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Outcomes of the recent in-depth reviews carried out by the Bureau of the Conference of European Statisticians

In-depth review of satellite accounting

Note by Statistics Canada

Summary

The document is an updated version of the in-depth review paper on satellite accounting that the Bureau of the Conference of European Statisticians discussed in February 2019. It was prepared by Statistics Canada with inputs from Eurostat, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations Economic Commission for Europe and United Nations Statistics Division.

The document provides an overview of existing national practices with satellite accounting based on a global survey carried out in 2018, suggests a typology of satellite accounts and recommendations for future work. The last section summarises the discussion and decision by the Bureau in February 2019.



I. Introduction

1. The Bureau of the Conference of European Statisticians (CES) regularly reviews selected statistical areas in depth. The aim of the reviews is to improve coordination of statistical activities in the United Nations Economic Commission for Europe (UNECE) region, identify gaps or duplication of work, and address emerging issues. The reviews focus on strategic issues and highlight concerns of statistical offices of both a conceptual and a coordinating nature.

2. In February 2018, the CES Bureau concluded that in recent years, there has been a growing interest from the user community for more detailed statistical data that address their specific needs. Users find it beneficial if these data are presented in relation to well-established statistics produced by national statistical offices, such as the System of National Accounts, 2008 (2008 SNA). There has been an increasing tendency for countries to produce 2008 SNA satellite accounts and several handbooks were developed by different organizations. At the same time this development can put significant strain on the resources of statistical offices. For this reason, the CES Bureau decided to carry out an in-depth review of SNA satellite accounting. Statistics Canada, with support from Organisation for Economic Cooperation and Development (OECD), Eurostat, UNECE, United Nations Statistics Division (UNSD) and International Monetary Fund (IMF) volunteered to prepare the paper providing the main basis for the review.

3. The scope of this review is limited to a discussion around satellite accounts. In recent years many countries have also developed specialized tables that represent disaggregations of the 2008 SNA standard accounts such as estimates of Gross Domestic Product (GDP) by city, or distributed household sector accounts related to income, expenditure and wealth. These tables have been extremely important tools to help policy makers better understand the economic and social environment in their countries. Since most of these tables are disaggregation of the standard SNA based tables, they have been excluded from this analysis.

4. This in-depth review paper first presents the recent international debate around the role of satellite accounting to enhance the usefulness and relevance of SNA to different users. Sections III and IV outline the purpose of satellite accounting in SNA and suggests a typology that can be used to classify the different satellite accounts to help frame the discussion. Section V presents the results of a country survey of national practices in satellite accounting that was conducted as part of the in-depth review and also provides an inventory of existing international guidance for the various satellite accounts. The paper concludes with a series of recommendations and possible next steps.

II. Background

5. The digital economy, clean technology, culture, ecosystems, tourism, sport and recreation – each day national accountants receive requests for data to address an ever-increasing complex set of questions posed by policy makers, businesses, think tanks, non-profit organizations and ordinary citizens. The 2008 SNA is a powerful analytical tool containing a rich set of information, but this richness is not always apparent or sufficient. Often this information needs to be re-worked, re-constructed, re-packaged, or expanded in order for it to be effectively used to address these, more specific, policy questions.

6. Whether GDP, beyond GDP, is GDP still relevant? – there is a growing debate about the validity of GDP and the System of National Accounts framework, more generally, as being a sufficient system to measure economic progress and even more so social progress. Much of the recent discussion has been driven by a substantial increase in ‘free information goods’ and advances in health care and communication over the last years where individuals experience positive change but do not see this change reflected in the economic data released by national statistical agencies. Equally, the SNA framework is being criticised for not addressing negative externalities that affect the sustainability of our economy. The latter may not only relate to the sustainability of our environment, but also to possible negative impact on social sustainability of increasing inequalities.

7. You could argue that much of the current debate around the validity of GDP dates back to the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP). CMEPSP was commissioned by Nicholas Sarkozy, President of the French Republic, who was “unsatisfied with the present state of statistical information about the economy and society.” The aim of the commission was to “identify the limits of GDP as an indicator of economic performance and social progress, including the problems with its measurement; to consider what additional information might be required for the production of more relevant indicators of social progress; to assess the feasibility of alternative measurements tools.” Society and the economy are increasingly complex and changing at a rapid pace.

8. Valid concerns are being raised as to whether the 2008 SNA can capture all the information required by citizens, businesses and governments to fully understand these changes. Users, at times, find it difficult to navigate through the sequence of accounts or find the accounts are too aggregated to allow them to answer their questions about a specific activity or sector. While the 2008 SNA is a powerful tool and provides users with highly relevant information, it has ‘boundaries’ which determine what gets measured and what does not get measured.

9. One way to expand the 2008 SNA is by allowing for the development of satellite accounts. Satellite accounts provide national accountants the flexibility to look outside the rigors of the core concepts and methods recommended by the 2008 SNA and experiment with new ideas and measures. Given rapid economic and social change, national statistical organizations (NSOs) seem to be more and more drawn by their users to look outside of the standard SNA framework and develop an ever-increasing variety of satellite accounts.

10. This apparent proliferation of satellite accounts is raising questions by national accountants and international organizations as to the motivation behind the increase. Is the increase in satellite accounting an indication that there is a problem with the scope and detail available in the standard set of national accounts? Or alternatively, does the increase in the number of satellite accounts reflect a maturation of national accounting where improved methods and access to data are enabling national accountants to develop more flexible and credible new dimensions that respond to local information needs? Or is it simply a case of NSOs further aligning their national systems with international standards where they use satellite accounts as a way to test out these new concepts and methods with users before integrating them into their core program.

11. The 11th meeting of the Advisory Expert Group on National Accounts (AEG) in 2017 discussed the growing demand on countries for compiling satellite accounts, in particular when it comes to functional, or thematic, types of satellite accounts. Thematic accounts provide a more detailed description of a particular economic function or theme, including its interaction with and the impact on the economy at large. It was noted that the proliferation of satellite accounts may raise concerns about the negative impact of such accounts on the implementation of 2008 SNA. AEG recognized that various interest groups aim to develop functional satellite accounts, which need to be reviewed by the national accounts community and for this purpose requested the Intersecretariat Working Group on National Accounts (ISWGNA) to provide guidance on a strategy to develop satellite accounts taking into consideration the various resources requirements and a minimum set of standards for comparability¹.

12. In November 2018, the 12th meeting of AEG further addressed the role of satellite accounts for building statistical information system for capturing well-being and sustainability. AEG agreed that the presentation of well-being and sustainability statistics could be enhanced to improve the (consistent) integration between ‘core’ national accounts and ‘satellite’ accounts under a broader accounting umbrella. SNA should be supplemented with guidance on the measurement of (sustainable) wellbeing, by providing clearer links between material wellbeing, including for example distributional measures, and broader issues of wellbeing and sustainability. The latter could be further elaborated by developing a

¹ See report of the 11th and 12th AEG Meetings at <https://unstats.un.org/unsd/nationalaccount/ramtg.asp?ftype=2>

broader accounting framework, e.g. by combining the current framework with unpaid household activities, environmental-economic accounts, health and education. Finally, AEG emphasised that appropriate terminology (and branding) should be developed to facilitate the integration of measures of wellbeing and sustainability with the core accounts and cooperation between those developing and preparing accounts in different fields and stressed the need for the optimal use of resources.

13. The Group of Experts on National Accounts (organized jointly by Eurostat, OECD and UNECE) also discussed the role of satellite accounting in national accounts in May 2018. During the discussion the participants noted that satellite accounting helps make the national accounts accessible to a broader set of users. Participants also warned that there is a danger, especially with thematic satellite accounts that are sponsored by government departments, that NSOs will be pushed towards adopting broader definitions of certain activities with the sole purpose of increasing the size of the activity being measured, and thus making the activity seemingly more important for policy.

