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**SNA/M4.22/12.1**

**SNA/M4.22/13.1**

**SNA/M4.22/14.1**

# Overview of outcome of global consultation for

# WS.8 Accounting for biological resources

# WS.10 Valuation of mineral and energy resources

# WS.11 Treatment of renewable energy resources as assets

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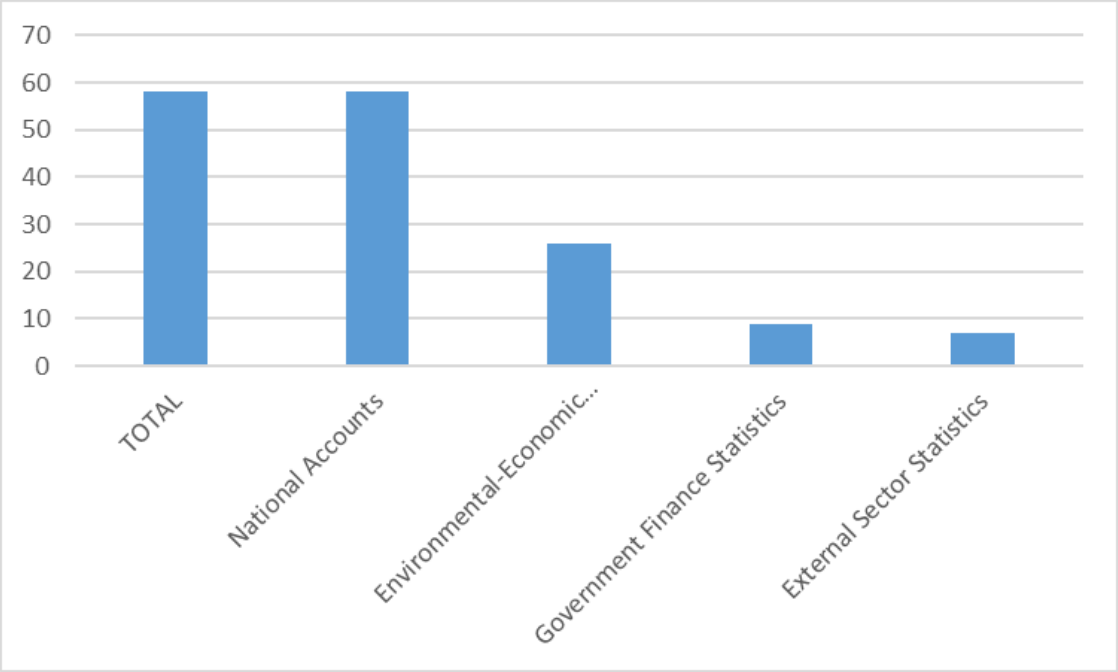
- **WS.8 Accounting for biological resources**
- **WS.10 Valuation of mineral and energy resources**
- **WS.11 Treatment of renewable energy resources as assets**

A total of 58 respondents contributed to this consultation[1] of which 37 provided consent that their responses could be published. This document provides an overview of the results, with detailed results for the 37 countries. For a more detailed analysis of the results, please see the accompanying PowerPoint presentations.

[1] Completely anonymous contributions and exact duplicates have been excluded.

## 1. Your response concerns which area of statistics?




**(European Union) (Eurostat):** National Accounts; Government Finance Statistics

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** National Accounts

**Aruba (CBS):** National Accounts

**Australia (Australian Bureau of Statistics):** National Accounts; External Sector Statistics; Environmental-Economic Accounts; Government Finance Statistics

**Brasil (Instituto Brasileiro de Geografia e Estatística):** National Accounts

**Burundi (ISTEEBU):** National Accounts

**Canada (Statistics Canada):** National Accounts; Environmental-Economic Accounts; Government Finance Statistics

**Chile (Central Bank):** National Accounts; Environmental-Economic Accounts

**Costa Rica (Central Bank of Costa Rica):** National Accounts; Environmental-Economic Accounts

**Cyprus (Statistical Service of Cyprus):** National Accounts

**Denmark (Statistics Denmark):** National Accounts; Environmental-Economic Accounts

**Finland (Statistics Filand):** National Accounts; External Sector Statistics; Environmental-Economic Accounts; Government Finance Statistics

**France (NSI):** National Accounts

**Georgia (National Statistics Office of Georgia):** National Accounts

**Germany (Federal Statistical Office (Destatis)):** National Accounts

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** National Accounts; Environmental-Economic Accounts

**Indonesia (BPS Statistics Indonesia):** National Accounts; Environmental-Economic Accounts

**Israel (Israel's Central Bureau of Statistics):** National Accounts

**Italy (Istat):** National Accounts

**Jordan (department of statistics):** National Accounts; Environmental-Economic Accounts

**Malaysia (Department Of Statistics Malaysia):** National Accounts; Environmental-Economic Accounts

**Mexico (INEGI):** National Accounts

**Nepal (Central Bureau of Statistics):** National Accounts; Environmental-Economic Accounts; Government Finance Statistics

**Netherlands (Statistics Netherlands):** National Accounts; External Sector Statistics; Environmental-Economic Accounts; Government Finance Statistics

**New Zealand (Statistics New Zealand):** National Accounts; External Sector Statistics; Environmental-Economic Accounts; Government Finance Statistics

**Norway (Statistics Norway):** National Accounts; Environmental-Economic Accounts

**Perú (Instituto Nacional de Estadística e Informática):** National Accounts; Environmental-Economic Accounts

**Qatar (Planning and Statistics Authority):** National Accounts

**Romania (National Statistical Institute):** National Accounts

**South Africa (Statistics South Africa and the South African Reserve Bank):** National Accounts; Environmental-Economic Accounts

**South Korea (The Bank of Korea):** National Accounts

**Sudan (central Bureau of Statistics -CBS):** National Accounts

**Sweden (Statistics Sweden, NSI):** National Accounts; Environmental-Economic Accounts

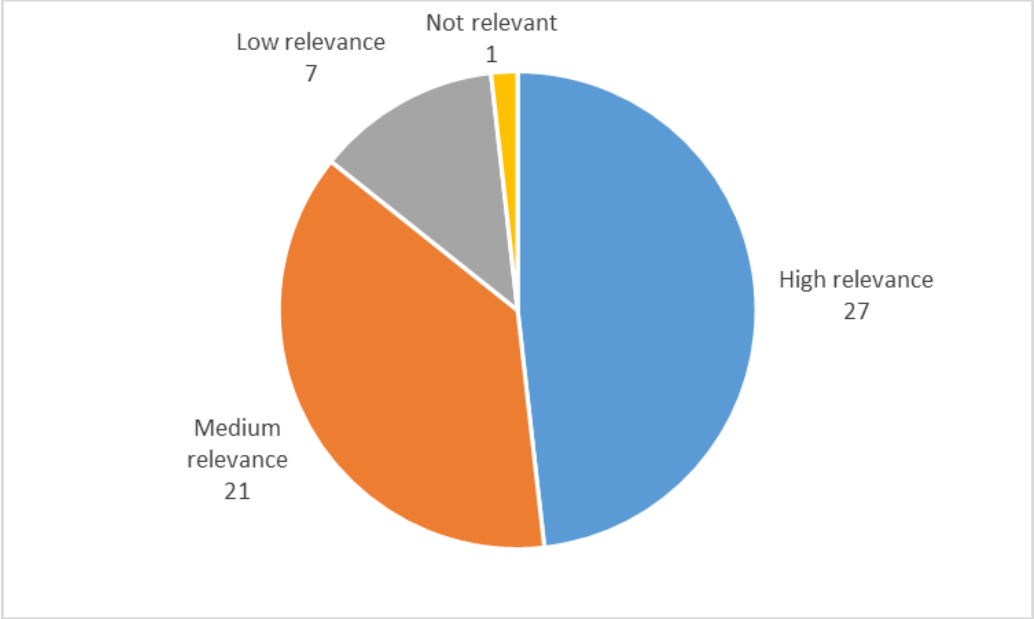
**Thailand (Office of the national economic and social development council):** National Accounts

