vehicles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed residential and commercial wastes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other wastes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total solid waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Generation of solid waste products</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Physical use table for solid waste

<table>
<thead>
<tr>
<th>Intermediate consumption; Collection of residuals</th>
<th>Final consumption</th>
<th>Flows to the rest of the world</th>
<th>Flows to the Environment</th>
<th>Total use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste collection, treatment and disposal industry</td>
<td>Tourism Industries</td>
<td>Other Industries</td>
<td>Households</td>
<td>Exports of solid waste</td>
</tr>
<tr>
<td>Landfill</td>
<td>Incineration and reuse</td>
<td>Other treatment</td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Collection and disposal of solid waste residuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total solid waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Use of solid waste products</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total solid waste | | | | |

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

3.3.6 Estimating the tourism share of environmental flows

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

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

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

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

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

By way of example, the tourism share of water use in the restaurant industry may be estimated by multiplying the total water use of that industry by the output share of the restaurant industry that is attributable to visitor consumption.

Some care should be taken in the use of the different tourism shares for different environmental flows. Output shares should be used where the magnitude of the environmental flow of interest is directly related to the level of production (e.g. GHG emissions and solid waste) while intermediate consumption shares are best applied for those environmental flows that are inputs to production (e.g. energy).

Value added shares can be used when output or intermediate consumption shares are not available and estimating value added shares can turn out to be relatively more affordable, but they are not preferred. Their use depends on the extent to which it can be assumed that there is a close relationship between the value added share and the share of output or intermediate consumption. At the same time, where output and intermediate consumption shares are quite high then it is likely that the value added share is also high and then value added ratios may be good proxies for output ratios or intermediate consumption ratios.

The more general assumption in estimating tourism shares is that the production function (mix of outputs and inputs) for an industry is the same for visitors and non-visitors. For example, the amount of water used to make a restaurant meal is invariant between consumers. In concept, this assumption is likely reasonable provided that information is available at a relatively fine level of industry detail. For example, estimates of energy use may vary between air freight and air passenger transport and more accuracy in the tourism shares will be obtained if calculations can be completed at the finer level. However, in practice it may be difficult to source suitably fine levels of industry detail in which case the appropriateness of the assumption will depend on the extent of differences in the consumption patterns of visitors compared to residents and the mix of products within the industry.
3.3.7 Distinguishing the consumption and the production perspectives

To this point, the discussion in this section has focused on the measurement of environmental flows from the perspective of tourism industries, i.e. a production perspective. The next step is to consider, for the same environmental flows (water, energy, GHG emissions and solid waste), the methods that would be appropriate in estimating the attribution of flows based on visitor activity.

First of all, the investigation should consider the environmental flows associated with tourism activity where households and individuals undertake activity on their own-account. For example, the energy and GHG emissions associated with driving one’s own car on holiday. Also for consideration are the environmental flows associated with visitors staying with friends and relatives. In allocating SEEA estimates to tourism, these environmental flows should be taken into account in addition to those caused by production processes discussed in this section.

Furthermore, in line with SEEA directions concerning possible applications and extensions of economic-environmental accounts, one way to consider the measurement challenge from a consumption perspective is to recognize that all products are outputs from production processes which are, at an aggregate level, reflected in standard supply and use tables. By using the information on the relationships between inputs and outputs of goods and services reflected in these tables, in principle it is possible to determine a link between the environmental flows of specific production processes along the whole supply chain linked to tourism demand and the outputs that are ultimately consumed by visitors. For example, it would be possible to estimate the quantity of energy embodied in the provision of accommodation services for visitors. The same logic could be applied for other environmental flows such as water and GHG emissions.

The techniques of attributing environmental flows to categories of final demand are well established and widely applied. The SEEA Applications and Extensions provides an introduction to the relevant approaches and associated literature in Chapter III and, in Chapter IV, it provides an example of applying this approach in relation to household consumption. It could be possible to use the principles outlined in SEEA Applications and Extensions to attribute environmental flows to tourism characteristic products, potentially using information on tourism expenditure also to differentiate this attribution by different types of visitor.

Beyond the considerations noted above, more investigation of this topic is required to resolve specific issues. For example, since visitors are by definition outside of their usual environment, there is the dual challenge of both attributing a flow to visitors and also assigning that flow to the residence of the visitors. There is no doubt overlap here with the production perspective but differences in scope do exist.

A conceptual issue lies in appropriately defining the spatial boundaries for consumption. This is especially so since environmental boundaries are open, and visitors travel between countries. The aim here is thus to describe possible methods of presenting a consumption perspective in relation to the environmental flows under investigation. It is quite likely that different approaches are relevant for different flows. Ultimately there should be an alignment of methods here with the delineation of spatial boundaries for destinations but at this stage it should be possible to develop relevant criteria for presenting the consumption perspective without knowing precisely how destinations might be defined.
This discussion provides a brief introduction to the topic and further investigation and discussion of this topic should be undertaken to support compilation activities. It is recommended that initial estimates be undertaken using the production approach since this is generally well aligned with data available through the TSA and SEEA based data sets.

3.3.8 Allocating environmental flows associated with transport activity

Within the general discussion of the estimation and allocation of environmental flows to tourism activity a particular consideration concerns flows related to transport activity. Because transport businesses operate by moving people and products between locations within and between countries, the allocation of relevant environmental flows to specific countries and destinations is not as straightforward as for other businesses. There are national accounting conventions, in particular the residence principle concerning the allocation of economic units to economic territories, that apply in relation to the treatment of expenditures and revenue by these businesses. Hence, the starting point for measurement from a production perspective in a joint SEEA / TSA approach is to consider that these conventions apply in the case of environmental flows.

However, a question requiring further consideration is whether there are any additional considerations in relation to transport that emerge when considering a consumption perspective on these flows. For example, what is the best way to consider allocation of the GHG emissions from a British Airways plane travelling between Singapore and London and carrying passengers from the United States and Australia. At this stage, no specific answers have been developed and it remains an area requiring further investigation and discussion before more concrete advice can be provided.

3.4 General features of measuring environmental assets

3.4.1 Introduction

Following the SEEA Central Framework (UN et al, 2014a), environmental assets are defined broadly as

“the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.” (para 2.17).

There are so many different types of environmental assets, ranging from pristine wilderness to areas heavily influenced by people (such as, city parks and beaches), that applying a single definition can be problematic. The intention however, from a measurement perspective, is to consider that the scope of environmental assets is suitably broad ranging.

Given the range of environmental assets, it is not surprising that many perspectives and associated measurement approaches are adopted. Indeed, in the biophysical sciences, it is clear that there are many specialties including hydrology, geology, climatology, and ecology, and specialisations concerning specific types of ecosystems (e.g. marine areas, forests, deserts) and species (insects, mammals, conifers). Given this variety and the associated breadth of methods and areas of focus, it is perhaps not surprising that there has been, to date, relatively little integration of environmental data into standard national statistical operations.

Nonetheless, there is a very substantial quantity of data and expertise about environmental assets. The challenge from an ongoing measurement perspective is to find ways of
gathering, standardizing and presenting the information in a manner that (i) can be integrated with economic and social data, (ii) is useful for policy making, and (iii) respects the underlying science. The accounting framework of the SEEA is designed to provide a platform to meet this challenge.

3.4.2 Approaches to accounting for environmental assets

The SEEA describes two approaches to the measurement of environmental assets. The first approach concerns the measurement of individual assets such as minerals, energy resources, timber, fish, soil and water. This is described in the SEEA Central Framework. Many of these assets are the focus of extraction or use by primary industries and do not directly support tourism activity. Consequently, there is likely to be little need to develop estimates of the stocks and changes in stocks for these resources in the context of measuring sustainable tourism. There are two main exceptions in this regard: the measurement in physical terms of water resources and the measurement of individual species (e.g. gorillas, wild boar). Accounting for both of these types of environmental asset are described below (sections 4 and 5).

The second approach is accounting for the extent and condition of land and ecosystem assets as described in the SEEA Experimental Ecosystem Accounting (SEEA EEA) (UN et al., 2014b). In the SEEA, land is a unique and fundamental environmental asset. At one level it can be accounted for as an individual resource by recording changes in the composition of land use and land cover within a territory over time. In this way indicators of deforestation and urbanization may be derived.

At the same time, land defines the space within which all activity takes place and other assets are situated and it is the spatial aspects of land that need special and distinct consideration. In the context of environmental assets, accounting for land and ecosystems involves separating an overall territory (e.g. country, region) into distinct spatial areas, known as ecosystem assets, each categorized according to different characteristics. Generally, this will relate to different vegetation types and hence, at an aggregate level there will be a mix of ecosystem assets such as forests, wetlands, coastal areas, urban and built-up areas, farmland, savanna, etc. delineated within a territory. The approaches to land and ecosystem accounting in the context of tourism activity are described further below (sections 6, 7 and 8).

Environmental asset accounts

Accounting for all environmental assets follows basically the same logic. The first step is assessing the stock of the particular environmental asset at a point in time (in accounting terms the beginning of the accounting period). This will likely involve some measurement of the physical stock of the asset using different measurement units depending on the asset. Numbers of wildlife and cubic metres of water would be common metrics.

The second step involves measuring changes in the stock of the asset, both additions and reductions over an accounting period. Ideally, measurement would be undertaken each year but, for many environmental assets, monitoring over 3-5 year periods might be sufficient to support policy discussion.