14. The participants agreed that, given the proliferation of satellite accounts, the international community should develop some general guidance regarding priority areas, and should also recommend approaches when developing satellite accounts. This guidance could include how to best relate the satellite accounts to the core, priority areas of development, and the allocation of resources and responsibilities for compiling the respective satellite accounts. Some form of typology is also required given the increasingly diverse nature of satellite accounting.

III. Satellite accounting and the 2008 SNA

15. One of the strengths of the 2008 SNA lies within its flexibility. While the system lays out the concepts, accounts and accounting rigour required to produce a set of integrated and internally consistent set of accounts, it does afford the compiler the flexibility to vary and, in a sense, ‘expand’ the framework to address a specific need. At the limit this ‘expanding’ is referred to as satellite accounting.

16. The 2008 SNA distinguishes between two types of satellite accounts. One type of satellite account involves a rearrangement of the classifications or presentation (e.g. more detail and alternative aggregations) of the core accounts and the possible addition of complementary information. These satellite accounts do not fundamentally change the underlying concepts of the core System of National Accounts² but provide an expanded perspective on a particular sector, group of products or activity (2008 SNA paragraph 29.5).

17. The second type of satellite account seeks to expand or supplement the underlying concepts of the core System of National Accounts. This could involve, for example, expanding the concept of production (e.g. including unpaid household services or volunteer activities as production), consumption or capital formation (e.g. including human capital within the asset boundary). While these types of accounts may also involve the use of new classification systems and presentations the focus of the account is on the alternative concepts (2008 SNA paragraph 29.6).

18. The development of a satellite account involves extracting or enhancing detail contained in the core national accounts, and so the results are directly comparable with established national account aggregates. Since the data, for the most part, are extracted from the core set of accounts the satellite accounts also inherit the high-quality nature of the national accounts.

19. As noted in paragraph 1.73 of the 2008 SNA, satellite accounts are also an excellent tool for national accountants to “explore new methodologies and work out new accounting procedures that, when fully developed and accepted, may become absorbed into the main SNA in the course of time ...”.³ In many ways they afford both the compiler and the user to

² There are some cases where concepts such as the production boundary could be extended without affecting GDP, such as the internal production and use of certain goods and services.

³ More details are provided in chapter 29 of the 2008 SNA.

experiment and test out new ideas and when those ideas have been fully tested and formed, they can then be integrated into the main accounts.

20. In general, a large array of data is used to construct standard macroeconomic accounts. The data go through rigorous data quality validation and are integrated, reconciled and balanced in the process of *producing* national accounts. The drawing of the satellite accounts from these data help ensure a high degree of quality and overall consistency within the system as a whole.

21. Most importantly for users, satellite accounts help them analyse a specific sector of the economy that they may not have been able to analyse using the core accounts. In the absence of satellite accounts users are often left trying to reconcile data from different surveys and statistical products in order to get a complete picture of the size and structure of a particular sector. Often these data are not coherent and difficult to interpret. Satellite accounts can remove the confusion by bringing these data together in a common framework and ‘forcing them into line’.

22. A final positive externality of satellite accounts is that they often spur data development activity or investment that *improve* the quality of source data. These data developments not only benefit the satellite account program but can have positive spill-over effects on a countries’ core national accounts program.

IV. Classifying “satellite accounts”

23. Prior to analysing the results of the survey on national practices in the compilation of satellite accounts, which follows in section V, it is important to establish a typology to help frame the discussion. As noted above, the 2008 SNA identifies two broad types or categories of satellite accounts (2008 SNA 29.5). These two types provide a starting point in developing a typology or classification system for satellite accounts. While the SNA distinguishes between the two types (referred to as type 1 and type 2) of satellite accounts it provides little guidance regarding nomenclature and terminology.

A. Thematic accounts (Type 1)

24. Various statistical agencies have, over the years, begun to refer to a certain group of satellite accounts as thematic satellite accounts. Thematic satellite accounts generally restrict their scope to a specific activity or group of activities or sector⁴, and are predominantly constructed within boundaries of the 2008 core conceptual framework. Examples of thematic accounts include accounts such as tourism satellite accounts, culture satellite accounts, or the sport and recreation satellite accounts. These accounts tend to be sector based and involve regrouping, re-arranging and re-packaging existing national accounts information in a way that is more intuitive and accessible for users. They generally do not deviate, in any significant way, from the production, consumption and asset boundaries of the 2008 SNA or from the market price valuation principle. We will refer to these types of satellite accounts as “thematic accounts”.⁵

B. Extended accounts (Type 2)

25. While the international community is gravitating towards using the term thematic accounts to represent 2008 SNA “type 1” satellite accounts, the same cannot be said for the type 2 accounts which tend to extend the core concepts of the 2008 SNA. A term that adequately describes type 2 satellite accounts has not yet emerged. A common language for sub-groups or individual accounts seems to be emerging such as well-being accounts,

⁴ Not to be confused with institutional sectors as defined by the 2008 SNA. Paragraph 29.21 of the 2008 SNA notes that in the context of satellite accounts “it is common practice to refer to such groupings of industries as “sectors” even though they do not constitute institutional sectors as the term is used in the SNA.”

⁵ Footnote Paper by Peter van de Ven.

household accounts, and ecosystem accounts but a common term describing the group of accounts is not yet evident.

26. The common feature of type 2 accounts is that they tend to extend or expand the concepts and boundaries of the 2008 SNA. For example, satellite accounts related to human capital extend the asset boundary of the 2008 SNA, while satellite accounts related to unpaid household work extend the production boundary of the 2008 SNA. This idea of going beyond the core set of concepts is common among these “type 2” satellite accounts. They often go beyond measuring monetary, pseudo-monetary or even economic transactions. Another commonality is that they often involve imputing values for non-market products such as household own-account services, leisure time, ecosystem assets, and assets like human capital and social capital. Given the common theme of expansion and the fact that these satellite accounts tend to extend beyond standard macro-economic transactions, for the purposes of this in-depth review, we will refer to these as “extended national accounts” – to convey the idea that they go beyond the generally accepted conceptual boundaries identified in the 2008 SNA.

C. Standard System of National Accounts

27. While the proposed typology distinguished between the different types of satellite accounts, we also need a term that we can use to reference the recommended set of (2008 SNA) accounts. The term “core” could be used but the term implies these accounts are “correct” or “of higher quality” or “of greater importance” than satellite accounts. Given this is not necessarily the case it is preferred to refrain from calling them the core accounts. Since the accounts are economic by nature and they are the “generally accepted” by the international community as the standard set of accounts countries should aspire to produce, they will be referred to as the Standard System of National Accounts (SSNA). It should be emphasised that we are not proposing to alter the current 2008 SNA in any way – a typology to facilitate the description of the extensions to the SNA. The result is three high level classes of accounts:

- (i) Standard system of national accounts;
- (ii) Thematic accounts; and
- (iii) Extended national accounts.

28. Thematic accounts are broadly within the scope of the SSNA. In addition, one thematic account can overlap with another thematic account. For example, a thematic account related to tourism can overlap with a thematic account related to culture since some tourism activity is also cultural activity. The relationship between the SSNA and thematic satellite accounts is depicted in figure 1.

29. The extended national accounts encompass the Standard System of National Accounts as well as a select set of sustainability and well-being accounts. Similar to the thematic accounts, the various extended satellite accounts can overlap. For example, a set of ecosystem accounts can overlap with a set of well-being accounts that quantify the positive or negative impacts pollution has on the goods and services that can be derived from ecosystems. The idea of the extended national accounts is depicted in figure 2. The key question that needs to be addressed is whether or not we want to designate a set of accounts as the “official” extended system and encourage countries to develop this extended set of accounts using international agreed upon concepts and methods.