**Ukraine (State Statistics Service of Ukraine):** External Sector Statistics

**United Kingdom (UK Statistics Authority):** National Accounts; Environmental-Economic Accounts

**United States (US Bureau of Economic Analysis):** National Accounts

## 2A. How relevant is the topic of accounting for biological resources for your country?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| High relevance | 27 | 27 | 16 | 5 | 3 |
| Medium relevance | 7 | 7 | 2 | | |
| Low relevance | 21 | 21 | 8 | 3 | 4 |
| Not relevant | 2 | 2 | | | |
| No response | 1 | 1 | | 1 | |
| TOTAL | 58 | 58 | 26 | 9 | 7 |

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** High relevance

**Aruba (CBS):** Not relevant

**Australia (Australian Bureau of Statistics):** High relevance

**Brasil (Instituto Brasileiro de Geografia e Estatística):** High relevance

**Burundi (ISTEEBU):** Low relevance

**Canada (Statistics Canada):** High relevance

**Chile (Central Bank):** High relevance

**Costa Rica (Central Bank of Costa Rica):** Medium relevance

**Cyprus (Statistical Service of Cyprus):** Low relevance

**Denmark (Statistics Denmark):** Medium relevance

**Finland (Statistics Filand):** Medium relevance

**France (NSI):** Medium relevance

**Georgia (National Statistics Office of Georgia):** Medium relevance

**Germany (Federal Statistical Office (Destatis)):** Low relevance

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** High relevance

**Indonesia (BPS Statistics Indonesia):** Medium relevance

**Israel (Israel's Central Bureau of Statistics):** Medium relevance

**Italy (Istat):** Low relevance

**Jordan (department of statistics):** High relevance

**Malaysia (Department Of Statistics Malaysia):** High relevance

**Mexico (INEGI):** Medium relevance

**Nepal (Central Bureau of Statistics):** High relevance

**Netherlands (Statistics Netherlands):** Medium relevance

**New Zealand (Statistics New Zealand):** High relevance

**Norway (Statistics Norway):** High relevance

**Perú (Instituto Nacional de Estadística e Informática):** High relevance

**Qatar (Planning and Statistics Authority):** Medium relevance

**Romania (National Statistical Institute):** Medium relevance

**South Africa (Statistics South Africa and the South African Reserve Bank):** High relevance

**South Korea (The Bank of Korea):** High relevance

**Sudan (central Bureau of Statistics -CBS):** Low relevance

**Sweden (Statistics Sweden, NSI):** High relevance

**Thailand (Office of the national economic and social development council):** Medium relevance

**Ukraine (State Statistics Service of Ukraine):** Medium relevance

**United Kingdom (UK Statistics Authority):** High relevance

**United States (US Bureau of Economic Analysis):** Medium relevance

### 2B. Please provide arguments in favor of your response:

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Because it is important for the economy to evaluate the biological resources managed by economic factors, which represent a high value in Agriculture Activity.

**Australia (Australian Bureau of Statistics):** Australia has a significant amount and variety of biological resources. Biological resources are topical and a priority for policy makers in our country.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** The country has a huge natural capacity to generate environmental assets, for this reason the topic of accounting for biological resources is very important, mainly in agriculture, forestry, and fishing.

**Burundi (ISTEEBU):** data are not available

**Canada (Statistics Canada):** Canada has immense natural capital that generates biological resources of great importance from a fiscal, economic, social and environmental point of view. For example, Canada is home of 362 million hectares of forest, which represents almost 10% of the world's forests. In terms of resources, forests in Canada represent a volume of wood of approximately 50 billion cubic meters. Good stewardship of these resources and fiscal policies focused on sustainable development depend directly on a good assessment and monitoring of the value of these biological resources in the official macroeconomic statistics. At this point, Canada produces a monetary timber asset account: being up to date on current methodology and guidance on other biological resources is highly relevant to our balance sheet estimates.

**Chile (Central Bank):** The economic sectors related to biological resources in Chile (fishing, forestry and wood manufacturing) are important (4.6% of the GDP; 13.3% of the total exports; 6.5% of the employment). In addition, the sustainability of the use of biological resources is a matter of public interest not only because of its contribution in terms of employment and GDP, but also because of the growing interest on biodiversity and the environment among the population. Natural forests cover almost 20% of the total area of the country.

**Denmark (Statistics Denmark):** The topic is relevant, but user interest is limited. User interest in stocks is mainly in physical terms, not so much in values. Users are more interested in flows.

**Finland (Statistics Filand):** In our economy biological resources are quite numerous.

**France (NSI):** medium because, as far as mineral and energy resources are concerned, France is not well endowed

**Georgia (National Statistics Office of Georgia):** As a part System of National Accounts (2008) it's significant accounting biological resources, between them cultivated and non-cultivated resources and plays a big role for formation gross fixed capital

**Germany (Federal Statistical Office (Destatis)):** Germany is scarce of economically relevant biological resources. The gross production value of agriculture, fishery and forestry together contributes about 1% only to the German GDP.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** India is one of the Bio-diverse country of the world and NSO, India has already initiated the process of compiling information on Biodiversity. In addition, accounts for Biological Resources such as Timber and Fish have also been compiled using the SEEA Framework. NSO, India envisages to compile the complete set of accounts for all the Biological Resources in the country (Those resources having economic value and those not having any direct economic value). It is because these biological resources provide a multiple service for the economic and societal well-being of mankind and proper management is possible only when proper measurements are done.

**Indonesia (BPS Statistics Indonesia):** Environment, disaster, and climate change is a priority concern for Government of Indonesia as well as resilience economic growth. Accounting for nature is consider as relevant topic to address those concern.

**Jordan (department of statistics):** green growth plan in Jordan 2017 http://www.moenv.gov.jo/ebv4.0/root_storage/ar/eb_list_page/الخطة_الوطنية_للنمو_الأخضر.pdf

**Malaysia (Department Of Statistics Malaysia):** Biological resources especially palm oil contributes significantly for agriculture sector and provide jobs and income to smallholders.

**Mexico (INEGI):** In Mexico, this asset is small within gross capital formation, but we consider the revision to be made for the SNA 2025 adequate.