The measures of the changes in stock must then be reconciled to measures of the stock at the end of the accounting period (i.e. the first step is repeated at a later point in time). This accounting identity that opening stock + additions – reductions = closing stock is a powerful
equation that supports telling coherent stories over time. Table 5.5 shows the basic form of an asset account that reflects this identity.

Table 5.5: Basic form of an asset account

<table>
<thead>
<tr>
<th>Opening stock of environmental assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additions to stock</td>
</tr>
<tr>
<td>Growth in stock</td>
</tr>
<tr>
<td>Discoveries of new stock</td>
</tr>
<tr>
<td>Upward revaluations</td>
</tr>
<tr>
<td>Revaluations</td>
</tr>
<tr>
<td>Total additions of stock</td>
</tr>
<tr>
<td>Reductions of stock</td>
</tr>
<tr>
<td>Extractions</td>
</tr>
<tr>
<td>Normal loss of stock</td>
</tr>
<tr>
<td>Catastrophic losses</td>
</tr>
<tr>
<td>Downward revaluations</td>
</tr>
<tr>
<td>Revaluations</td>
</tr>
<tr>
<td>Total reductions in stock</td>
</tr>
<tr>
<td>Revaluation of the stock*</td>
</tr>
</tbody>
</table>

* Only applicable for asset accounts in monetary terms.

Often gathering the information to measure each of the accounting entries in Table 2 is very challenging and hence biophysical models may be applied that provide estimates of, for example, additions to the stock of timber resources using information on the size and age of the forest and the primary species. In this sense, the accounting framework provides a means by which a variety of environmental information can be integrated with economic data since the underlying recording principles are the same.

An important feature of the SEEA's environmental asset accounting is that it can be conducted in both biophysical (quantitative) terms and in monetary terms. In the first instance, the focus is most commonly on recording data in biophysical terms and indeed, in a sustainability context, understanding the actual physical stock is a fundamental requirement. As well, this information is generally the focus of measurement since the biophysical characteristics can be observed and monitored.

The valuation of environmental assets in monetary terms is a challenging area of research and measurement. It is necessary in cases where the information demand is for comparing environmental assets to other assets or for estimating the capital cost of using environmental assets in the generation of income (e.g. estimating depletion adjusted GDP). However, there are a range of methodological challenges and assumption associated with valuation of environmental assets since they are not commonly traded on markets. Issues associated with valuation are not pursued further in this paper and interested readers are invited to consider material in SEEA Central Framework, Chapter 5 and SEEA EEA, Chapters 5 and 6.

3.4.3 Accounting for water resources

As highlighted earlier, in locations and countries where there are concerns about the availability of water to support tourism activity, it will not be sufficient to record only the
levels of water use by tourism activities. In addition, it will be necessary to record information on the stock of water and changes in this stock. The appropriate account for this task is the water resources asset account – shown below in Table 3. This account records the stock of water at the beginning and end of the accounting period and the changes in the stock of water due to both human activities and natural phenomena such as precipitation and evaporation. The information can provide a basis for the assessment of the pressure being exerted on water resources through abstraction for economic activity including for tourism.

Ideally, as explained in the SEEA Central Framework, water resources asset accounts would be compiled for each water catchment across a country. In the context of assessing sustainable tourism it would be appropriate to focus only on those catchments where there is a significant connection to tourism activity. The water resources asset account provides information as to the stocks and changes in stock of the overall resource and hence the use of water by tourism activities can be seen in context. As a consequence, there are no specific issues pertaining to tourism that need to be considered in developing an appropriate water resource asset account.

Table 5.6: Water resources asset account (cubic metres)

<table>
<thead>
<tr>
<th>Accounting entries</th>
<th>Type of water resource</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surface water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Artificial reservoirs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rivers and streams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glaciers, ice and snow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Groundwater</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil water</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening stock of water resources</td>
<td></td>
</tr>
<tr>
<td>Additions to stock</td>
<td></td>
</tr>
<tr>
<td>Inflows from other territories</td>
<td></td>
</tr>
<tr>
<td>Inflows from other inland water resources</td>
<td></td>
</tr>
<tr>
<td>Discoveries of water in aquifers</td>
<td></td>
</tr>
<tr>
<td>Total additions to stock</td>
<td></td>
</tr>
<tr>
<td>Reduction in stock</td>
<td></td>
</tr>
<tr>
<td>Abstraction</td>
<td></td>
</tr>
<tr>
<td>of which: for tourism purposes</td>
<td></td>
</tr>
<tr>
<td>Evaporation and actual evapotranspiration</td>
<td></td>
</tr>
<tr>
<td>Outflows to other territories</td>
<td></td>
</tr>
<tr>
<td>Outflows to the sea</td>
<td></td>
</tr>
<tr>
<td>Outflows to other inland water resources</td>
<td></td>
</tr>
<tr>
<td>Total reductions in stock</td>
<td></td>
</tr>
<tr>
<td>Closing stock of water resources</td>
<td></td>
</tr>
</tbody>
</table>

The compilation of water resource asset accounts is described at length in a range of materials. These include:

- SEEA Central Framework
- SEEA Water
International Recommendations on Water Statistics

SEEA Technical Note: Water accounting

Commonly, the estimates of stocks and changes in stocks of water will be based on hydrological monitoring and associated models concerning precipitation, evaporation, run-off and other flows. Direct measurement of stocks of water, particularly with respect to surface water is more challenging but is likely to be relevant where abstraction from groundwater is a primary source.

In some situations, for example in island nations, it may be relevant to assess changes in the quality of available water resources as increases in the salinity of groundwater are a known concern and will limit the availability of water, and/or increase the costs of providing water for tourism activity.

A significant issue in some tourism areas will be the seasonality of tourism activity. Where storage capacity is limited, it may be highly relevant to monitor both water use and changes in the stock of water on a monthly basis such that information for monitoring the capacity to meet peak tourism demand is well established. This may be particularly important as weather and climate patterns vary such that rainfall and peak visitor arrivals do not align well.

To provide a complete picture with respect to water resources, it will be relevant to compile estimates of water use within tourism activities as presented in Table 3.1. Approaches to the collection of these data and the attribution to visitors are described in the Technical Note linking the SEEA and the TSA.

Focus in the SEEA is on the active use of water that occurs as it is abstracted and distributed to economic units and households. This will include for example, the abstraction of water to fill swimming pools and related water park facilities. Beyond this, tourism activity will also use water resources passively. Examples include surface water (lakes and rivers) and coastal waters being used for recreation and swimming, and water providing the medium for water transport (ferries, cruises, etc.). Passive uses of water are not the focus of accounting in the SEEA however application of the principles of land accounting (section 6), in terms of accounting for land use, may be applied to provide information to support management of these areas.

An important issue related to both the active and passive use of water resources is water quality and the associated issue of the treatment of wastewater. The issue of wastewater treatment is covered in the discussion of the supply and use of water in the Technical Note linking the SEEA and the TSA. Water quality is a challenging area of measurement as introduced in the SEEA Water, although in part this challenge lies in providing aggregate measures of water quality at a national or other larger scale. Approaches to the measurement of water quality in specific locations are well established and it is likely of relevance, particularly in coastal tourism destinations, to collect and record water quality information on an ongoing basis. Approaches to recording this information are described in the section below on ecosystem accounting.

3.4.4 Accounting for wildlife and key species

Another individual asset for which asset accounts might be developed are accounts for selected species of wild animals, for example, animal species that provide the focus for safari and related activities in national parks and species that are a focus for recreational hunting and fishing.
Recording changes in the stock of such key species over time would support an understanding of the environmental assets supporting tourism activities. Related areas of measurement such as measurement of biodiversity and protected areas are considered under the topic of land and ecosystem accounting (see following sections).

A basic, but potentially very useful, asset account would focus on numbers of particular species monitored at regular intervals and entered into an asset account format. This might be extended to show additions (e.g. through natural births and releases from breeding programs) and reductions (e.g. through natural losses, poaching), to provide more detail concerning the nature of the changes over time. Such an account over multiple time periods is shown in Table 5.7 for the Big Five mammals of southern Africa. Further extensions to integrate information on the age and composition of the stock of animals, for example to understand the number of breeding females, could also be made. The same approach can be applied for all species that may support tourism activity (e.g. Californian redwoods, penguins, wild boar, trout, etc.), noting that many possibilities may be considered.

Table 5.7: Stylised asset account for the Big Five mammals of southern Africa (numbers of animals)

<table>
<thead>
<tr>
<th>Accounting entries</th>
<th>Species</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uin</td>
<td>African elephant</td>
<td>Cape buffalo</td>
<td>Leopard</td>
<td>Black rhino</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Opening stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additions to stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural births</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breeding programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other additions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reductions in stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural losses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poaching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other reductions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net change in stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closing stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information of this type for key species may well be available to managers of national parks and protected areas or from active research programs. The aim of accounting is to provide a platform for this information to be placed in context alongside information on visitors and tourism activity and hence provide a more complete picture for decision makers. Indeed, the relevance of this type of information has been highlighted in a recent UNWTO briefing paper Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa (UNWTO, 2015).

For wildlife, there will be a direct link between the stock and the condition (quality) of the associated ecosystem, such as a forest, wetland or savanna. As well, it is common for the assessment of the numbers of species to be determined on the basis of the extent of
suitable habitat and hence there will be connections to approaches used in ecosystem accounting.