Figure 1
Standard System of National Accounts and thematic satellite accounts

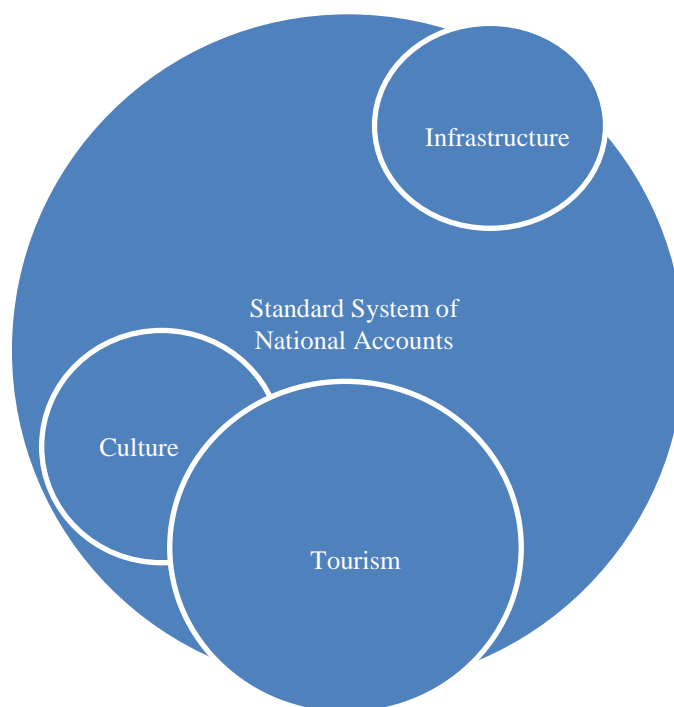
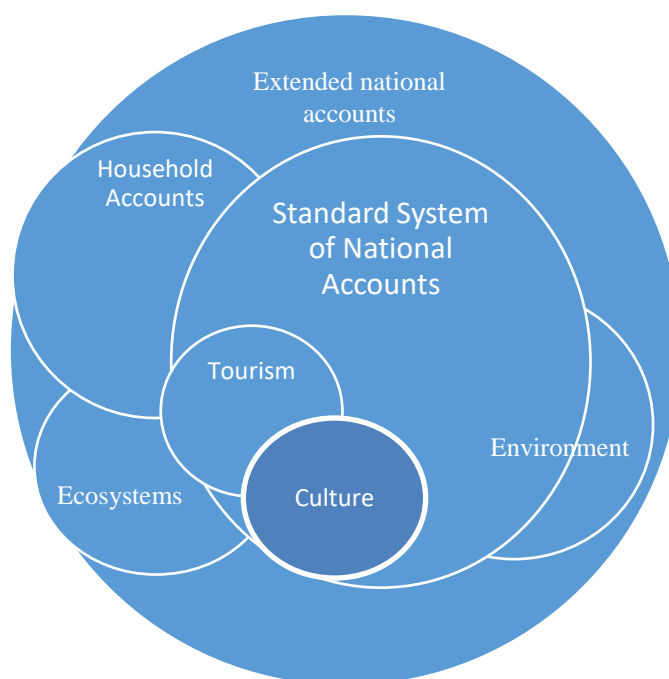


Figure 2
Extended national accounts



30. The above typology or classification system was used to analyse the results of the survey of national practices in satellite accounting. The following table shows the range of satellite accounts reported by respondents on the survey along with how each of the accounts were subsequently designated. It should be noted that the range of topics that were listed on the survey was not exhaustive and in some cases the topics did not align well with the concept of a satellite account. Nevertheless, we are including them in the list and analysis for completeness.

Table 1
List of accounts in the survey

<i>Account Name</i>	<i>Class</i>
<i>The following list was included in the survey and respondents were asked to identify any of the accounts they produced</i>	
Environmental-economic accounts (SEEA including ecosystem accounting)	Extensions
Non-profit institutions and volunteering	Extensions
Human capital	Extensions
Health accounts	Extensions
Unpaid household activities	Extensions
Education accounts	Extensions
Social protection	Extensions
Social accounting matrices	Extensions
Distributional national accounts	Thematic
Tourism accounts	Thematic
Natural resource accounts	Thematic
Culture accounts	Thematic
Sport and recreation accounts	Thematic
Illegal/informal sector	Thematic
Agriculture	Thematic
Digital economy	Thematic
Transport accounts	Thematic
Ocean coastal economic accounts	Thematic
Technology	Thematic
Education and training	Thematic
Intangible capital	Thematic
<i>The following set of accounts were "write-ins" identified by the NSOs</i>	
Care economy	Thematic
Softwood lumber	Thematic
Cannabis	Thematic
Pensions	Thematic
Water	Thematic
Sea	Thematic
Fisheries	Thematic
Telecommunication	Thematic
Travel and tourism	Thematic
Arts and culture	Thematic
Outdoor recreation	Thematic

V. State of play in satellite accounting – results of the country survey

A. International inventory of satellite accounts

31. As noted by the CES Bureau, over the last number of years there has been an apparent increase in demand from users to develop satellite accounts, either because they no longer find the concepts in the core accounts appropriate or they are masking or do not properly account for emerging economic phenomena. In order to address these two questions Statistics Canada, conducted a survey on national practices in the compilation of satellite accounts. The questionnaire was developed through consultation with international bodies (UNSD, UNECE, IMF, OECD, Eurostat) and selected individuals from various national statistical organizations. In addition to developing an international inventory of satellite accounts the survey collected information along six themes:

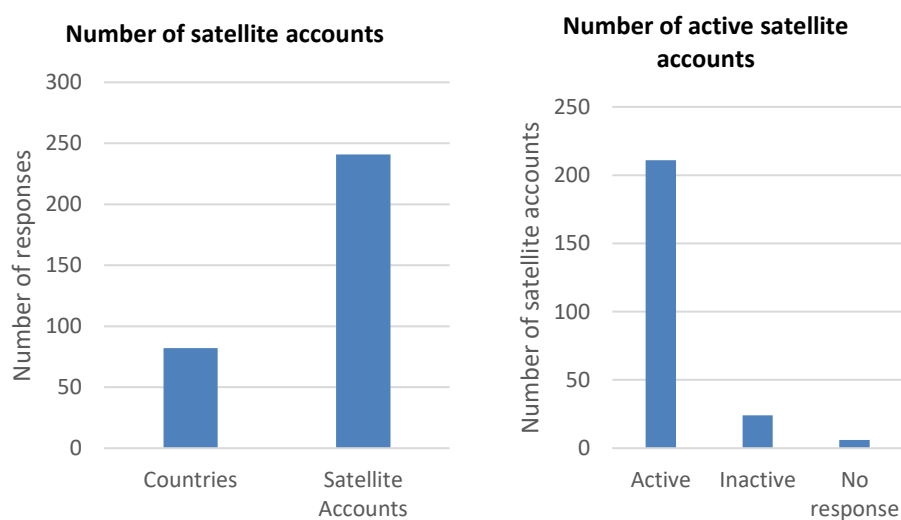
- Sponsorship / financing of satellite accounts
- Work unit responsible for producing satellite accounts
- Relationship of the satellite account to the “core” 2008 SNA
- Frequency and timeliness of satellite accounts
- Data sources and methods used to construct satellite accounts
- Data gaps and demand for satellite accounts.

32. UNECE and OECD distributed the survey to their member countries, while UNSD extended the survey to the rest of the member countries. Over 80 countries responded to the survey on national account practices related to satellite accounts. In total, the respondents reported having developed 241 satellite accounts (covering over 20 different topics) – most of which continue to be actively worked on. The number of accounts produced by a given country varies from one to 15. The median number of satellite accounts in production for a given country was 2, and the average was 4 (3.7).