**Nepal (Central Bureau of Statistics):** Constitution of Nepal has given importance in conservation, protection of environment and natural sources stating that the state shall pursue a policy of conserving the natural resources available in the country. It shall also be about its sustainable use in an environmental friendly way. The State shall pursue a policy of making a sustainable use of biodiversity through the conservation and management of forests. The State shall pursue a policy of keeping necessary landmass as forest area in order to strike an environmental balance." Hence it is pertinent topics of accounting for biological resources.

**Netherlands (Statistics Netherlands):** We have little forest and a small fishing industry in in the Netherlands. There is a legal regulation underway for forest accounts so therefore it becomes more important.

**New Zealand (Statistics New Zealand):** Primary industry exports play a significant role in our economy, and the use of natural resources is relevant to environmental outcomes.

**Perú (Instituto Nacional de Estadística e Informática):** Nuestro país es mega diverso, tiene muchos recursos naturales que son depósitos de valores, que nos ofrecen materias primas e insumos en los procesos de producción de las empresas y los hogares, que es necesario medir en cantidad y valor a fin de preservarlos para las generaciones futuras.

**Romania (National Statistical Institute):** In the context of global economy, climate change and food scarcity, biological resources become more important and relevant for national accounts and countries.

**South Africa (Statistics South Africa and the South African Reserve Bank):** South Africa has exceptional biodiversity, characterised by a wide variety of ecosystem types, high species richness and high levels of endemism. South Africa's biodiversity provides an array of benefits to the economy, society and human wellbeing. These benefits that nature provides are dependent on intact ecosystems, healthy species populations and genetic diversity.

**Sweden (Statistics Sweden, NSI):** Sweden is rich in natural resources.

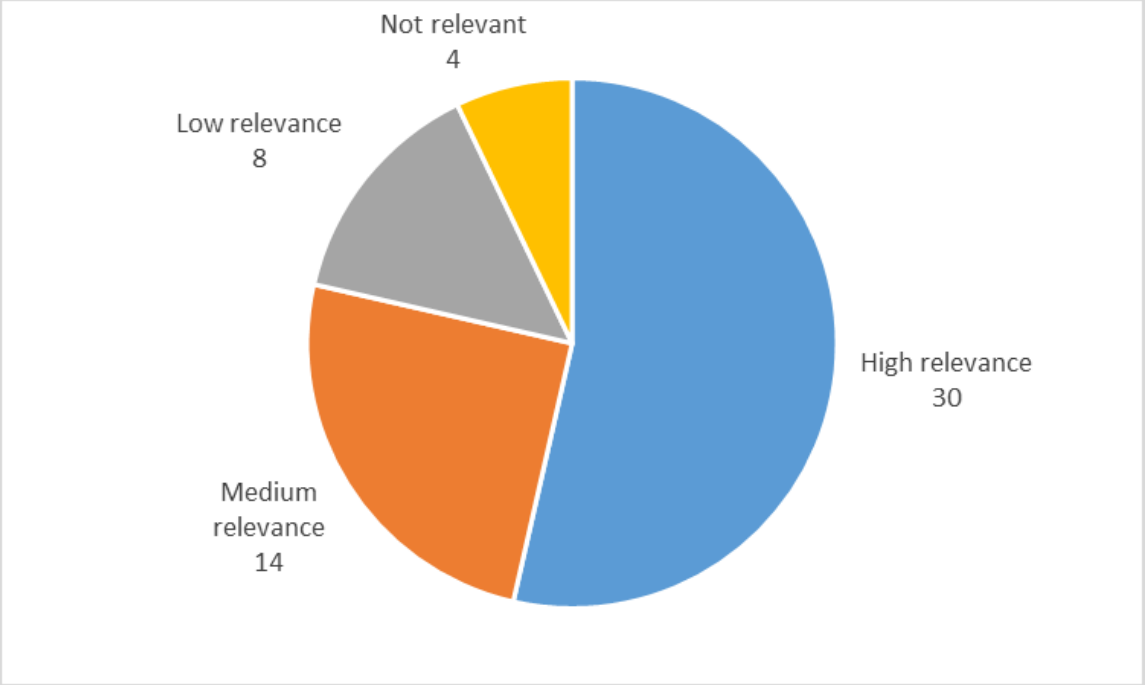
**Thailand (Office of the national economic and social development council):** Thailand has many records of biological statistics, although our data base doesn't fully cover all data requirement in the SNA and still doesn't record it in national account.

**Ukraine (State Statistics Service of Ukraine):** Hight share of agricultural production in economy

**United Kingdom (UK Statistics Authority):** His Majesty's Treasury recently published a report that it commissioned on the economics of nature. "The Dasgupta Report" places a significant emphasis on accounting for biological resources.

**United States (US Bureau of Economic Analysis):** These are important resources but there are significant measurement issues

### 3A. How relevant is the topic of valuation of mineral and non-renewable energy resources for your country?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| High relevance | 30 | 30 | 15 | 6 | 4 |
| Medium relevance | 8 | 8 | 2 | | |
| Low relevance | 14 | 14 | 8 | 2 | 3 |
| Not relevant | 4 | 4 | 1 | | |
| No response | 2 | 2 | | 1 | |
| TOTAL | 58 | 58 | 26 | 9 | 7 |

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** High relevance

**Aruba (CBS):** Not relevant

**Australia (Australian Bureau of Statistics):** High relevance

**Brasil (Instituto Brasileiro de Geografia e Estatística):** High relevance

**Burundi (ISTEEBU):** Medium relevance

**Canada (Statistics Canada):** High relevance

**Chile (Central Bank):** High relevance

**Costa Rica (Central Bank of Costa Rica):** Not relevant

**Cyprus (Statistical Service of Cyprus):** Low relevance

**Denmark (Statistics Denmark):** Medium relevance

**Finland (Statistics Filand):** Medium relevance

**France (NSI):** Low relevance

**Georgia (National Statistics Office of Georgia):** Medium relevance

**Germany (Federal Statistical Office (Destatis)):** Low relevance

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** High relevance

**Indonesia (BPS Statistics Indonesia):** Medium relevance

**Israel (Israel's Central Bureau of Statistics):** High relevance

**Italy (Istat):** Not relevant

**Jordan (department of statistics):** High relevance

**Malaysia (Department Of Statistics Malaysia):** High relevance

**Mexico (INEGI):** High relevance

**Nepal (Central Bureau of Statistics):** High relevance

**Netherlands (Statistics Netherlands):** High relevance

**New Zealand (Statistics New Zealand):** Medium relevance

**Norway (Statistics Norway):** High relevance

**Perú (Instituto Nacional de Estadística e Informática):** High relevance

**Qatar (Planning and Statistics Authority):** High relevance

**Romania (National Statistical Institute):** Medium relevance

**South Africa (Statistics South Africa and the South African Reserve Bank):** Medium relevance

**South Korea (The Bank of Korea):** High relevance

**Sudan (central Bureau of Statistics -CBS):** Low relevance

**Sweden (Statistics Sweden, NSI):** High relevance

**Thailand (Office of the national economic and social development council):** Medium relevance

**Ukraine (State Statistics Service of Ukraine):** Medium relevance

**United Kingdom (UK Statistics Authority):** High relevance

**United States (US Bureau of Economic Analysis):** High relevance

### 3B. Please provide arguments in favor of your response:

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Energy resources represent an important share of output and use in the Egyptian economy that

includes the output of crude oil, natural gas and non-renewable resources and their various use in the economy.