3.4.5 Land accounts for tourism

The use of land for tourism activity and development is often a contentious aspect of ongoing tourism growth. The contention arises where there are limitations in the availability of land to satisfy all potential users and hence choices must be made in terms of how land is used and who is provided with the opportunity to secure the associated benefits.

In this context, land accounts can provide an important information source to support discussion of planning and land allocation decisions. Following the basic structure of the asset account described above, land accounts report the opening and closing stocks (areas) of land classified by different classes of use, cover or ownership. Thus land accounts provide information that shows the changing composition of land over time. This information can be extended by examining the types of additions and reductions for different land classes during an accounting period.

Another important output that can be directly related to land accounts are maps showing the areas of land classified by use, cover or ownership. Maps are important tools since they are able to convey the actual configuration of an area that is not apparent when looking at a set of accounts in tabular form.

Both land cover and land use accounts are likely to be of interest in measuring sustainable tourism. For a given territory (country, region, destination), accounts for land cover will provide an understanding of the relative size of areas that are covered by, for example, forests, wetlands, rivers, built-up areas, agricultural areas, grasslands, coastal areas and beaches, etc. If converted into maps, this information will clearly identify key environmental areas and ecosystems and their relative significance and configuration. An interesting overlay of this information would be to incorporate information on protected areas and national parks which might be a focus for certain tourism activities. Changes in the size of such areas might be of particular interest.

Accounts for land use will be able to highlight the relative significance of land used by tourism industries such as hotels, restaurants, recreational facilities, transport hubs, etc. When mapped, this will highlight whether there are particular clusters and how these might be changing over time. While such tourism maps might be regularly produced for cities and regions, the advantage of using a SEEA based land accounting framework is that the information on tourism activity is fully integrated with information on other activities in a mutually exclusive and comprehensive manner.

For tourism purposes, the land account structure that is likely to be of most value is an account that shows an integration of land use and land cover classes. This would involve starting from a land cover account with broad classes, as suggested above (forest, grasslands, etc.) and within the class of built-up areas breaking this down further into various tourism industry use of land and non-tourism uses. Further, within the non-urban land cover classes it would be logical to determine the area of land that was most relevant for tourism activities – e.g. beaches. A map of these various classes, produced on a regular basis, would provide substantive input to planning and other tourism related discussions.

An account showing these types of classes is shown in Table 5.8. It represents a melding and adaptation of the interim land use and land cover classifications described in the SEEA Central Framework. The proposed classes are illustrative only and are included to give a
sense of the potential structure of a tourism land account. Descriptions of the relevant classes are provided in the SEEA Central Framework, Annex 1.

Table 5.8: Tourism land account (hectares)

<table>
<thead>
<tr>
<th>Land classes</th>
<th>Accounting entries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Opening stock</td>
</tr>
<tr>
<td>Built-up areas / artificial surfaces</td>
<td></td>
</tr>
<tr>
<td>Transport and storage</td>
<td></td>
</tr>
<tr>
<td>Commercial, financial and public services</td>
<td></td>
</tr>
<tr>
<td>Hotel and catering services</td>
<td></td>
</tr>
<tr>
<td>Retail trade</td>
<td></td>
</tr>
<tr>
<td>Other commercial services</td>
<td></td>
</tr>
<tr>
<td>Recreational facilities</td>
<td></td>
</tr>
<tr>
<td>Residential areas</td>
<td></td>
</tr>
<tr>
<td>Other built-up areas</td>
<td></td>
</tr>
<tr>
<td>Cropland (herbaceous, woody, other)</td>
<td></td>
</tr>
<tr>
<td>Grassland</td>
<td></td>
</tr>
<tr>
<td>Tree-covered areas</td>
<td></td>
</tr>
<tr>
<td>Mangroves</td>
<td></td>
</tr>
<tr>
<td>Shrub-covered areas</td>
<td></td>
</tr>
<tr>
<td>Shrub and other vegetation, aquatic and regularly flooded (incl wetlands)</td>
<td></td>
</tr>
<tr>
<td>Sparsely vegetated areas</td>
<td></td>
</tr>
<tr>
<td>Terrestrial barren land</td>
<td></td>
</tr>
<tr>
<td>Permanent snow and glaciers</td>
<td></td>
</tr>
<tr>
<td>Inland water bodies</td>
<td></td>
</tr>
<tr>
<td>Coastal water bodies and intertidal areas</td>
<td></td>
</tr>
<tr>
<td>Total area</td>
<td></td>
</tr>
</tbody>
</table>

The compilation of land accounts is the focus of much ongoing statistical attention. The SEEA Technical Note on land accounting provides an introduction to this area of work. Generally speaking, the compilation of land accounts will require a close relationship to be established with experts in geo-spatial data since there should be a relatively direct connection between land accounts (along the lines of Table 5) and maps showing the same information.

Land accounts can be compiled at different scales. The key from a SEEA perspective is consistency in the application of classifications across spatial scales such that different land accounts (and associated maps) can be nested using consistently defined boundaries. This type of approach, which will likely require some level of national co-ordination, will directly support the type of cross-jurisdictional interaction and discussion that is considered necessary for progressing sustainable tourism.

3.4.6 Accounting for tourism related ecosystem assets

Introduction

The final type of environmental asset to consider is ecosystem assets. While ecosystems are not new concepts, the logic of fully incorporating ecosystems into an accounting structure is quite recent. In a statistical context, this was first presented in the SEEA EEA. The approach involves identifying (delineating) separate spatial areas within a country each representing an ecosystem asset. Most commonly, these separate areas are determined on the basis of different vegetation types but other factors can be incorporated. In effect, each spatial area – referred to as an ecosystem asset – is a statistical representation of an ecosystem as understood by an ecologist.
**Ecosystem extent**

Consistent with SEEA accounting principles, all ecosystem assets (i.e. discrete spatial areas) within a territory are classified to a type of ecosystem asset in a non-overlapping manner. Each of these ecosystem assets might change in size – extent – over time. One key role of ecosystem accounting is to record these changes in extent, and measure the composition of a territory in terms of its ecosystem types at points in time. In this regard, there are strong connections to the land cover accounts discussed in the previous section.

Ecosystem extent accounts for tourism could be used to record the current composition and changes in composition of tourism areas according to different ecosystem types. For example, the changing composition of ecosystems such as beaches, coastal zones and dunes, mangroves, rivers and estuaries, forests, wetlands and urban areas may be tracked over time. Maps of these changes may also be useful policy tools. The delineating and mapping of ecosystem assets provides the underlying framing for ecosystem accounting.

**Ecosystem condition**

In addition to measuring the extent of ecosystem assets, ecosystem accounting records changes in the condition of each asset. This is done by considering, for each asset type, a range of characteristics relevant to the assessment of the overall integrity and functioning of the asset. Characteristics may include water flow and quality, species abundance and diversity, vegetation density and cover, soil fertility, etc. The choice of characteristics is ideally determined at the local level by ecologists familiar with the various ecosystem types. The ecosystem accounts provide a structure within which this ecological information can be brought together and tracked over time. The same approach can also be used to monitor the condition of coastal waters and reefs that may be of importance in some tourism areas, for example by recording changes in coral cover.

**Ecosystem services**

The next stage in ecosystem accounting involves measuring the flows of ecosystem services generated by ecosystem assets. Commonly, ecosystem services are grouped into three broad classes: provisioning services, regulating services and cultural services. Provisioning services relate to the extraction and harvest of materials from the environment including timber, fish and water. These will largely be inputs to primary industries, e.g. agriculture, forestry and fisheries, but there will be cases of relevance for tourism, for example when a hotel or resort abstracts water from the environment.

Regulating services are generally the least recognized and the most taken for granted. These services include the filtering and purification of water and air by ecosystems, the regulation of soil and water flows to minimize the impacts of flooding and the sequestration of carbon, to name just a few. Communities and tourism activities gain directly from these services but usually do not pay for them.

Cultural services concern the opportunities provided by ecosystems to enjoy and learn from nature. They include educational and scientific connections and, most significantly for tourism, cultural and recreational opportunities including wildlife watching, hiking, camping, visits to national parks, swimming and other outdoor recreation, etc.
Application of ecosystem accounting to tourism

Although much further discussion on the application of ecosystem accounting to tourism is required, there appears a direct link that can be made between the spatial detail required for ecosystem accounting and the common destination level focus of sustainable tourism. Thus the application of ecosystem accounting principles and the development of ecosystem accounts should provide information that can be directly used at destination level to progressively build a picture of tourism’s use of and impact on local ecosystems. For example, it would be possible to:

- Understand the size and location of ecosystem assets that are of primary interest in the local area
- Record how these ecosystem assets are changing in condition and the extent to which the change in condition is a result of tourism activity
  - This could be negative e.g. where tourism activity leads to poor quality water due to lack of sewage treatment, or loss of forest condition due to excessive numbers of tourists
  - Or it could be positive where activity by tourism businesses leads to ecosystem restoration or protection.
- Understand the flows of ecosystem services that are used by tourism businesses, for example in the production of ecotourism outputs.

Overall, the ecosystem accounts that might be developed in this section would provide a framework for incorporating information on

- protected areas
- biodiversity and iconic species
- water quality
- beach, seas water and reef quality/condition
- air quality

In concept, adapting ecosystem accounting to tourism would require the delineation of spatial areas for analysis including the tourism area itself and for associated ecosystem types, for example beaches, national parks, marine areas, etc. Thus each tourism area, e.g. a region or local destination, would be expected to comprise a combination of different ecosystem types (e.g. a combination of beaches, forest, rivers and built-up areas).