33. Certain satellite accounts were found widespread across European countries. This can be explained by a common legislation, which sets common standards and serves common policy purposes. Examples of legislated accounts include the agricultural satellite accounts or the environmental satellite accounts. Some other satellite accounts in Europe are implemented on a voluntary basis by countries which have a national interest in that specific field, like the tourism or the social protection satellite accounts. For these voluntary European satellite accounts a harmonised methodology exists.

Figure 3

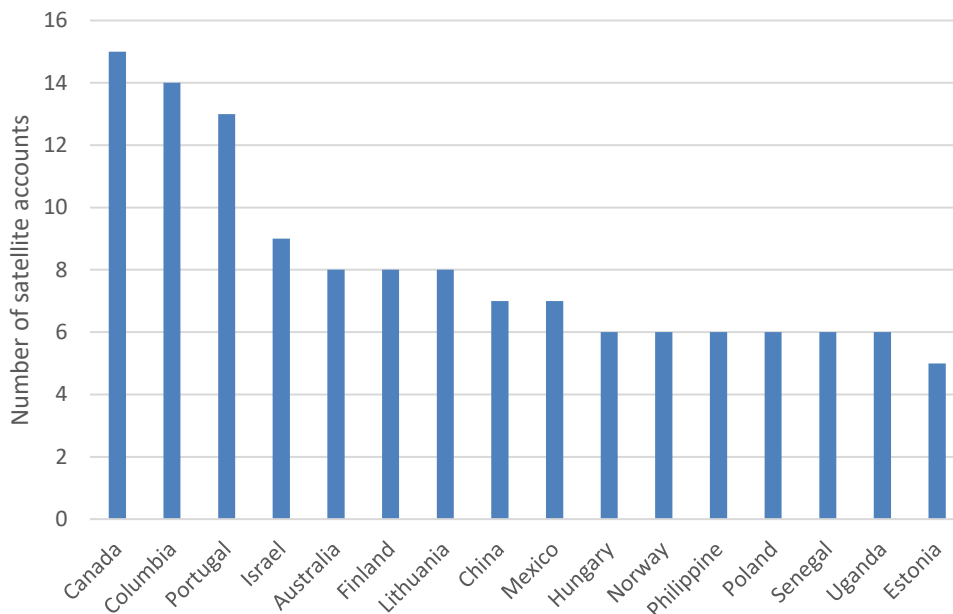
Overview of developed satellite accounts



34. The countries most active in satellite accounting are listed below. As noted above, European countries are quite prevalent in the list. Other countries actively engaged in satellite accounting include Canada, Columbia, Australia, Mexico and Israel.

Figure 4

Countries actively engaged in satellite accounting



35. The typology outlined in the previous section was used to classify each satellite account as either thematic accounts or extended national accounts. At times, it appeared that the two types of accounts overlapped. In cases of overlap the account was categorized as an extended national account even if the account focused on a specific sector. Out of the 241 satellite accounts reported by the survey respondents the majority were classified as thematic accounts.

36. The above numbers are somewhat skewed towards thematic accounts given the large number of countries that product tourism satellite accounts. Tourism satellite accounts are the most common account produced by national statistical organizations followed by environmental-economic accounts. Satellite accounts that involve expanding the asset boundary for the 2008 SNA such as human capital accounts are less prevalent among countries.

37. The survey also examined the reference periods covered by the satellite accounts. The majority of the satellite accounts relate to reference periods 2000 and later. In total, 9 satellite accounts cover reference periods prior to 1980, 40 cover reference periods in the 1980s and 1990s, and 148 cover reference periods after 2000. Most of the development over the last two decades was focused on health, tourism and environment.

Figure 5
Topics covered by satellite accounts

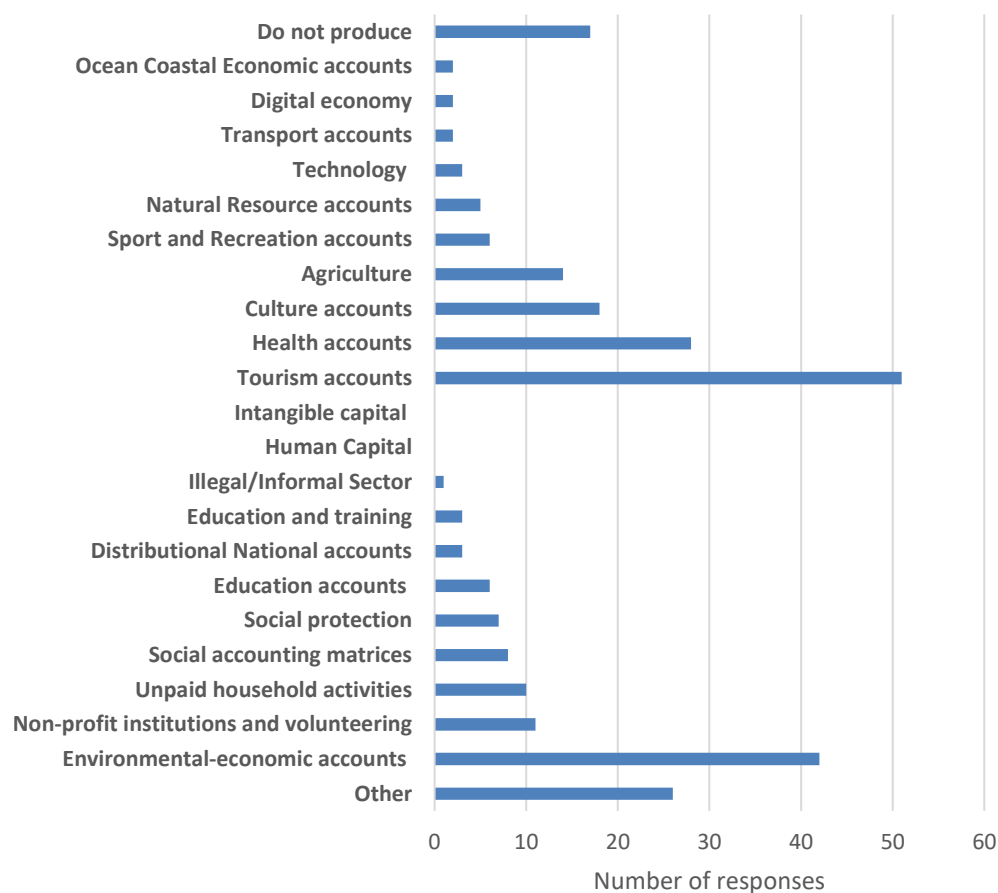
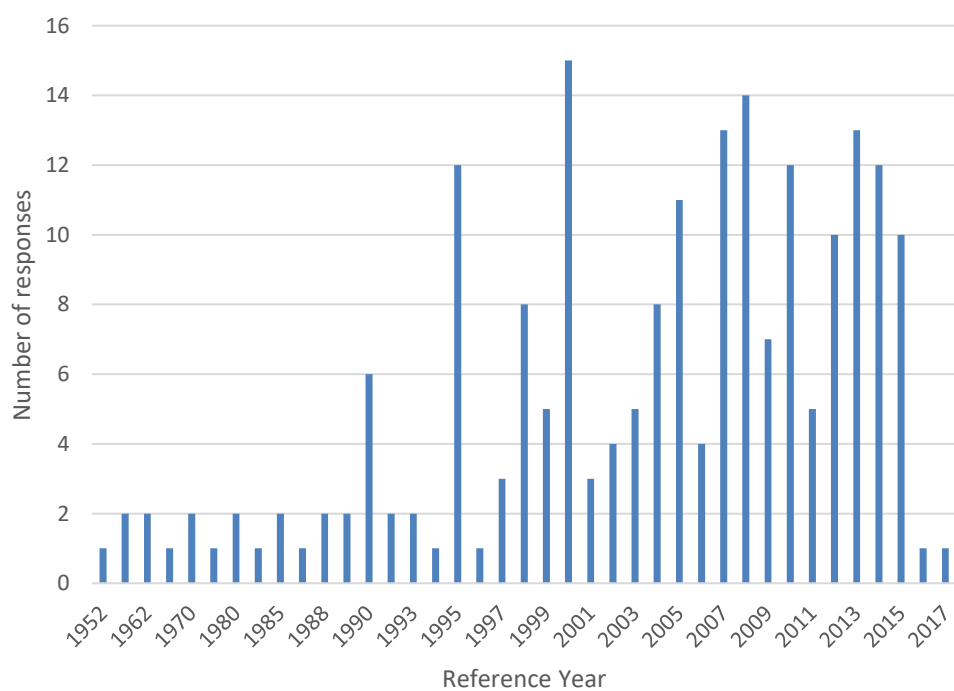


Figure 6
Reference periods covered by satellite accounts



B. Sponsorship and funding

38. The second part of the survey focused on sponsorship and sources of funding. The survey asked statistical organizations to indicate if the satellite account was sponsored by an organization outside the national accounts program and if the sponsors contributed funds.