**Australia (Australian Bureau of Statistics):** Australia has a significant amount and variety of mineral and non-renewable energy resources and a large mining industry. These resources are topical and a priority for policy makers in our country.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It is important to measure how much economic growth is dependent on non-renewable resources, and to acknowledge how much these resources have been used as a mean to achieve economic development. It should be noted that the share of non-renewable energy in the country's domestic energy supply in 2020 was 51,6%. In addition, the country is a major oil producer (9th in oil produced volume in the world) and it is in 16th place in the ranking of proved reserves.

**Burundi (ISTEEBU):** C'est un domaine en vogue, le Burundi est en train d'y concentrer des efforts

**Canada (Statistics Canada):** The mining, oil and gas industries represent a very important and strategic economic sector in the country. For the general government sector, it is also an important source of revenue (tax and non-tax revenues), especially when it comes to fossil fuels. On the general government balance sheet, mineral and non-renewable energy resources represent a very large share of non-produced nonfinancial assets (excluding land). Mineral and energy resources are published in our National Balance Sheet accounts.

**Chile (Central Bank):** Mining is the most important economic sector in Chile (13.4% of the GDP; 62% of the total exports).

**Costa Rica (Central Bank of Costa Rica):** Costa Rica does not have proven and non-renewable energy resources inventories, therefore there is no practical interest in carrying out any type of valuation.

**Denmark (Statistics Denmark):** The topic is relevant, but user interest is limited. User interest in stocks is mainly in physical terms, not so much in values. Users are more interested in flows.

**Finland (Statistics Filand):** At the moment we do not have any values to see how important those resources are in out economy.

**France (NSI):** see 2B

**Georgia (National Statistics Office of Georgia):** As a part System of National Accounts (2008) it's essential measuring mineral and non-renewable energy resources for our country. It is a necessary step for the valuation of natural resources. It is noteworthy that Georgia is distinguished by the abundance of water resources.

**Germany (Federal Statistical Office (Destatis)):** Unfortunately, Germany is also scarce of mineral and non-renewable energy resources.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** India is endowed with huge resources of many metallic and non-metallic minerals with Mining sector holding a prominent place in the economy. NSO, India has developed an abridged version of the Asset Accounts for Minerals. Efforts are being made by Government Accounting Standards Advisory Board (GASAB), Comptroller & Auditor General of India to compile the Complete set of Mineral Accounts for India. Also, efforts are being made by NSO to compile Energy Accounts for India. Since the mineral and energy resources cannot be renewed, the rate at which these assets are extracted and depleted, the overall availability of these assets, and the sustainability of the industries that exploit them are of particular interest. Though measurements in physical terms are essential to assess the depletion of the resources, valuation enables to compare different resources using a common denominator. Also, valuation of these accounts would help to relate these accounts directly with the economy which can be fed into policies.

**Indonesia (BPS Statistics Indonesia):** Mineral and non-renewable energy resources are finite resources, its stock and deposits will be phase-out someday therefore it is importance to put the appropriate valuation method for the resources and the lease rights

**Israel (Israel's Central Bureau of Statistics):** Israel has a large suppository of natural gas that it utilizes for both energy production and export

**Jordan (department of statistics):** energy balance https://memr.gov.jo/AR

**Malaysia (Department Of Statistics Malaysia):** Due to it's nature of deplition mineral especially crude oil.

**Mexico (INEGI):** We consider that the energy market is very relevant, especially non-renewable energy resources, so the guidance note is very important to advance in the methodological standardization between countries.

**Nepal (Central Bureau of Statistics):** There are some issues on exploration of mineral resources;

1. There has been increasing exploitation of unscientific quarrying of stone, sand and gravel, 'unmanaged exploitation of natural resources'
2. problem with the lack of essential data such as how much natural resources such as stone, sand, and gravel do exist in Nepal, how much Nepal needs, and where and how much can be mined
3. natural calamities such as floods and landslides have increased due to unnecessary excavation against the standards without going through the methods and procedures.
4. Petroleum is the second largest energy fuel imported in Nepal after firewood as primary energy consumption in Nepal. Still rural Nepalese are dependent on firewood as non-renewable energy sources.
5. Hence for the proper policy formulation of conservation and proper management of mining and quarrying as well as natural resources, topic of valuation of mineral and non-renewable energy resources for your country.

**Netherlands (Statistics Netherlands):** We have a lot of natural gas in the Netherlands, and the energy transition (from fossil to renewable) is underway. Gas prices are booming and very volatile. Highly policy relevant these days. Gas tap closes in the future, so less important over time.

**New Zealand (Statistics New Zealand):** Minerals and non-renewable energy resources are important to the economy of some regions.

**Perú (Instituto Nacional de Estadística e Informática):** La valoración de los recursos minerales y energéticos es un tema relevante, una de las principales actividades económicas en el Perú es la minería, siendo uno de los principales exportadores de minerales a nivel mundial por lo que es conveniente determinar y estimar los valores de mercado de los activos no producidos en la contabilidad nacional, para lo cual se debe tener en cuenta: la elección de la tasa de descuento; heterogeneidad de los costos de extracción; ingresos mineros; entre otros aspectos.

**Qatar (Planning and Statistics Authority):** Mineral resources are critical for the Qatari economy and the topic is relevant for policy makers.

**Romania (National Statistical Institute):** In the context of global economy, climate change and food scarcity, biological resources become more important and relevant for national accounts and countries.

**South Africa (Statistics South Africa and the South African Reserve Bank):** South Africa is a mineral rich country, but statistics on mineral valuation is in the developmental stage and need further development. There is an increasing focus within South Africa on the development of more non-renewable resources.