For each ecosystem within a tourism area, an assessment would be made of ecosystem condition, for example using indicators of the quality of beaches, which could be tracked over time to provide insight into the environmental impact that could be attributable to tourism activity in that tourism area.

The scope of accounting might be extended to include the changing condition of water catchments and associated groundwater systems that underpin the provision of water to support tourism activity. This would complement the water resources asset account described above.

Assessment could also be made of the supply of ecosystem services from the various ecosystems within a given tourism area, including both those services that contribute to tourism activity (e.g. the recreational opportunities from forests) and other services that may be produced at the same time (e.g. carbon sequestration) but where the user of the service is not the visitor. An important distinction might be identified between visitor direct...
consumption of natural inputs, e.g. water; and visitor use of ecosystems for recreation, e.g. lakes, rivers and beaches.

Understanding the flows of ecosystem services to different users, including visitors, permanent residents of the area and others, can support a broader discussion on the trade-offs that arise if the supply of ecosystem services changes as result of tourism activity and/or development that impacts the quality of ecosystems within a tourism area. Equivalently, in cases where tourism activity or investment enhances the condition of local ecosystems, the ecosystem accounting approach provides a framework for recording the likely positive impacts on flows of ecosystem services both to visitors and to the local community.

In the first instance, ecosystem accounting in physical terms would be a likely focus. However, there may be interest in the valuation of ecosystem services and related ecosystem assets. To this end, the fact that much information on tourism can be attributed to specific destinations may provide data to support direct valuation of ecosystem services. There is a rapidly growing body of work in this area with more than 50 countries involved in ecosystem accounting projects or initiatives.²²

Finally, it is noted that the spatial accounting for ecosystem assets envisaged in the SEEA EEA, can also be extended to consider a broader range of assets that are present in the landscape. For example, to understand changes in particular destinations it may be relevant to consider the influence and condition of infrastructure that supports tourism such as walkways, viewing platforms and camping sites. Also, it would be appropriate to account spatially for cultural assets that may be frequently visited. In short, the spatial accounting principles of ecosystem accounting provide a basis for capturing many aspects of relevance to sustainable tourism at a destination level.

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4 Accounting for the social and cultural dimension of sustainable tourism

Notes to Chapter 6: Accounting for the social and cultural dimension of sustainable tourism is the least developed from a statistical perspective but this is not to suggest a lack of importance of this dimension in measurement. Developing this area of measurement is a high priority on the MST research agenda with the intent of taking advantage of the active body of research and measurement practice in these areas, especially in the context of the SDGs.

4.1 Introduction

From a statistical perspective, the standardization and co-ordination of data on social aspects is much lower compared to the economic and environmental dimensions. In short, while there is a relatively common set of themes that are measured concerning social aspects (including health, education, poverty, crime and safety and decent work) and this measurement is undertaken for a range of population groups (including children, the elderly, indigenous peoples, ethnic and religious minorities and people with disabilities), there is not an agreed overarching framework that places all of these aspects of the social dimension in a common context. Consequently, determining the scope of any assessment of the social dimension is a matter of judgement for those involved in a given measurement project. This may be appropriate for each assessment but without an overarching framework the potential to understand what has been excluded from any assessment is removed and there is much more limited potential to compare the state and trends in the social dimension between different assessments.

For the economic and the environmental dimensions, the SF-MST has applied and integrated existing statistical frameworks to support improved measurement of sustainable tourism. For the social dimension, the approach and ambition must be different. With the broad aim of supporting compilers to establish a relevant set of social indicators, this chapter proposes an organization and presentation of social aspects appropriate for the assessment of sustainable tourism. There are four parts which need to be joined and rationalized:

- The different conceptual approaches to the social dimension including concepts of social capital, social inclusion and exclusion, social equity and welfare, social cohesion and well-being.
- The different perspectives on the social dimension that arise in the case of tourism activity namely the visitor, the host community and tourism businesses.
- The different aspects of the social dimension such as health, education, decent work, etc.
- The different population groups including children and youth, the elderly, people with disabilities, etc.

The blending of these four parts in the chapter is aimed at placing relevant data in context and providing a pathway for compilers to make decisions about which data requires collection and for users to understand which data are of most relevance.
The framing provided in this chapter also goes some way towards suggesting possible relationships between different social data sets but this is limited to answering questions of the appropriate description of the social dimension to support discussion and decision making. There is no intention or ambition to articulate causal relationships between social variables.

### 4.2 Concepts in the measurement of the social dimension

A range of different concepts have been developed in relation to the social dimension. Given the accounting based nature of the SF-MST, of particular interest is the concept of social capital but other concepts such as social inclusion and exclusion, social equity and welfare, social cohesion and well-being are also relevant.

To provide a starting point for the consideration of these concepts in the context of sustainable tourism, the following question is proposed as representing the focus of efforts in the measurement of the social dimension –

The extent to which engagement in tourism (both direct and indirect) influences social development.

Social development in this context is considered to be reflective of improvements in social capital, social inclusion, social equity, social cohesion and overall well-being recognizing that these are separate but overlapping components, **and that the notion of improvement may be a challenging conceptual point in its own right**. Nonetheless, this measurement question should provide a suitable starting point for framing the discussion.

<< It is intended that the following paragraphs will summarize the main points on the different concepts. In general, it is intended to make the distinction between the stock of social capital that underpins social development (as reflected in the extent and quality of networks, shared values, institutions, etc.) and the measures that reflect the performance of the social system including, for example measures of poverty, health, education, etc.

It is noted that these performance or outcome measures will likely reflect inputs from a combination of capitals, for example health outcomes will reflect a combination of the quality of doctors, hospitals, the external environment (e.g. air quality) and social capital. In measuring the social dimension, it is therefore insufficient to focus on changes in social capital.

It is also noted that there is not a single view or concept of the social dimension which is sufficient for capturing all of the aspects that decision makers may be interested in. From a statistical framework perspective, it is considered appropriate to be able to provide a logic which allows all of the relevant aspects to be included and for data to be available to users to apply whatever interpretative lens is appropriate. Thus, in a situation where a single aspect, e.g. poverty, is relevant in relation to more than one conceptual view, e.g. poverty is relevant in the measurement of social equity and well-being, the statistical framework should only include the aspect once.>>

### 4.3 Tourism perspectives on the social dimension

To appropriately capture the various aspects of the social dimension it is important to consider multiple perspectives. Three perspectives are considered exhaustive for sustainable...
tourism – the visitor, the host community and tourism businesses. Each represents a different way in which people engage with tourism, either directly or indirectly, and hence each will have different perspectives on tourism’s influence on social development.

The visitor perspective can be separated into the social dimension at the place/s visited and within their usual environment. Key features of the social dimension at the place visited will include visitor perceptions, visitor experiences (e.g. of health, crime, congestion), engagement with local communities (e.g. cultural experiences, heritage, local products) and issues of accessibility (for example with respect to age, disability, or to infrastructure).

Within their usual environment, it may be relevant to consider the extent to which engagement in tourism provides visitors with improved overall well-being, improved social networks, educational outcomes, or more negatively, experience limited access to tourism opportunities (e.g. due to cost, ethnicity).

The host community perspective, is a high profile focus of sustainable tourism discussion. A common area of interest is whether a host community is heavily impacted (i.e. in terms of quality of life) due to the extent of tourism activity. A simple measure of pressure (e.g. number of tourists relative to population) may provide an initial indication of potential host community perspectives. However, a more encompassing assessment should include community perceptions of tourism and indicators of various social aspects such as access to housing, quality of infrastructure (e.g. roads), availability of basic services (including water, energy, health), and crime and safety. These more negative aspects should also be considered in relation to the benefits that the host community may derive in terms of incomes, employment opportunities and recognition of cultural and indigenous heritage. And collectively, the host community perspective should encompass their capacity to participate in decision making.

The tourism business perspective is needed to ensure that the contribution of these businesses to social development in considered in assessing sustainable tourism. A particular aspect of focus under this perspective is decent work, i.e. the extent to which tourism businesses provide employment opportunities, adequate earnings, safe working environments etc. To some extent, this perspective might be encompassed within the perspective of the host community but taking an explicit business perspective facilitates consideration of businesses which operate across multiple communities.

4.4 Aspects of the social dimension

The term aspect is used here to refer to the different areas, topics and themes which are the most common focus of measurement in the social dimension. Sometimes these aspects make most sense when considering specific population groups (e.g. education makes most sense in the discussion of children and youth) but in other cases assessment for the whole population will be relevant (e.g. in relation to crime). The following aspects are listed to indicate the coverage of the SF-MST noting that in practice it will be necessary to consider the relevant perspective (visitor, host community or business) and the appropriate population groups) before determining the scope of measurement.