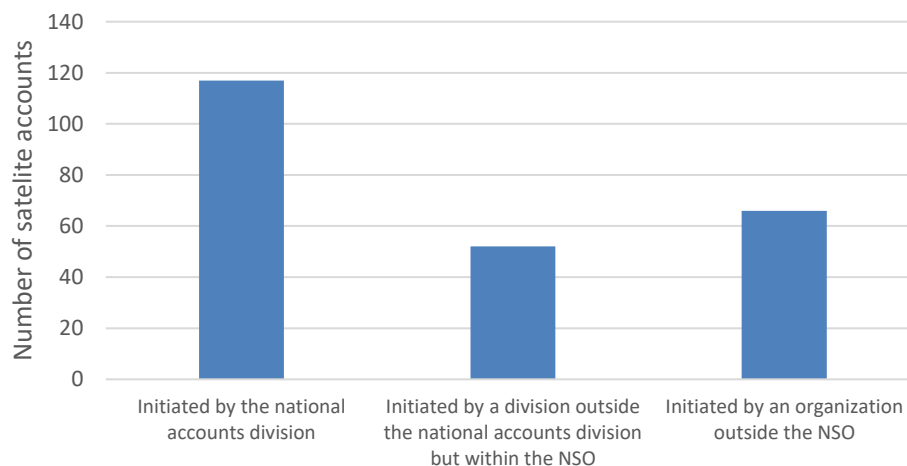
39. The results of the survey showed an almost even split between those accounts initiated by the national accounts program located within NSO and those satellite accounts initiated by organizations outside of the national accounts program of NSO. Of the 241 satellite accounts represented in the study, 117 were initiated by the national accounts program, 52 by a work unit outside the national accounts program within the NSO, 66 by organizations outside the NSO, and the origin of 6 was unknown.

40. Of the accounts commissioned by organizations outside NSO, most were related to thematic accounts. It appears that sponsorship and funding was more forthcoming when the product was closely aligned with the sponsoring organization's mandate. Expanded national accounts have a broader use and therefore sponsorship of these types of accounts is less prevalent. For example, in most countries there is not a logical sponsor for a human capital satellite account – while this account is important to shed light on the comprehensive wealth of a country, it is unlikely that a specific organization would sponsor its development.

41. Countries were also asked about the work units and areas responsible for producing satellite accounts within their national context. This area of questioning was intended to see if countries use the same national accountants to produce satellite accounts as they use to produce the Standard National Accounts. The line of thought is that, if the satellite accounts are organizationally embedded with the same work unit as the Standard National Accounts, they will be more likely to receive the same rigor that goes into developing the SSNA accounts.

Figure 7

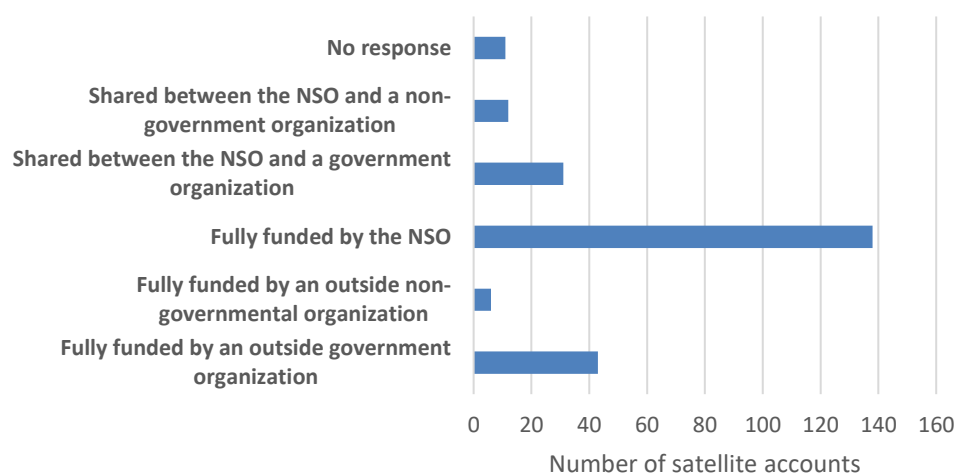
Initiating organization



42. National statistical organizations were also asked a number of questions related to funding. In the majority of cases the NSO indicated that the satellite accounts they compiled were fully funded internally by NSOs. This could have either been out of the base budget of the NSO or through special funds that were allocated to NSO for the purpose of developing the satellite account. There were less instances where the satellite account was funded by an outside organization (government or non-governmental) in which funds were transferred from the sponsor organization directly to NSO.

43. This is an important result given that one of the concerns about satellite accounting is that they can become politicalized. If satellite accounts are sponsored by an outside organization, there may be a tendency, real or perceived, for the accounts to be “bent” to support a political point of view or outcome. If the funding is at arm's length, then the perception is reduced, and it could lend more credibility to the exercise.

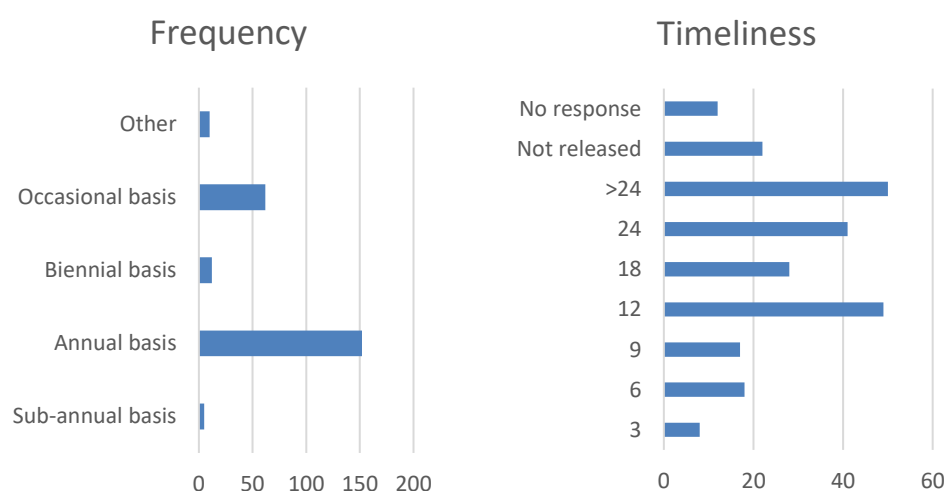
Figure 8
Source of funding for development of satellite accounts



C. Periodicity and frequency

44. NSOs were also asked to report on the periodicity and frequency of the satellite accounts they produce. This line of inquiry was intended to determine if users demanded the same periodicity and frequency for satellite accounts as they do for SSNA. Not surprisingly, the periodicity and frequency of satellite accounts differs substantially from that of SSNA. This is an indication that satellite accounts help users understand the structure of an economy/society and the overall impact of an activity rather than growth or cyclical evolution of the activity or sector. Most satellite accounts are produced on an annual basis and released 12-24 months following the reference period. There were a few sub-annual satellite accounts or “indicators”, and most were related to tourism and culture.