**Sweden (Statistics Sweden, NSI):** Sweden is rich in mineral reserves.

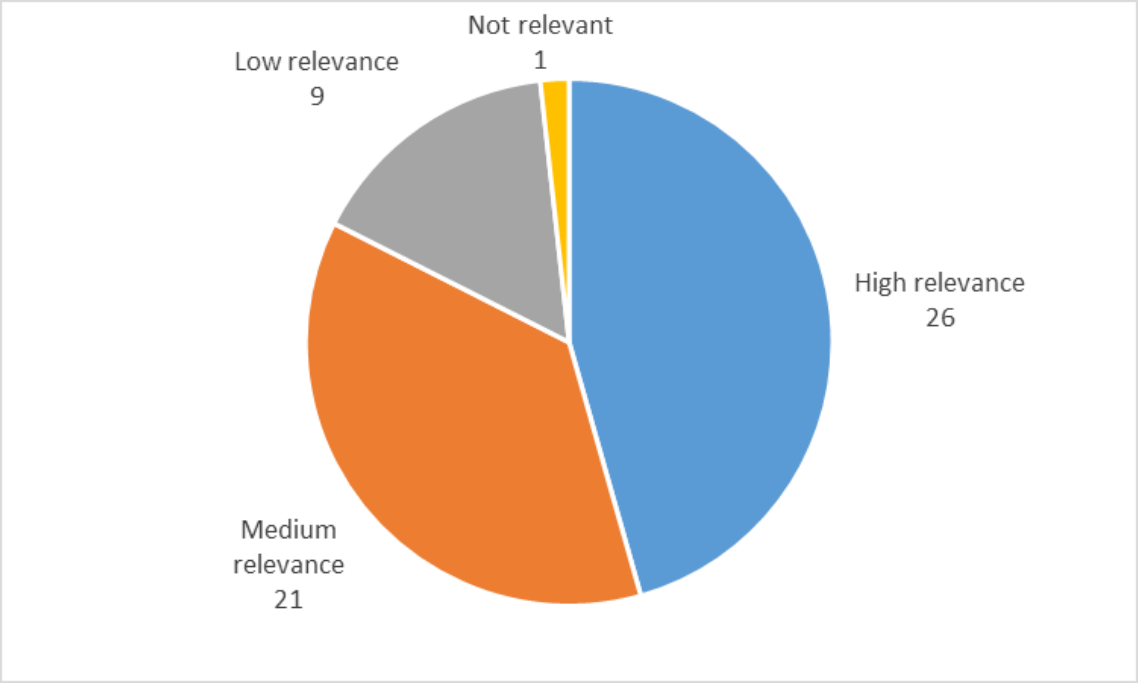
**Thailand (Office of the national economic and social development council):** We have record some of the mineral resources but there are some miss out.

**Ukraine (State Statistics Service of Ukraine):** Vital importance of own energy resources for economy in the conditions of their significant imports

**United Kingdom (UK Statistics Authority):** The UK is a producer of oil and gas

**United States (US Bureau of Economic Analysis):** This is related to current practices

### 4A. How relevant is the topic of accounting for renewable energy resources for your country?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| High relevance | 26 | 26 | 16 | 6 | 5 |
| Medium relevance | 9 | 9 | 1 | | |
| Low relevance | 21 | 21 | 9 | 2 | 2 |
| Not relevant | 1 | 1 | | | |
| No response | 1 | 1 | | 1 | |
| TOTAL | 58 | 58 | 26 | 9 | 7 |

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** High relevance

**Aruba (CBS):** Low relevance

**Australia (Australian Bureau of Statistics):** High relevance

**Brasil (Instituto Brasileiro de Geografia e Estatística):** High relevance

**Burundi (ISTEEBU):** Medium relevance

**Canada (Statistics Canada):** Medium relevance

**Chile (Central Bank):** High relevance

**Costa Rica (Central Bank of Costa Rica):** High relevance

**Cyprus (Statistical Service of Cyprus):** Low relevance

**Denmark (Statistics Denmark):** Medium relevance

**Finland (Statistics Filand):** Medium relevance

**France (NSI):** Medium relevance

**Georgia (National Statistics Office of Georgia):** Medium relevance

**Germany (Federal Statistical Office (Destatis)):** Low relevance

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** High relevance

**Indonesia (BPS Statistics Indonesia):** Medium relevance

**Israel (Israel's Central Bureau of Statistics):** Medium relevance

**Italy (Istat):** Medium relevance

**Jordan (department of statistics):** High relevance

**Malaysia (Department Of Statistics Malaysia):** Medium relevance

**Mexico (INEGI):** High relevance

**Nepal (Central Bureau of Statistics):** High relevance

**Netherlands (Statistics Netherlands):** High relevance

**New Zealand (Statistics New Zealand):** High relevance

**Norway (Statistics Norway):** High relevance

**Perú (Instituto Nacional de Estadística e Informática):** High relevance

**Qatar (Planning and Statistics Authority):** High relevance

**Romania (National Statistical Institute):** Low relevance

**South Africa (Statistics South Africa and the South African Reserve Bank):** Medium relevance

**South Korea (The Bank of Korea):** High relevance

**Sudan (central Bureau of Statistics -CBS):** Low relevance

**Sweden (Statistics Sweden, NSI):** High relevance

**Thailand (Office of the national economic and social development council):** Medium relevance

**Ukraine (State Statistics Service of Ukraine):** Medium relevance

**United Kingdom (UK Statistics Authority):** High relevance

**United States (US Bureau of Economic Analysis):** Low relevance

### 4B. Please provide arguments in favor of your response:

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** In order to know its share in the economy and how to increase such resources to limit the use of non-renewable resources.

**Australia (Australian Bureau of Statistics):** We consider this to be of high relevance as the use of renewable energy resources is growing and Australia is looking to be a world leader in renewable energy production as part of transitioning to a low emission economy. These resources are topical and a priority for policy makers in our country.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It is important to measure how much economic growth is dependent on renewable energy resources. For example, the share of renewable energy in the country's domestic energy supply in 2020 was 48,4%.

**Burundi (ISTEEBU):** C'est un domaine en vogue, le Burundi est en train d'y concentrer des efforts

**Canada (Statistics Canada):** Canada is largely reliant on renewable energy resources for the electricity generation. Hydroelectricity (including wave/tidal) generates nearly 60% of all the electricity produced in the country and wind power is growing rapidly although its potential remains largely underused. Other renewable energy sources are biomass, geothermal and solar (in order of importance). A better valuation of renewable energy resources could induce significant changes in the nonfinancial assets of public corporations at the subnational level (state, local) and by extension, on the (financial) assets / net financial worth / net worth of the general government sector. Canada is currently looking at data sources and is testing preliminary estimates for these resources.

**Chile (Central Bank):** Renewable energy resources represent 51.3% of the total electricity production in Chile, with a growing share of non-conventional renewable energies, (35.5% in 2022). Solar photovoltaic energy and wind energy participation in electricy production reaches a 19.3% and 10.4%, respectively in 2022.

**Costa Rica (Central Bank of Costa Rica):** In Costa Rica, on average, 98% of electricity is generated through renewable sources. This highlights the importance of quantifying these resources.

**Denmark (Statistics Denmark):** Mainly interest in flows, not so much in assets.

**Finland (Statistics Filand):** The goal to diminish fossil-fuels gives importance to account the renewable energy resources in more detailed way.

**Georgia (National Statistics Office of Georgia):** Despite the smallness of its territory, Georgia has very diverse and unique resources for renewable energy, like wind and sun.

**Germany (Federal Statistical Office (Destatis)):** First: see above. Second: Users need – and receive – reliable information on renewable energy output. We see no user demand in the compilation of renewable energy resource stocks.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** India has one of the highest rates of growth for renewable energy in the world. Accounts for both Renewable and Non-Renewable Energy are currently being attempted by NSO, India (under the Energy Accounts) following

the SEEA-Energy structure. Detailed physical and monetary accounts will help in providing further insights into the Energy sector of the country.