<<The following list is for discussion. Pending that discussion, it is intended to provide a short description of each aspect, its connection to the social dimension.
and links to relevant to statistical or measurement definition and advice. It is noted that all of the following aspects have been proposed for measurement across a range of international initiatives over the past 10-15 years, including through the SDGs. >>

Potential aspects of the social dimension for sustainable tourism

- Income and wealth distribution; Poverty
- Health; Nutrition
- Education; Skills, Training
- Housing
- Personal security, safety, crime, peace
- Social capital
  - Social connections and networks
  - Community and individual levels of trust / tolerance
  - Civic engagement and participation
  - Institutions and governance
  - Corruption
- Subjective well-being of host communities; of visitors
- Visitor perceptions of destinations
- Human rights – discrimination, empowerment
- Decent work
  - Employment opportunities
  - Decent hours
  - Adequate earnings and productive work/life balance
  - Child and forced labour
  - Work security
  - Equal opportunity and remuneration
  - Safe working environments
  - Social security
  - Social dialogue and representation
- Accessibility and use of infrastructure
  - Roads, transport systems
  - Congestion and noise
  - Basic services (water, energy)
  - Environmental space (green space, national parks, beaches)
- Culture and heritage
- Participation in production (cultural products, employment, income)
- Festivals and events
- Protection of heritage incl language, arts, etc.

4.5 Population groups

The final part of the framing for the measurement of the social dimension concerns the relevant population groups. While it is possible to measure the range of aspects listed above in relation to a population as a whole, in many instances of most relevant in discussion of the social dimension is the situation with respect to specific groups of people in society. Indeed, it is not unusual for approaches to measurement of social indicators to mix aspects and population groups when establishing the appropriate areas for measurement. Thus persons with a disability and indigenous people are often identified as distinct areas of measurement.

The approach taken in the SF-MST is to distinguish the aspects and the population groups thereby establishing a matrix showing combinations of these two parts. This matrix can be used to identify the key areas that should be the focus of measurement.

The proposed list of relevant population groups is below. Pending discussion, it is intended to provide a short description of each population group, the connection to the different perspectives on sustainable tourism described above and relevant measurement advice. It is noted that individuals may be a member of more than one group and hence the organization of data about population groups effectively provides a different set of lenses with which to consider social information. Also, it is expected that in many cases it will be relevant to organize data following criteria such as age, income level, and educational status but these are not distinguished here as distinct population groups. Finally, it will be relevant to consider how to best consider data on a spatial basis. The following chapter considers the ways in which the areas within a country may be delineated to support the measurement of sustainable tourism. In many cases, the assessment of social aspects at detailed sub-national levels will be relevant – especially from the perspective of host communities.

Proposed population groups

- Women; gender
- Children and Youth
- Elderly
- Persons with a disability
- Indigenous groups
- Ethnic and religious minorities
- Migrant workers
- Families
- LBGTLQI

Comment [MB32]: Urban/rural, coastal, high/low income
4.6 Integrating the four parts of the social dimension for the measurement of sustainable tourism

<< Building on the descriptions in the previous sections, and pending discussion on the framing and coverage of the social dimension those sections present, this section will develop an overall framing for the measurement of the social dimension for SF-MST. It will outline the key areas (i.e. combinations of perspective, aspect and population group) that should be the focus of measurement while at the same time allowing for compilers to recognize means of providing additional or alternative views of the data. The section will also describe key indicators that emerge from the development of the data sets.

It may be useful for determination of the areas of focus to utilize a starting point such as the set of social themes included in the UNWTO 2004 Guidelines on sustainable tourism indicators. >>
5 Defining spatial areas for the measurement of sustainable tourism

Notes to Chapter 5: The measurement of the various dimensions of sustainable tourism will commonly be conceptualized at different scales from local level to national and global levels. In practice, the assessment of sustainable tourism and the implementation of relevant policy responses has often taken place at a sub-national level, while the measurement of tourism statistics is usually coordinated at national level. The Sustainable Development Goals embody the tracking of progress globally in a way that is comparable across countries.

This chapter aims to describe a conceptually sound but practical approach to integrating data to underpin measurement across the economic, environmental and social dimensions. There is little doubt this is a challenging area of measurement.

The intent is to provide a common framing and language about spatial areas in the measurement of sustainable tourism to support the discussion and interpretation of data and to provide opportunities for the enhanced integration of data from different dimensions.

The current text uses material developed in the context of research undertaken for the MST project that was presented at the 6th International Conference on Tourism Statistics. The material provides only a starting point for further discussion. It is expected that substantial progress in this area will take place through the development of the SF-MST.

5.1 Introduction

The development of the concept of sustainable tourism over the past 25 years has had a clear and direct focus on the sustainability of tourism activity at a destination level as distinct from considering the broader sustainability of tourism at national or global levels. In this context, tourism destinations have commonly been conceptualized as relatively small, local areas such as cities or small islands. Using this small spatial area perspective, the sustainability discussion and related measurement and indicator activity is focused on encompassing and finding balance among the three dimensions of sustainable tourism – the economy, the environment and society.

As described in Framing Sustainable Tourism this small spatial area perspective is very distinct from the broader national perspective that has been the focus of official tourism statistics. The significant statistical developments of the International Recommendations on Tourism Statistics (IRTS) and the Tourism Satellite Accounts: Recommended Methodological Framework (TSA:RMF) in 2008 provide an excellent platform for measuring tourism activity in a comparable and credible way. However, as both documents have a national and global focus, they do not provide direct guidance for sub-national measurement although they continue to provide an underlying conceptual reference for measurement at sub-national levels.

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23 Discussion paper drafted or the Meeting of the Working Group of Experts on MST, Madrid, 20-21 October, 2016
The purpose of this chapter is to describe how a bridge can be built between these two perspectives – the smaller scale sustainable tourism perspective and the larger scale official tourism statistics perspective. It is important to recognize however that building a bridge is not simply a case of examining the extent to which currently available national level data can be “downscaled” to provide information at a destination level. Or whether the type of data desired at a destination level can be collected using statistical processes. Rather, the ambition is to describe how both detailed spatial data and national level data may be best integrated to provide a “single best picture” of tourism activity that is of most use to decision makers and other stakeholders at different scales.

Compiling a single best picture does not imply that all economic, environmental and social information must be available at every spatial scale. This would not only provide an endless compilation challenge but also likely produce a substantial volume of data that are not useful. Rather the ambition should be that the information set compiled is both appropriate for the spatial level of analysis and use, and coherent with information at other spatial levels. For example, estimates of visitor expenditure on accommodation at national level should be consistent with estimates of visitor overnights at destination levels with a country.

The importance of coherence emerges from a policy perspective as it is recognized that decisions made at each spatial scale – local, regional, national, global – are not independent. Choices made at a local level will have impacts on broader regions, and national and global policies will influence outcomes at a local level. These inter-connections are best understood and interpreted when the data organized at each level tells a consistent and coherent picture of the structure of tourism activity and the change over time.

There are some data that may seem relatively non-spatial in nature. For example, visitor perceptions, migrant labour movements and climate change indicators. It is certainly the case that the way in which these types of indicators connect to locations is less direct than, for example, indicators of visitor consumption on accommodation and restaurants. However, this paper starts from the general premise that “everything happens somewhere” and hence connection to spatial areas is meaningful for all types of measurement. Thus, visitor perceptions will concern a location or set of locations and the visitor will be resident somewhere. Climate change is a globally diffuse phenomenon but actions that contribute to climate change can be spatially located and the impacts of climate change occur in specific locations.

The framework is not prescriptive and does not articulate which data might be most relevant at different spatial scales. Rather the focus is on establishing a consistent way in which different spatial scales and spatial areas might be defined / delineated within a country, and hence support coherent policy and decision making. This will support all stakeholders, including users and data providers, to work towards a common approach within their country for the collection and use of data at different spatial scales.

The approach described comes from the perspective of official statistics in the sense of imagining the potential for a nationally coordinated, internationally comparable, set of information. However, it is important that the perspectives of many other areas of expertise are incorporated to better support decision making.

The initial framing described in this chapter builds on a range of work including the statistical guidance of the IRTS and the TSA:RMF, the spatial accounting in the System of Environmental-Economic Accounting Experimental Ecosystem Accounting (SEEA EEA) (UN et al, 2014b), and work on sub-national and sustainable tourism of UNWTO and the INRouTe network, among a number of other materials. It does not provide a definitive and final word on this topic which will be the focus of ongoing discussion within the MST project.
5.2 Terminology with respect to spatial areas

Discussion of the topic of defining spatial areas immediately suffers from the choice of language and wording to describe the different scales of measurement and analysis that different stakeholders are considering. The section proposes some terminology to be applied in the MST framework.

The broadest scale is considered the global scale encompassing both all countries and all marine areas.

The supra-national scale is used to refer to groupings of countries, usually in contiguous areas, including for example, Africa, the Middle East, the South Pacific. Within international statistics these are commonly referred to as “regions”, but this term is reserved here in relation to certain sub-national areas (see below).

The national scale is the most common level of statistical measurement and is the level of government that sets the overarching legislative and policy frameworks and engages with other countries.

The regional scale is used to refer to the level of administrative unit directly below the national level. This use of the term is the same as applied in the recent INRouTe document (INRouTe, 2016) and corresponds to the NUTS 2 level in the EU territorial classification scheme (although it is noted that compilation at the NUTS 1 level may also be relevant) (Eurostat, 2015). Countries may also use the terms state, province, county, etc. It does not refer to aggregations of countries.

The municipal or city-region scale is used to refer to the level of administrative units corresponding to local but relatively large populations. Large cities may have a number of municipalities. In rural areas, the municipal scale may encompass both some urban and agricultural areas.