Figure 9
Frequency and timeliness of satellite accounts



D. Motivation

45. A key objective of the in-depth review is to better understand the motivation behind the development of satellite accounts. Respondents were asked to report on the main drivers behind the demand. Most respondents indicated that users requested satellite accounts to better illuminate a specific activity or sector that could not be easily analysed using the

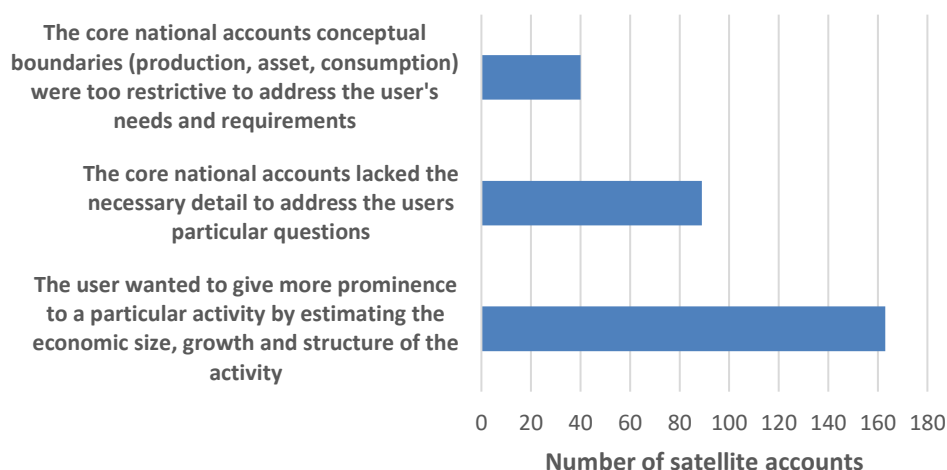
standard SSNA classifications. When users explore the national accounts to look for tourism or culture they only see pieces of what they require. Users request satellite accounts to rearrange the standard data to suit the type of analysis they would like to undertake.

46. Much of the motivation behind these requests is to derive an estimate that allows the user to put an activity or sector of interest in the context of total economic activity. The ability to tell users the share of this activity to total GDP is often a key motivation in the development of satellite accounts. This motivation was evident for both thematic accounts and extended national accounts. In many cases users were interested in the size of the activity that was not conceptually covered by the standard system of national accounts. Is the stock of human capital larger than the stock of physical capital? What is the level of training when we include in-house training activities by employers? In addition to the overall size, respondents indicated that users often require a time series (the longer the better), so that they can also understand how a sector was evolving through time.

47. Over 55% of the respondents reported that satellite accounts were developed to give more prominence to a particular activity by estimating the economic size, growth and structure of the activity. Very few respondents indicated that satellite accounts were developed because users felt the conceptual boundaries of the 2008 SNA were too restrictive and do not capture, for example, the welfare effects of free goods, or seamless access to information.

Figure 10

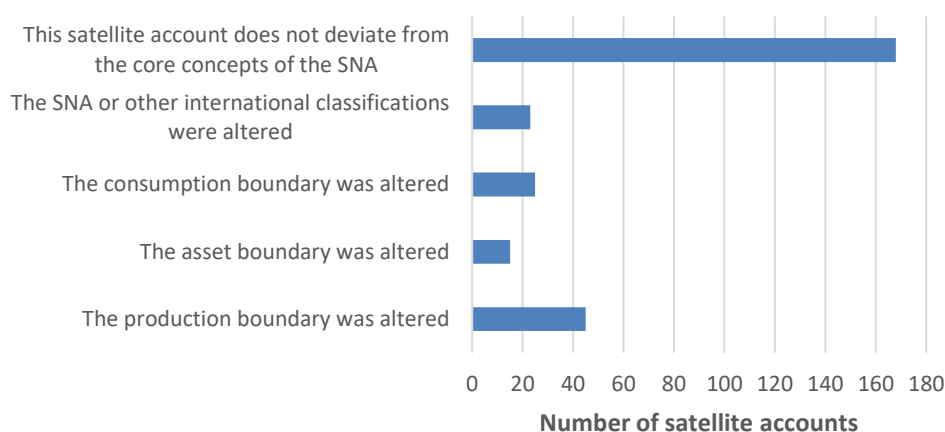
Primary reasons for development of satellite accounts



48. This is an important finding, given most of the discussion around the usefulness of GDP centres on its “restricted” production boundary, which does not adequately capture certain benefits (e.g. better health outcomes or increases in consumer surplus due to technological advancement) or do not appropriately account for negative externalities. This is not to say that these are not important areas of investigation. The lack of responses may be more an indication of a lack of conceptual development in these areas making attempts at producing satellite accounts related to well-being and sustainability less credible and therefore evoke less demand from users.

49. In cases where the satellite accounts did deviate from the core concepts of the national accounts, most often the production boundary was expanded. In 61% of the cases the satellite accounts did not deviate from the core concepts of the 2008 SNA. In over 15% of the cases the production boundary was altered (such as valuing volunteering), followed by the consumption boundary - 9% and the asset boundary - 5% (such as including human capital in the asset boundary).

Figure 11
Deviation from the core concepts of the System of National Accounts

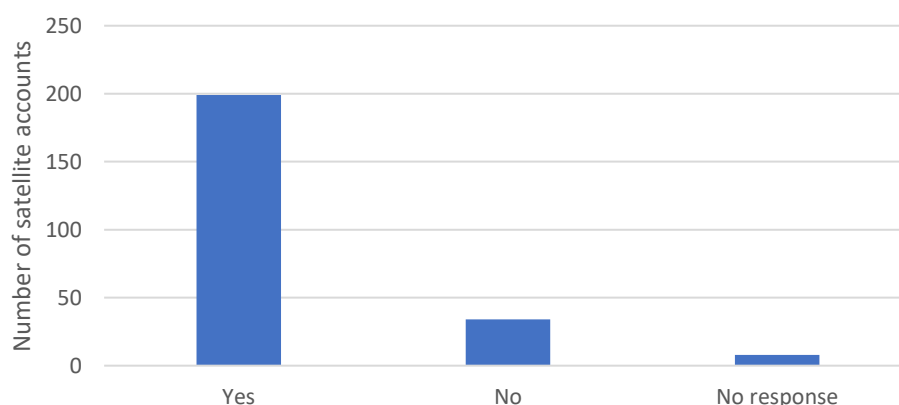


E. Guidance

50. National statistical organizations and satellite account compilers were asked a number of questions about their compilation practices. Specifically, respondents were asked if they received guidance from the international community and whether or not satellite account sponsors contributed to either the development of the framework or provided metadata that helped in the construction of the satellite account.

51. In the vast majority of cases, users indicated that international guidance was available and that they used this guidance to help them construct their satellite accounts. Most of the motivation for following international guidance was related to their desire to ensure their final product compared to similar products produced by other countries.

Figure 12
Availability of international guidance for satellite accounts



52. A significant amount of guidance exists regarding the sources and methods national compilers can use to construct satellite accounts. Much of this guidance is recent and has been updated to align with the 2008 SNA. The appendix contains a full inventory of the handbooks, guides and manuals available to countries as well as the date they were published and the international organization or groups that developed the guides.

53. Satellite account compilers also received input from either non-governmental organizations or government organizations outside the national statistical office. The survey explicitly asked about four types of input received in the compilation of a specific satellite accounts. The types of input were: input related to the concepts and statistical methods; input related to the definitions and classifications; the provision of data to help construct the satellite account; and others. In general, compilers received input on all aspects

of the design of the satellite account. In the majority of cases, compilers received at least two key inputs from users in the development of the accounts and in at least 60 cases they received input related to the concepts/methods, definitions/classifications and data to help construct the account.