**Indonesia (BPS Statistics Indonesia):** As the non-renewable resources someday will be vanish, we must consider renewable resources to be its replacement

**Jordan (department of statistics):** energy balance 2020 https://memr.gov.jo/AR

**Malaysia (Department Of Statistics Malaysia):** Currently the Government through 12th Malaysia Plan (RMK12) emphasized on advancing Green Growth for sustainability and Resilience

**Mexico (INEGI):** This guidance note is possibly the most important, since without a doubt the national accounts must show the renewable energy resources. In addition, advancing on this issue will allow us to comply with the recommendations of the new phase of the G-20 DGI.

**Nepal (Central Bureau of Statistics):** Constitution of Nepal has also emphasized that the State shall pursue a policy of developing and producing renewable energy, ensuring cheap, easily available and dependable supply of energy, and making an appropriate use of it to meet the basic needs of the citizens. There is an abundance possibilities of developing hydro power projects as well as solar and wind energy projects. With these views, its also a highly relevant topic for renewable energy resources.

**Netherlands (Statistics Netherlands):** Energy transition is underway. A lot of investments in wind energy and solar energy. Highy policy relevant these days.

**New Zealand (Statistics New Zealand):** Renewable energy contributes a significant proportion of our electricity generation.

**Perú (Instituto Nacional de Estadística e Informática):** En el país, el tema es relevante, se cuenta con Centrales hidroeléctricas que utilizan la fuerza del agua para producir energía y que su puesta en marcha ha sido costosa, sin embargo, hay otras formas como la energía eólica, solar y geotérmica que está en desarrollo y que igualmente trae beneficios y preservan el medio ambiente, su medición es necesaria en las cuentas nacionales para conocer su aporte en la economía y en el medio ambiente.

**Qatar (Planning and Statistics Authority):** New projects targeting renewable resources will soon have an impact in the Qatari economy. Information about the economic and environmental impact of these project will soon become of greatest importance.

**Romania (National Statistical Institute):** Data sources about renewable energy is underdeveloped and is hard to develop robust databases.

**South Africa (Statistics South Africa and the South African Reserve Bank):** South Africa is currently in a process of engagement for various independent power producers renewable energy projects

**Sweden (Statistics Sweden, NSI):** Sweden has a long history of using waterenergy and currently the use of wind energy and solar radiation is expanded rapidly.

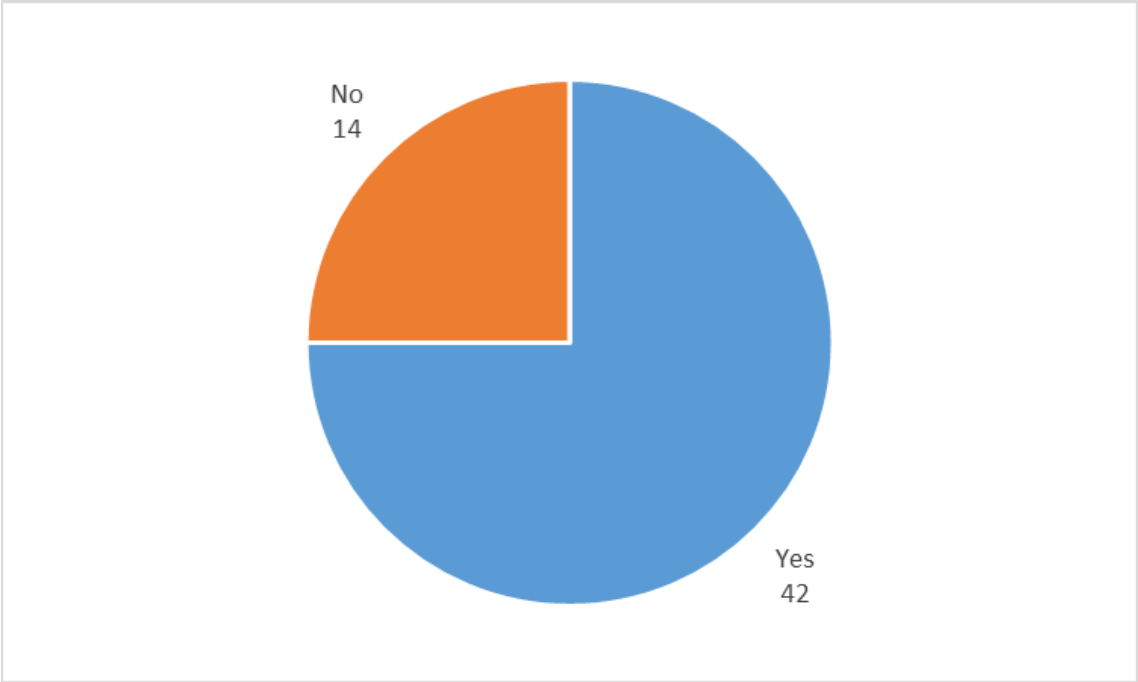
**Thailand (Office of the national economic and social development council):** We acknowledge that the renewable energy will become an important topic in the future, and Thailand's national strategy aims to drive the country towards environmentally friendly development in order to achieve the sustainable development goals.

**Ukraine (State Statistics Service of Ukraine):** Tendency towards the rise in renewable energy resources

**United Kingdom (UK Statistics Authority):** The UK was the Climate COP 26 president and remains committed to reducing net climate change emissions to zero by 2050. The UK plans to achieve this through significant increases in renewable energy production, where we have a large and growing sector.

**United States (US Bureau of Economic Analysis):** It is of low relevance because it is not clear how to do it.
The main problem with the proposed treatment of renewables is that it should do more to recognize the fundamental difference between them and minerals/fossil fuels, along with its implications for accounting for stocks, flows, and valuation. Wind, solar, and water are forms of kinetic energy—the energy provided is based on movement. Coal and oil are physical stocks. Conceptually, how does one measure an asset that is a flow? One area of confusion with the WS11 proposal is that it appears to confuse the production process with the asset, or does not do enough to bridge the traditional view of assets in the SNA and the new view proposed For example, one can have a mineral mine as an asset. What is the comparable concept for solar/radiant energy? According to Appendix 6 the value of solar energy at a point in time is given by the before-tax accounting profit for the solar power producer and includes the return to risk for the producer. Even if the cost of capital included the risk compensation, using such a profit measured does not measure value of the solar energy. Compare to the case of oil in which the valuation includes price of a barrel of oil, the quantity of oil and the extraction costs—note it is not about the consequent electricity produced.
The broad argument in WS11 seems to be that because renewables are topical and important, conceptual problems such as units of measurement and the attending price, double counting, and establishing ownership should be minimized or overlooked, leaving vague/incomplete guidance to national statistical offices on how to approach measuring these assets. Furthermore, the SEEA-CF approach to using land is criticized despite the economic literature containing evidence that land values do capture the value of solar energy, which interprets mixed evidence in the literature as license to assume little, if any, of this is already capitalized in land.