The local scale is used to refer to the areas or zones within a given municipality that exhibit particularly concentrations or clusters of commonly purposed or aligned activities and businesses. In the context of this paper the focus is on concentrations of tourism activity but other activities may also be of particular interest. It is not expected that administrative units would be defined at this spatial level.

The term sub-national is used to refer to the three spatial scales below the national level. In different countries and contexts some of these scales may merge or there may be additional scales within the five scales described here. However, these five scales are considered sufficient for the purposes of discussing the relevant concepts.

The term tourism destination might refer to any of these scales (except global). Thus, a destination might be a country, a region, a municipality or a location. In the discussion of sustainable tourism, the concept of a tourism destination appears to be most commonly associated with spatial areas defined at the local or municipal level and, when the term destination is used, it is this smaller conception of tourism area that is being applied.

The intent in the MST is to integrate economic, environmental and social data. For many of these data, it is appropriate to consider that the scales listed above would be appropriate, in the sense that data should be able to be attributed to a location and hence to the other, larger scales. The important exception to this will be cases where large ecosystems, for example forests, agricultural areas, etc., or other environmental scales, for example water catchments, national parks, etc., cross municipal, regional or national boundaries. The appropriate approaches for integrating data in these situations requires further discussion.
5.3 The statistical challenge in defining spatial areas

The need for coherent spatial boundaries

From a statistical perspective, the methodological challenge is to develop the structure and tools to support providing relevant information for policy and analysis at the appropriate spatial scale. As noted above, most commonly, the starting point for statistical measurement is the national scale. Thus, national statistical agencies will tend to focus primarily on the collection and dissemination of economic, social and environmental data at national level. This reflects their historically primary role as providing a service to national governments.

At the same time, many countries operate statistical systems that are federated in nature. That is, national level data are compiled using information collected at the sub-national level. Thus, there are commonly regional and sometimes municipal level statistical processes and outputs.

While both national and sub-national level data sets are commonly produced, a standard feature of a statistical approach to spatial data is to ensure consistency and coherence across spatial scales. Thus, for any given data set, a national level aggregate must be consistent with the results obtained for the component regions or municipalities.

Importantly, this does not imply that for every data sets, precisely the same sub-national boundaries must be used. For example, data on water is likely best considered in terms of water catchments at sub-national level. Given this potential variation there are two challenges to consider:

i. ensuring that for each data set the spatial boundaries are internally coherent

ii. determining which spatial boundaries should be used to facilitate comparison across data sets.

This requirement for internal coherence should ensure that there are mutually exclusive and exhaustive spatial boundaries – i.e. the different spatial scales are defined or delineated in such a way that all areas within a country are included and no areas are covered more than once. This ensures that data coverage is complete and that there is no double counting.

This requirement for the delineation of spatial areas such that there is complete and non-overlapping coverage within a country poses a quite different challenge to the situation in which measurement is being designed for a single region, municipality or location. That is, if there is a focus on only one spatial area, it can be defined without consideration of neighbouring areas. This has been the approach taken in many indicator initiatives, where even in exercises that bring together data from different destinations, the definition of each destination has often been determined by the managers of each destination.

Unfortunately, this area-specific approach limits the potential to compare data between similar types of spatial area, since they may be delineated in overlapping ways. More significantly it limits the potential to compare data across spatial scales. Thus, unless there is an agreed and nested structure to spatial areas it is not possible for national level analysis to easily integrate information available at smaller municipal and local type scales if these have been defined in alternative, non-nested ways.

Comment [MB36]: However, having national standards for each different geographical boundary: province, drainage area, ecosystem, management area…, ideally in the form of an NSDI would immensely benefit compilation.
Thus, for the purpose of official statistics, it is important that a set of commonly agreed spatial boundaries are delineated for different datasets. This is not to say however that the process of reaching such a common set of spatial boundaries must be top-down. Instead, it will be essential that those working at the various sub-national levels are involved in the discussion and their insights into how spatial areas are defined can generate information that are suitable for analysis and policy at those sub-national level. One pathway forward in reconciling top-down and bottom-up perspectives may be the delineation of spatial areas at very fine levels that can then be aggregated to form different intermediate spatial areas for analysis and reporting. For example, a combination of small spatial areas may be used to represent a single tourism destination.

The application of statistical and accounting principles

In the context of spatial areas, all statistical standards (and related accounting standards) clearly specify the geographical boundaries for the collection, compilation and dissemination of data but these boundaries are almost exclusively related to national scales of measurement. As a consequence, the general understanding is that statistical standards pertain primarily to the compilation of national level data sets. This extends, for example, to the expectations concerning the appropriate measurement of the substantial global value chains that exist in tourism and other sectors. Statistical standards will tend to consider these chains in terms of linkages between countries rather than as linkages between (or within) businesses for specific goods and services.

In fact, statistical and accounting principles are independent of scale. By way of example, the national accounting principles outlined in the System of National Accounts (SNA) apply equally to a large and diverse economy of the United States and the small island nation of Tonga. Most definitely, the measurement of the national accounts will be a more involved task in the United States, and in both countries different types of data are likely to be used, but the principles applied are the same. The same logic applies in sub-national situations since the essential difference between national and sub-national scales is one of size.

Often it is imagined that there are quite fundamental differences in measurement principles at sub-national scales. In fact, the differences lie in the application of the principles and hence in developing sub-national level statistics. The important considerations are primarily of feasibility (i.e. are resources available to measure national level statistics at finer spatial scales) and relevance (i.e. should all national level data be compiled at finer spatial scales).

Nonetheless, there are two specific measurement challenges that are significant in the context of tourism. The first concerns the recording of information on transport and visitor movements at a sub-national level and the associated attribution of production activity, particularly of transport companies. This is no doubt a challenging measurement issue. However, recognizing that conventions have been established to deal with such issues between countries then, at least in principle, and assuming unlimited resources, it would be conceivable that each location or municipality within a country could be considered a separable area for transport purposes and all movements and production allocated using the national level treatments.

Second, again at least in principle, it should be possible to estimate the allocations to tourism activity that are required to calculate, for example, tourism gross value added. In practice, this can be challenging at national level and is likely to involve additional issues in finding appropriate data at a sub-national level. Conceptually as well, the allocation of data for a single business operating across multiple locations within a country is not straightforward.

Comment [MB37]: Could say SNA. Shouldn’t give all statistical standards a bad name.

Comment [MB38]: You’re looking at it from the SNA perspective. You could suggest alternative approaches: visitor surveys, business registers with locations, big data on cell phone movement...
5.4 The feasibility and relevance of compiling sub-national data

Although statistical and accounting principles could be applied at all spatial scales, the reality is that this does not take place and generally there will be far less data available at sub-national scales than at national scales. This reality arises for two key reasons. First, the available resources for statistical collection are generally allocated so as to optimize the compilation of national level estimates and this means that finer level detail is generally either not produced or is of relatively poor quality (e.g. very high standard errors).

Second, there are commonly different decisions made at national levels compared to regional and municipal levels and hence there are different types of data that are relevant. For example, detailed data on the performance of the financial markets is not of relevance at sub-national levels.

These two points provide an explanation for the most common situation of a lack of standardized coverage of spatially detailed official statistics. For national level decision making, this may be satisfactory for macro-economic management, but it is generally unsatisfactory for many other areas of policy and decision making where understanding the location and context is imperative. Put differently, relying on national averages is often likely to be misleading and ignore important variations among different areas within a country.

At sub-national level, the immediate demand for standardized spatial areas from decision makers may be less clear since they will have a focus on data for their own spatial area. However, there may be significant benefits in being able to discuss policy and other issues with other sub-national areas and with national level decision makers on the basis of a common understanding of the different spatial area within a country.

The case for extending and improving sub-national statistics is very apparent in considering sustainable tourism. Sustainable tourism requires the integration of data across the environmental, economic and social dimensions and assessing sustainability across these dimensions and determining context-specific policy responses is most meaningful at finer spatial scales. The need to consider sustainability at finer spatial levels is evident in the almost complete focus on destinations in the conceptual and policy work on sustainable tourism. Further, the case for sub-national statistics for sustainable tourism has been made strongly in much previous work, including by INRouTe (2017), the Regional Government of Andalucia, Spain and the OECD (OECD, 2016) The relevant arguments have been picked up in the MST project.

Although the case for sub-national level data is strong and statistical principles can, in theory, be applied equally at sub-national level, it is not the case that the logical ambition is to replicate all national level statistical outputs at all sub-national spatial scales. Aside from the potential cost, since the types of decisions made at different spatial scales vary, not all data will be equally relevant at all scales. Indeed, some data may be most relevant at finer scales and not relevant or meaningfully aggregated to national scale, e.g. data on traffic congestion.

5.5 Current definitions of spatial areas for tourism

From a statistical perspective, there is little standardized advice on sub-national tourism statistics. The IRTS has a brief mention of the need for sub-national tourism statistics but provides no guidance on how sub-national areas might be delineated. The TSA:RMF does not consider sub-national measurement.
The concept of a tourism destination is not defined from a statistical perspective although it has been defined by UNWTO for tourism management purposes (see Box 5.1). Unfortunately, this definition, while clearly linked to a spatial concept, does not provide the means by which a standardized approach to delineating sub-national tourism areas can be established within a national context.