Figure 13
Type of input received from outside organizations

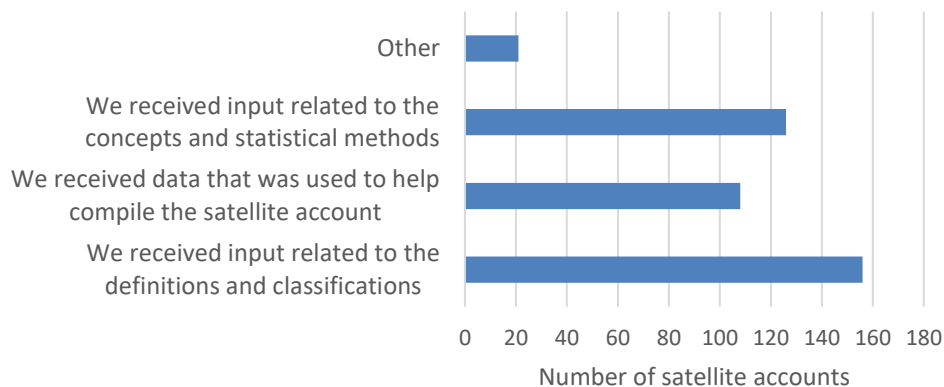
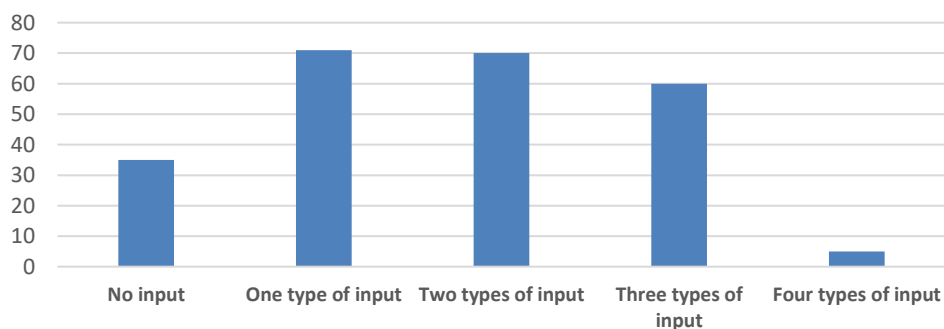


Figure 14
Range of input received



F. Demand

54. NSOs were asked to identify cases where a satellite account was requested but they were unable to “fill the order” due to various circumstances. In total, NSOs indicated there were 130 cases where a user requested a satellite account for which they were unable to meet the demand. The unmet demand was evenly split between thematic accounts and extended accounts.

Figure 15
Level of unmet demand by type

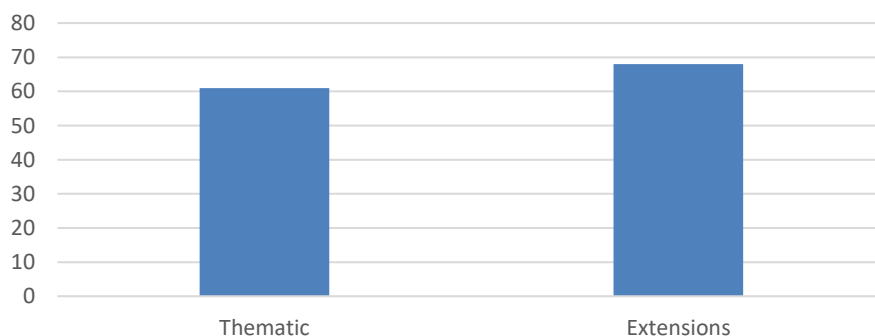
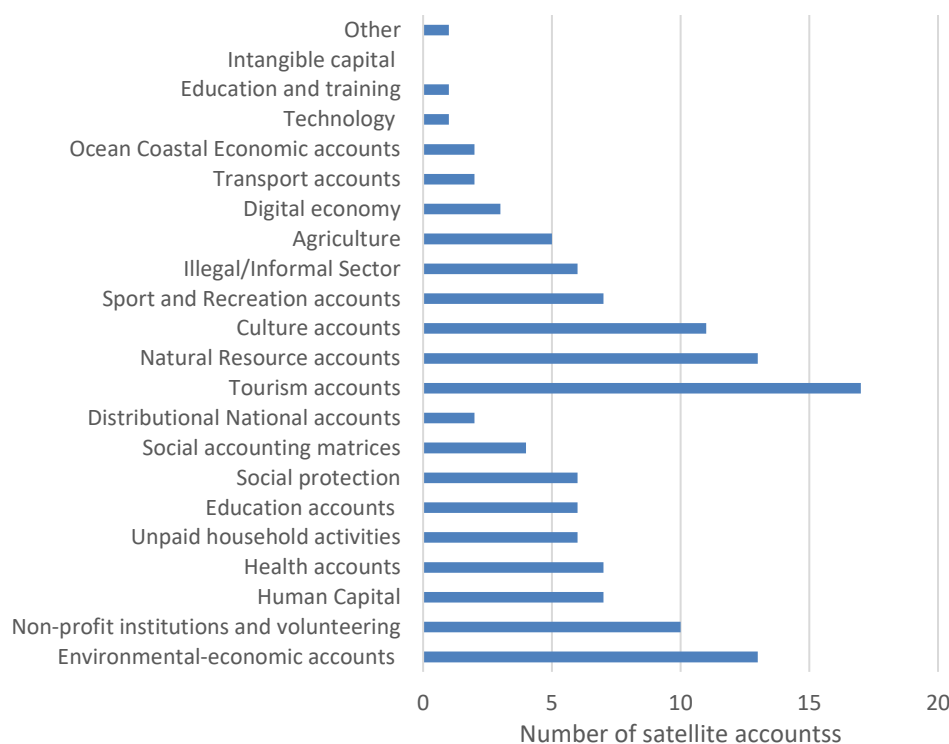


Figure 16
Level of unmet demand by topic



VI. Recommendations

55. This report demonstrates that national compilers use guidance when available. This guidance helps them ensure the satellite accounts do not become overly politicized since the compiler can reference international standards when identifying the definitions and boundaries of the satellite account. While a significant amount of guidance exists for the various accounts, the guides are developed independently. It is recommended that a general Guide to Satellite Accounting be developed. This guide would recognize that there exists a standard set of standard satellite account concepts, methods and techniques that are common (or should be common) across all satellite accounts. This more general guide can be accompanied by guides on detailed sources and methods related to specific themes such as tourism, culture or infrastructure.

56. Second, an international organization should be designated to conduct a regular survey of satellite account compilation and maintain an online inventory of published satellite accounts that national compilers can consult as required. This inventory should include links to country specific sources and methods as well as contact information. In constructing this inventory, an agreed upon typology and classification of accounts should be developed. In addition, in cases where a critical mass of satellite accounts exists, such as in the area of tourism, international agencies should develop integrated country by country tables in order to facilitate cross country comparisons by both the compiling organization and its users. At the CES level, it is recommended that UNECE, together with Eurostat and OECD maintain an inventory of compiled satellite accounts, as well as conduct an occasional country survey to identify current practices and areas where member countries require guidance.

57. Third, consistently with the discussion of the Advisory Expert Group, presented in paragraph 8, it is recommended that ISWGNA prepare a guidance note proposing an extended set of satellite accounts (existing or to be developed) that could be presented for endorsement to the United Nations Statistical Commission. This extended set of (economic, social and environmental) national accounts would focus on addressing some of the well-being and sustainability gaps that are present within the current 2008 SNA (such as the

measurement of unpaid household activities, environmental externalities, health and education). In the future, the CES Bureau should consider how to facilitate the implementation of the agreed extended set in the CES countries, including through the development of specific compilation guidance and developing platforms and hosting workshops that facilitate the exchange of best practices.