**5A. Do you agree to include further clarifications on the delineation of mineral and non-renewable energy resources, by relying on the same three resource classes as in the System of Environmental-Economic Accounts (SEEA) 2012 (i.e., "commercially recoverable resources", "potentially commercially recoverable resources" and "non-commercial and other known deposits"), and to recommend their inclusion in national accounts, provided that separate estimates can be compiled for the different classes?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 42 | 42 | 21 | 6 | 6 |
| No | 14 | 14 | 4 | 3 | 1 |
| No response | 2 | 2 | 1 | | |
| TOTAL | 58 | 58 | 25 | 9 | 7 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** Yes

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** No

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** No

**United States (US Bureau of Economic Analysis):** No

### 5B. If no, please elaborate:

**(European Union) (Eurostat):** While tempted to say "yes" when reading the generally convincing note to the AEG meeting of April 2016, we eventually answer "no" here because we are unsure of what is entailed by this question 5A. Indeed, WS.10 is only allusive on this and does not fully explain the consequence to the reader. As an example: Is the

recommendation meant to suggest a compulsory or voluntary breakdown, or merely meant to suggest that all three categories should appear in the SNA balance sheet? Or both? We are also particularly worried that "non-commercial and other known deposits" would be valued using the NPV of resource rent as sponsored by WS.6, 8, 11, rather than the market value. As rightly noted by the April 2016 note to the AEG, not commercially exploitable resources could still have a non-zero market value (contrary to the spontaneous thinking that such assets should have zero market value and/or should not be reported in the balance sheet at all) because of uncertainty. But here, the value should be a market value, as derived for instance by observed transactions in such similar fields (or otherwise be valued at zero). We are worried that the valuation technique promoted in WS.6, 8, 11 (we strongly oppose), as opposed to the valuation technique promoted by WS.10 (we largely agree on), would then be used for these SEEA category C "non-commercial". From SEEA 2012 we understand that this category C includes minerals where "Extraction and sale are not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability", implying that there are a lot of contingencies involved.
We do not consider that it has been shown that renewable energy resources as proposed to be included in the asset boundary according to GN WS.11 table 3 can have effective ownership rights established over them (rather than on underlying land or sea bed or structures used to exploit these resources – a fundamental criterion for establishing an asset). Such renewable energy resources are in themselves substitutable. As such, it would need to be shown that the different types of renewable energy sources indeed have a scarcity – i.e. that there exist energy markets anywhere where such a scarcity not due to regulation occurs. In our view, this has not been adequately examined and demonstrated.

**Australia (Australian Bureau of Statistics):** We do not agree that the proposed resource classes should be included in the SNA. The SNA is primarily set up to measure stocks and flows on a monetary basis. By definition, some of these resource classes will have assets with no current economic value, and therefore should not be included. Additionally, distinguishing between them will not be useful in the SNA and would make unit value estimates less meaningful. We do not believe that the current guidance in the 2008 SNA needs to change. We agree that this distinction between the proposed resource classes is important for physical flows which are best included in SEEA. We recommend that the SNA makes stronger linkages between the physical flows in SEEA and SNA.
**Brasil (Instituto Brasileiro de Geografia e Estatística):** We are in favor of just leaving category A, because including the other categories would require more tests, studies, and experimental statistics. Mainly, more information on deposit types would be needed.

**Canada (Statistics Canada):** Yes and no ! We agree with including further clarifications on the delineation of mineral and non-renewable energy resources, however we do not support producing estimates for the three classes listed above. The Canadian accounts use definitions of economically recoverable for energy resources and proven and probable for mineral resources. We recommend maintaining the current economic asset boundary.

**France (NSI):** For what we understand from the SEEA, only the first class (commercially recoverable resources) deserves a full valuation, so that we do not see the usefulness of introducing this - additional – classification in the SNA, which deals exclusively with monetary data

**Germany (Federal Statistical Office (Destatis)):** In principle, the first two resource classes in the SEEA 2012 (i.e., "commercially recoverable resources", "potentially commercially recoverable resources") seem sensible while the third class ("non-commercial and other known deposits") contradicts the scope of National Accounting that is based on economic values.

**Italy (Istat):** "Potentially commercially recverable resources" and "non-commercial and other known deposits" are far from what can be included. The only case in which non-produced resources should be included in the SNA framework is when there are markets in which these resources are traded (change of legal ownership). In such a case they can be used for saving purposes. Otherwise they do not match the SNA definition of assets. Without a regular market it will be impossible to dispose of assets at the time the owner finds appropriate.

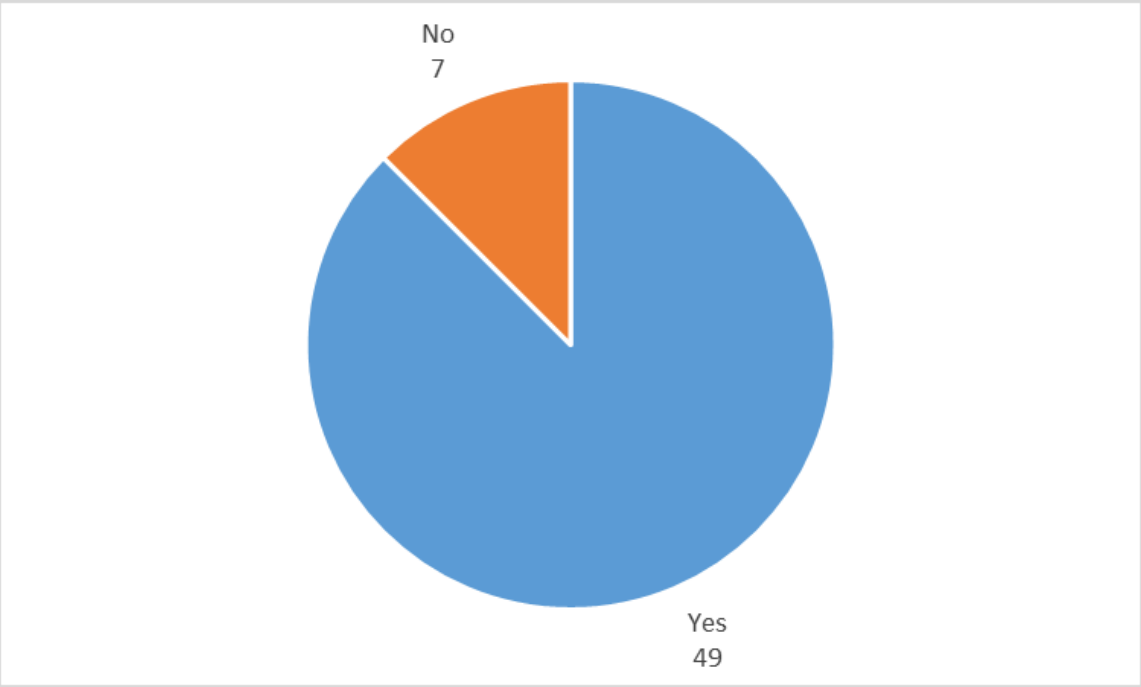
**Romania (National Statistical Institute):** This delineation should not be the object for SNA, but to remain in SEEA. There are too many hypothesis on valuation, and no data sources.