**Box 5.1: Destination management definition**

**A Tourism Destination** is a physical space with or without administrative and/or analytical boundaries in which a visitor can spend an overnight. It is the cluster (co-location) of products and services, and of activities and experiences along the tourism value chain and a basic unit of analysis of tourism. A destination incorporates various stakeholders and can network to form larger destinations. It is also intangible with its image and identity which may influence its market competitiveness. (UNWTO, 2016).

In its research and discussion on sub-national tourism measurement, the INRouTe project (2017) proposed a series of classes to support the organization of statistical information at sub-national levels. Those classes are shown below in Box 5.2. The classes are placed in two groups - regional and local. The classes are not defined in a hierarchical manner, i.e. they are not nested such that smaller areas lie within larger areas, and hence information associated with the different classes cannot be meaningfully aggregated or disaggregated. Thus, the classes provided by INRouTe do not provide a classification as such but rather a typology of different spatial areas that may be of interest. This is certainly useful in furthering the understanding of statisticians and other stakeholders of the levels at which information is required. However, since there is no specific connection between the different classes, particularly between the local and regional levels, it is not clear precisely how a coherent set of spatial areas might be defined.

**Box 5.2: INRouTe sub-national classes**

**REGIONAL**

- Region
- Multi-regional (supre-national)
- Multi-regional (intra-national)
- Other administrative units
- Analytical units

**LOCAL**

- Municipality
- Multi-local
- Other administrative units
- Analytical units

It is worth emphasizing that the ambition of developing a nested set of spatial areas for the organization and aggregation of statistical information on tourism should remain the objective recognizing that it is likely that the resulting set of spatial areas will not satisfy all requirements or analytical demands.

Perhaps the most established approach to sub-national area classification is the European NUTS classification (Eurostat, 2015) that was originally established in 1970. It has four levels and two additional levels that allow for further disaggregation. The boundaries are established based on the three principles of population thresholds, administrative divisions
and stability through limited amendments over time (http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics). The fully nested nature of the NUTS classification scheme perhaps provides a structure within which tourism destinations can be identified.

At national level, there are also classifications of areas that may be relevant. In Australia, primarily for the purpose of organization of population census information, but also for the organization of other socio-economic data, a classification of spatial areas based on concentrations of population has been implemented. (ref#) This works from so-called “mesh-blocks” at the finest level through to a series of larger areas known as “statistical areas”. Statistical area boundaries are nested/constrained to the regional level of aggregation but different aggregations of mesh blocks are used to generate municipal level information. Thus, from a fine level spatial area alternative and complementary aggregate spatial areas can be defined. In the UK, at fine level, “neighbourhood” statistics have been developed where neighbourhoods are delineated on the basis of census output areas or electoral boundaries (electoral wards). No doubt there are many other examples of national approaches to sub-national classification.

The majority of approaches are likely to have a close link to administrative units, which in turn are commonly based on concentrations of people and the households they comprise, particularly at finer spatial levels. Using boundaries delineated in this way to analyse the behavior of visitors, the productive activities of tourism industries and associated environmental stocks and flows may suggest additional factors need to be considered.

The System of National Accounts briefly discusses the idea of sub-national/regional accounting systems, a topic also picked up by Eurostat (2010). The System of Environmental-Economic Accounting (SEEA) Central Framework (UN et al, 2014a) focuses almost exclusively on national level statistics although recognizes that environmental assets and flows will be recorded in relation to a specific location. The SEEA Experimental Ecosystem Accounting (UN et al., 2014b) explicitly takes a spatial perspective in defining ecosystem assets wherein the assets are defined in terms of the area of different ecosystem types, e.g. forests, wetlands, grasslands, etc.25

5.6 Pathways forward in defining spatial areas for measuring sustainable tourism

Overall, there are a number of examples of statistically based classifications of sub-national spatial areas. On the whole, aside from the ecosystem accounting approach, the approaches used start from administratively defined areas and have a nested delineation of progressively smaller areas. At the same time, complementary areas may also be defined for the purposes of being able to present statistics in reference to different spatial areas.

Finding a pathway forward will require reconciling the general motivation of statisticians to provide data based on administratively defined spatial boundaries and the reality that the spatial areas of most relevance for the analysis of sustainable tourism do not conform to these boundaries. There is thus a balance to be found between feasibility on the one hand

and relevance on the other, recognizing that comparability among spatial areas is likely a key feature of relevance given the inter-linkages both within and across spatial scales.

Ultimately, relevance must take the highest priority and methodologies should be developed that support implementation. Providing data at a spatial scale that is currently most feasible but which is not relevant for decision making and analysis, would not represent a good return on investment. Nonetheless, to the extent that the provision of data on the basis of administrative areas is relatively more tractable it is then important that these spatial areas retain an important place in the proposed structure. Discussion of the types of data for which administratively based areas would be most appropriate is relevant in this context. The next step is to consider how areas of relevance for the analysis of sustainable tourism might be delineated.

From the literature, it appears the clearest approach is to define areas on the basis of significant functions or roles. This reflects the type of approach that underpins the delineation of social-ecological systems (see, for example, Leslie et al., 2015), the way in which ecosystem accounting (described in the SEEA EEA) delineates between different ecosystem assets and in relation to spatial areas for tourism (see, for example, Hernandez-Martin, 2014).

Methodologically, the primary issue then becomes which factors, characteristics or criteria should be considered to determine whether tourism is significant in a particular location. It should be noted that the choice of characteristics for delineation is not an independent process but rather needs to be conducted by involving all stakeholders such that the resulting statistics are meaningful for policy and analysis at all levels to the greatest extent possible.

In this regard, it should be accepted that the delineation of spatial areas for statistical purposes will not result in spatial areas that are considered ideal for all purposes. However, the alternative of applying different spatial boundaries for every project and in every context significantly limits the potential to compare across projects, across dimensions of sustainability and over time. It is a focus on improving the potential to compare that is at the forefront of efforts to measure sustainable tourism.

A final factor to consider is that since the SF-MST encompasses data from a range of dimensions, the delineation of spatial areas should be relevant to different data. Thus, the potential power of sub-national data will be considerably enhanced if data from different dimensions can be attributed to a standard set of spatial areas. In this regard, the availability of data at finer scales may be an important consideration.

Possible characteristics and criteria for delineating sub-national spatial areas

Given the multi-faceted nature of tourism that is encompassed by tourism statistics there are two perspectives to be considered – (i) a tourism supply perspective in which the focus is on the location and concentration of tourism industries and (ii) a visitor demand perspective in which the focus is on the places visited.

The supply perspective is perhaps the most tractable pathway to delineating smaller spatial areas. This would involve using information on the location of tourism characteristic industries and determining a boundary around particular concentrations of these industries. In many cases it is likely that such areas are relatively well known and evidenced by known concentrations of hotels and associated restaurants. In some areas, it may be a concentration of, for example, theme parks and similar attractions. For statistical purposes, it would be relevant to provide methodological guidance on how relevant concentration
thresholds may be estimated at sub-national and national levels (as distinct from proposing universal standards to be applied which would not be appropriate). This would be developed as part of the SF-MST.

Delineation from the perspective of visitor demand will, in many cases, overlap with a delineation based on tourism supply. That is, in cases where the visitor receives goods and services from a tourism business, the relevant location is the same in both perspectives. However, there will also be instances where visitor activity takes place away from, or at least adjacent to, the location of tourism businesses. Particular examples will be national parks, beaches, reefs, cultural sites, etc. In addition, there will be many exchanges between visitors and non-tourism businesses. Taken together both the demand and supply perspectives should enable a description of a set of tourism areas within a country.

To initiate discussion the following possibilities are listed:

- **Industry concentration** – e.g. location of tourism establishments
- **Employment concentration** – e.g. location of tourism jobs
- **Visitor concentration** – e.g. location of visitor overnights
- **Expenditure concentration** – e.g. location of visitor expenditure

At this stage, no specific guidance has been developed beyond these initial descriptions. It is intended that the development of the MST framework will facilitate further discussion and the descriptions in this preliminary draft represent a starting point for this discussion and research. Some particular points for discussion include:

- describing the relationship between small tourism areas and the concept of “usual environment” that underpins tourism statistics
- developing suitable criteria for determining tourism significance for application in delineating small tourism areas
- considering with particular care the application of the approaches to delineation in large cities where tourism activity will be important but one of many activities taking place
- understanding the extent to which the delineation of small tourism areas raises questions of maintaining confidentiality in the release of statistics
- appropriately integrating environmental and social data for small tourism areas and, at the same time, related areas such as water catchments.
Annexes

Manila Call to action

Relevant classifications
Glossary
<<To be developed>>

References and links (to be finalized)

SNA 2008: System of National Accounts


https://unstats.un.org/wiki/display/IRTSCG

Eurostat (20xx) European Implementation Manual on Tourism Satellite Accounts


SEEA
http://unstats.un.org/unsd/envaccounting/seearev/

UN et al (2014) SEEA 2012 Experimental Ecosystem Accounting


Water
UNSD (2016) SEEA Technical note: Water accounting, Draft to UNCEA

UN (2012) System of Environmental-Economic Accounting for Water. UN. Series F No. 100
(ST/ESA/SER.F/100)

UN (2012) International Recommendations for Water Statistics. UN Series M No. 91


Energy


UNSD (201x) International Recommendations on Energy Statistics (IRES)

GHG emissions
UNSD (2016) SEEA Technical note: Air emissions accounting, Draft for UNCEEA.