VII. Discussion and decision by the CES Bureau

58. The CES Bureau conducted an in-depth review of various types of satellite accounts based on a paper by Canada in February 2019. The Bureau raised the following issues:

- The paper is very timely in the light of increasing importance of satellite accounts and proliferation of different types of these accounts. It is a good input to the ongoing debate on the usefulness of SNA, which at the moment does not address the current priorities such as digitalization or sustainable development
- Satellite accounts allow to address many user information needs and at the same time keep the core of national accounts intact
- Satellite accounts do not decrease the credibility of SNA. The work on satellite accounts should inform the revision of SNA, which need to become more iterative, inclusive and responsive to the changes in economy while maintaining the current strength of the SNA framework
- The paper presents a useful typology of satellite accounts. It is important to have general guidance and principles for satellite accounts to follow existing international standards and harmonise the approaches
- An inventory of satellite accounts would be very useful but needs to be coordinated by one institution
- The Bureau strongly supported the three recommendations proposed in the paper and stressed the urgency of advancing the work. The Bureau asked for a concrete proposal how to move forward with developing a general guide on satellite accounting and an online inventory of published satellite accounts.

Conclusion

59. The Secretariat will consult with the authors of the in-depth review paper and present to the Bureau a proposal how to move forward on developing a general guide to satellite accounting and an online inventory of published satellite accounts. The Secretariat will follow up the work of the Intersecretariat Working Group on National Accounts on preparing a guidance note on an extended set of satellite accounts (existing or to be developed) that could be presented for endorsement to the United Nations Statistical Commission.

Annex

Inventory of international guidance, handbooks and manuals

<i>Topic</i>	<i>Publication</i>	<i>Date published</i>	<i>Group responsible</i>
Environment and natural resources accounts			
Environmental	System of Environmental Economic Accounting (SEEA) 2012 Central Framework https://seea.un.org/sites/seea.un.org/files/seea_cf_final_en.pdf	2012	United Nations, Food and Agriculture Organization of the United Nations (FAO), European Commission, OECD, IMF, World Bank
Environmental	SEEA Experimental Ecosystem Accounting https://seea.un.org/sites/seea.un.org/files/websitedocs/eea_final_en.pdf	2012	United Nations, FAO, European Commission, OECD, World Bank
Environmental	Technical Recommendations in support of the System of Environmental-Economic Accounting 2012-Experimental Ecosystem Accounting (white cover) https://seea.un.org/sites/seea.un.org/files/technical_recommendations_in_support_of_the_seea_eea_final_white_cover.pdf System of Environmental-Economic Accounting for Water https://unstats.un.org/unsd/publication/seriesf/Seriesf_100e.pdf	2012	UNSD
Environmental	Environmental taxes https://seea.un.org/sites/seea.un.org/files/taxes_ks-gq-13-005-en.pdf.pdf	2013	Eurostat
Environmental	Environmental subsidies and similar transfers https://seea.un.org/sites/seea.un.org/files/subsidies_ks-gq-15-005-en-n.pdf	2015	Eurostat
Environmental	System of Environmental-Economic Accounting for Energy https://seea.un.org/sites/seea.un.org/files/seea_energy_all_jan_2015.pdf	2015	UNSD
Environmental	Environmental goods and services sector accounts https://seea.un.org/sites/seea.un.org/files/egss_handbook_ks-gq-16-011-en-n.pdf	2016	Eurostat
Environmental	SEEA Applications and Extensions https://seea.un.org/sites/seea.un.org/files/ae_final_en.pdf	2017	UNSD

<i>Topic</i>	<i>Publication</i>	<i>Date published</i>	<i>Group responsible</i>
Environmental	Environmental Protection Expenditure Accounts https://seea.un.org/sites/seea.un.org/files/epea_ks-gq-17-004-en-n.pdf	2017	Eurostat
Agriculture	Economic Accounts for Agriculture (ESA satellite) https://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-27-00-782	2000	Eurostat
Agriculture-forestry	System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries – White cover version published March 2018 https://seea.un.org/sites/seea.un.org/files/seea_aff_final_clean_03.pdf	2018	UNSD, FAO
Natural resources	<i>Guide to Analyze Natural Resources in the National Accounts</i> https://www.imf.org/external/pubs/ft/qna/na.htm	2017	IMF
Natural resources	Economy-wide material flow accounts https://seea.un.org/sites/seea.un.org/files/ks-gq-18-006-en-n.pdf UN Environment version coming soon	2018	Eurostat
Natural resources	Satellite account for the ocean	Under development	Economic and Social Commission for Asia and the Pacific and UNSD
Natural resources	Not available		
Human capital, education, health			
Human capital	<i>Guide to Measuring Human Capital</i> https://www.unecce.org/fileadmin/DAM/stats/publications/2016/ECECESSTAT20166_E.pdf	2016	UNECE
Education and Training	<i>Satellite Account for Education and Training: Compilation Guide</i>	Under development	UNECE
Education	Methodology of national education accounts (UNESCO, UNESCO IIEP, UNESCO UIS.) http://unesdoc.unesco.org/images/0024/002457/245781e.pdf	2016	United Nations Educational, Scientific and Cultural Organization (UNESCO)
Health	System of Health Accounts https://www.who.int/health-accounts/methodology/en/	2011	OECD, Eurostat, WHO
Household accounts (including distributional aspects)			
Households	<i>Handbook of National Accounting: Household Accounting Experience in</i>	2000	UN

<i>Topic</i>	<i>Publication</i>	<i>Date published</i>	<i>Group responsible</i>
	<i>Concepts and Compilation, Vol.2: Household Satellite Extensions</i> https://unstats.un.org/unsd/publication/SeriesF/SeriesF_75v2E.pdf		
Generational	<i>Measuring and Analysing the Generational Economy: National Transfer Accounts Manual</i> http://www.un.org/en/development/desa/population/publications/development/NTA_Manual.shtml	2013	UN
Unpaid work	<i>Guide on Valuing Unpaid Household Service Work</i> https://www.unece.org/fileadmin/DAM/stats/publications/2018/ECECESSTAT20173.pdf	2017	UNECE
Disparities	<i>Manual on Distributional National Accounts</i>	Under development	OECD
Non-profits institutions (NPIs)			
NPIs	<i>Satellite Account on Non-profit and Related Institutions and Volunteer Work</i> https://unstats.un.org/unsd/nationalaccounts/docs/UN_TSE_HB_FNL_web.pdf	2018	UNSD
Globalisation and digitalisation			
Digital economy	Satellite account for the digital economy	Under development	OECD
Globalization	<i>Handbook on Accounting for Global Value Chains</i>	Under development	UNSD
Other industry/sector accounts			
Tourism	<i>Tourism Satellite Account: Recommended Methodological Framework 2008</i> https://unstats.un.org/unsd/publication/SeriesF/SeriesF_80rev1e.pdf	2010	UN, World Tourism Organization (UNWTO), Eurostat, OECD
Tourism	Statistical framework for measuring the sustainability of tourism	Under development	UNWTO and UNSD
Culture	Culture satellite account http://uis.unesco.org/en/topic/culture-satellite-account	Under development	UNESCO
Transport	International Transport Forum Task Force (ITF TF) on Transport Satellite Accounts aims to produce a manual https://www.itf-oecd.org/3rd-international-transport-statistics-meeting	Under development	ITF TF
Aviation	Aviation satellite account	Under development	ICAO, ITF TF
Technology e.g., clean	Not available		

<i>Topic</i>	<i>Publication</i>	<i>Date published</i>	<i>Group responsible</i>
technology, artificial intelligence			
Sport and recreation	Not available		