Solid waste


Country examples of integrating TSA and SEEA


MST documentation

UNWTO – MST website http://statistics.unwto.org/mst


Papers for the 1st meeting of the Working Group of Experts on Measuring Sustainable Tourism http://statistics.unwto.org/wg_meeting

Strong points:

1. This draft supposes a great advance on the road to the final document.
2. The document follows a realistic approach looking for a balance between relevance and feasibility, including different scales of analysis.
3. It is an important issue to recognize the role of national statistical offices in the process, including establishing criteria for identifying the boundaries at the local scale. This process may be somehow similar to what national statistical offices have done to operationalize the concept of usual environment.
4. This realistic approach recognizes the relevance of spatial scale and time as two relevant aspects. Seasonality is strongly related to environmental issues. Therefore, yearly based statistics (or even quarterly) may not be appropriate in some cases. The scale dimension is considered throughout the paper, particularly in chapters 1 and 5 (not in the intermediate chapters dedicated to accounting).
5. The policy-oriented approach is very necessary as mentioned in the Draft.
6. To build a statistical framework is important if we want to provide credible numbers that can be compared with other sectors.
7. The document is clear and readable. The use of figures is in this sense very useful. Even more figures should be used to communicate the message to tourism stakeholders.
8. The 5th section on “defining spatial areas” includes most of the issues that emerge from MST at the local level, what definitely enriches the document.

Critical insights and suggestions

1. As the document assumes the relevance of a policy-oriented focus, a clear reference to the sustainability problems we are dealing with should be made explicit at the beginning. This is very important because of proposed balance between relevance and feasibility. To clarify the problem demanding policy intervention, two main sources should be followed. First, the SDGs of the UN should be a main reference. To this respect, a strong link between the content of the document and SDGs is not still observed throughout the paper. The second main source of information for identifying the problem that is being addressed in MST should be the tourists and stakeholders of the industry, including local populations. In this respect, there is at last one specific tourism problem that should be considered. As the recently released IPK report for ITB Berlin 2018 states: “around 25% of all international tourists had the feeling that their destination had been “overcrowded” this year, according to a special World Travel Monitor* representative survey of 29,000 international travelers in 24 countries in Europe, Asia and the Americas conducted in September 2017”. At the same time, reactions of local population in the destinations against tourists or the tourist industry are becoming common, as a signal that the impact of tourism concentration in certain spots can endanger sustainability if there is not a sound management of the destinations.

2. The six spatial scales are a good starting point for the analysis, but not all them are equally useful or relevant in MST. Anyway, it is important to distinguish between the spatial scale of the subject of analysis and the spatial scale of the object of the analysis. It is clear that because of the expertise, the availability of data, the financial resources and to guarantee coherence and comparability, the national statistical offices should play a central role in MST. Nevertheless, there is a consensus that as an object of analysis for sustainability issues the national scale is not
so relevant. To decide which is the most interesting scale of analysis for MST we should go back to the policy-problems mentioned. There is a clear global sustainability problem to face (climate change, depletion of resources, world heritage conservation, etc.) and there are local problems to deal with, as tourism activity is highly spatially concentrated (congestion, effects of global warming, scarcity of water or energy, sewage, labour conditions, quality of life, etc.). This means that these two scales should be focused as the object of analysis. The local scale of analysis takes into consideration the most genuine characteristic of tourism, the tendency of tourism destination to sooner or later put in danger their own sustainability. Attractive places tend to lose attraction when demand provokes crowding and congestion. The relevance of the global and local scales as an object of analysis is outlined in the figure.

Figure 1. Local and global scale in measuring sustainable tourism

3. Spatial scales influence on all the rest of the analysis, particularly the economic, environmental and sociocultural accounting sections. Therefore, it is suggested that the chapter on "Defining spatial areas..." is presented before the chapters related to the accounting of sustainable tourism. The chapters devoted to the accounting of the three dimensions include the existing accounting tools to provide statistics for such dimensions, particularly at the national scale, but is not integrated with several critical questions raised in the introduction and in the chapter related with spatial scales.

4. The scale of analysis is relevant from the point of view of feasibility. If we are interested in global sustainability it is a realistic way to build a “national statistical framework for MST”, that can provide information that could be internationally aggregated to obtain an approximation to global scale. At the same time, this national statistical framework can contain some information to help to identify and analyse tourism sustainability at the local level, but this information would not be relevant enough at this local scale, because the lack of detail and due also local sustainability issues are very heterogeneous among destinations in a country. When we want to analyse local problems there is a diversity of situations and a lack of resources (what makes impossible to use a complete statistical framework).

5. The major challenge of MST initiative should be integrating and looking for consistency between the local destination statistical information on sustainability (tables and indicators) with the national sustainable tourism accounts. This would be a way of improving the quality, the credibility and the usefulness of the entire statistical framework. For the national sustainable tourism accounts, it is an opportunity, of having a spatial distribution, given that it is common that only a few dozens of destinations may account for the majority of tourism activity. It seems clear that at the local level some indicators related to the national accounting framework would be needed, along with a set of common indicators for local destinations. Local destinations
should be integrated into the MST analysis through the following figure where the tourism industry and the tourist consumption both at “identified” local destinations (and in the rest of the country) affect and are influenced by global sustainability. At the same time it is necessary to recognize and consider the tendency of tourism destinations to follow a cycle that finishes with stagnation or decline, following Butler (1980) model, in other words, destinations have often the tendency to put in dander their own sustainability.

Figure 2. Integrating local destinations within a supply and demand country scale approach to MST

6. Feasibility suggests that the local scale should be considered in a very specific way. The local scale in tourism should not be approached through the division of the territory into myriads of tiny areas. By contrast, every country should identify its local destinations following relevance and feasibility conditions, with the help of some criteria internationally defined of significance (see later). It is very important to note that most of the territory of a country lies outside local destinations but it is probably that a relevant share of the tourism industry and a relevant share of visitors are concentrated in these places. A relevant share of tourism sustainability issues may be related to these particular areas. This way of approaching the local scale has the advantage of being able to provide comparisons between local tourism areas but has the difficulty of obtaining an aggregation of the figures for the next spatial scale.

7. Feasibility suggests that the local scale (destinations) should be analysed through several indicators included in tables, that should be consistent with the national scale base accounts, but base accounts cannot be applied in a local scale context.

8. Aggregation of spatial scales is not a straightforward process. This is due to both the availability of information and for methodological reasons. For example, air purity, working conditions or quality of the water of beaches, are local indicators that cannot be easily aggregated in a country. At the same time, this means that the statistical framework can work at the national (or even regional scale), but not in a local context. In a local context, an additional set of indicators is needed. Qualitative indicators obtained through surveys should be relevant at the local level. But again, these figures should be consistent with national values.

9. Demand perspective, supply perspective and the need of a new dimension (the territorial perspective). This complementary dimension requires the extension of the present statistical framework for tourism statistics (2008 IRTS & 2008 TSA: RMF). One of the most important
...we can build an extended framework. This extended framework would include a new leg, the tourism destination, defined through the economic significance from both a supply and a demand perspective (INRouTe, 2017). Visitors are defined as known, by the concept of usual environment. Tourism characteristic products (activities) are defined through their ratio in tourism consumption and through their dependency on tourists. Tourism destinations could be integrated into this existing account framework through the concept of economic significance of tourism activities. This is because a large share of tourism characteristic products (activities) are produced in the destinations and at the same time a large share of the production and consumption of tourism products (activities) is consumed in the destinations. By analogy, a large share of destination production is oriented to visitors and a large share of visitor consumption takes place in the destinations. The next figure outlines this extended framework (more detailed in the Annex).

The main consequence of this new framework is that now tourism sustainability at the local destination can follow:
a) Destination demand perspective (analysing tourist behavior).

**Figure 5. Destination demand perspective**

b) Destination supply perspective (analyzing only the tourism industry)

**Figure 6. Destination supply perspective**

c) Integrated destination perspective (analysing all the dimensions of sustainability in a place with high concentration of tourists and tourism activities but including also the impacts of the non-visitors and the noncharacteristic activities.

**Figure 7. Integrated destination perspective (supply + demanda)**
10. Dealing with local destinations requires following an enhanced perspective to consider that tourism is entangled at the local destination with other economic activities and with local population. Analysing sustainability at the local level requires a new perspective as the sustainability of tourism in a local place is dependent on the sustainability of the area (including local population) as much as on the sustainability of the main activity.

The suggestion is to consider the implications of this extended framework including its integration with the national statistical framework for MST in chapters 2 to 4 of the document.

P.S. We are building a “Statistical framework for sustainable tourism” without a complete framework for sustainable development. That is really complex!

Annex: an extended framework for tourism statistics integrating the local scale
Dale Honeck, WTO

I think it is an excellent start, and look forward to making further comment on more advanced drafts. In terms of the current structure, I agree that the main statistical focus should be on using the TSA for measuring economic effects. Nonetheless, I think a major element is missing, and that is Value Chain Analysis. The use of VCA as an interim step, when the TSA is incomplete or not yet available, should be recognized and strongly recommended by the MST. At the moment, I can find only 2 minor references to tourism value chains, on pp. 73 and 75.

I think it must be recognized that many UNWTO Members are still far from having a complete and up to date TSA, and consequently VCA can provide highly useful information in the meantime. I’ve just returned from St Kitts and Nevis, which is very interested in the simplified TSA, and has benefitted from an ecotourism VCA carried out by the IAB in 2014.