**Sweden (Statistics Sweden, NSI):** Mineral and non-renewable energy resources that are not currently being extracted lie outside the economy unless they can be traded separately. This can be done by change of ownership of land if the right to exploit the resource is related to the landowner. If the government allocates the right to extract the resource only the right to extract might be traded and not the resource.
Resources that are only potentially commercial or not commercial can only be part of the land value if recognised since these resources have not been integrated in any value chain of extraction and processing.

**United Kingdom (UK Statistics Authority):** The U.K. believes that there is good reason to agree with the above question, and in principle support a 'yes', however, the U.K. believes that the guidance note as drafted provides insufficient focus on the treatment of items already included in the national accounts. An example is how to review methods of calculating the value of assets such as "mineral exploration and evaluation", or indeed whether this asset should even continue to be included if the mineral themselves are now capitalised.

**United States (US Bureau of Economic Analysis):** clarification can be provided without including the last two asset categories. The last category may prove troublesome from a national accounts perspective

## 6A. Do you agree not to extend the asset boundary in physical terms for biological resources, as this is already provided for in the SEEA 2012, which is complementary to the SNA?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 49 | 49 | 20 | 8 | 7 |
| No | 7 | 7 | 5 | 1 | |
| No response | 2 | 2 | 1 | | |
| TOTAL | 58 | 58 | 25 | 9 | 7 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** No

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** No

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** Yes

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** Yes

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** Yes

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** No

**United States (US Bureau of Economic Analysis):** Yes

### 6B. If no, please elaborate:

**(European Union) (Eurostat):** We answer "No" because we think the question is unclear, as SNA typically only accounts in monetary terms (and in volumes, which is merely deflating monetary values and is not directly related to physical measures). Even if monetary value is zero, the asset can still exist, but at zero value in the balance sheet. The question 6A seems to also relate to the WS.10 view on some non-commercially exploitable subsoil assets (Class C), as mentioned in the answer to the previous question that could be added to the balance sheet according to WS.10. We thus do not necessarily agree

with the proposal of question 6A for biological resources. We think instead it is preferable to start with the fact that all land/forest is owned and potentially of value, even if close to zero. Similarly, we think that fish under quota should remain as cultivated assets as in the 2008 SNA. It is unclear whether GN WS.8 suggests to roll back on that, which we think would be a step backward, or not (e.g. para 60 can be seen as referring to 2008 SNA or as a proposal for future SNA). By quota, we should understand government control of extraction to avoid overfishing, thereby creating scarcity (this perhaps should be clarified). In that sense, migrating biota is not a criteria against asset recognition, because migrating biota under quota or similar form of control should be seen as asset. This seems to us the largest part of such migrating biota.

**Burundi (ISTEEBU):** Les données ne sont pas facile à obtenir

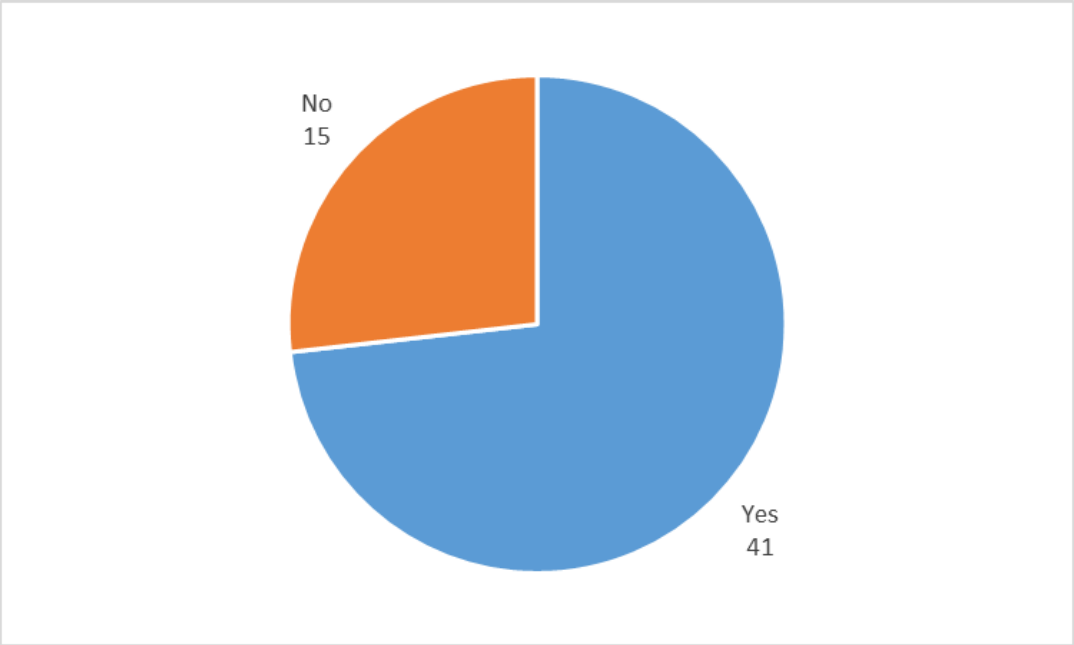
**Chile (Central Bank):** I agree to extend the asset boundary in physical terms for biological resources not only because they are socially relevant today given the challenges that biodiversity and ecosystems face around the world, but also because they are explicitly or implicitly managed by the man (for example, restrictions for a fishery to protect its natural biomass).

**Costa Rica (Central Bank of Costa Rica):** For a practical concerns in terms of valuation and data sources.

**Sweden (Statistics Sweden, NSI):** The asset boundary of biological resources includes cultivated resources and non-cultivated resources when evidenced as part of the land value. There is no separate value for non-cultivated biological resources that have not been integrated in the economy by hunting, catching, extraction or appropriated by other methods. Information presented as physical data is irrelevant if the corresponding value is excluded from the NA. Coherence is about the possibility of combining data from SEEA and SNA and not including the same data in both frameworks.

**United Kingdom (UK Statistics Authority):** The U.K. agrees that the resources discussed should be included, however the U.K. has three points it wishes to make: 1) there needs to be consistency between the treatment of different asset classes, and the proposal to exclude these appears partial, 2) the principles to include / exclude assets should be applied consistently – for example the argument about inaccessibility don't appear to have been applied consistently between Oil and Forest. 3) Moreover, the U.K. believes that it is important to maintain consistent around parity between the SEEA 2012 and the SNA 2025 to ensure that it does not appear that some data is 'important' and has been included in SNA and other data is 'secondary' and only available in SEEA. Equally it is important to understand where we may be duplicating data, or would this paper be arguing that data included in SNA would be removed from SEEA?

### 7A. Do you agree to extend the asset boundary in monetary terms by including renewable energy resources as well?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 41 | 41 | 21 | 6 | 5 |
| No | 15 | 15 | 4 | 3 | 2 |
| No response | 2 | 2 | 1 | | |
| TOTAL | 58 | 58 | 25 | 9 | 7 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

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**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

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**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** No

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 7B. If no, please elaborate:

**(European Union) (Eurostat):** We do not agree at all with this extension proposed by WS.11. The potential benefits from renewable energy is sufficiently adequately encompassed by the value of land in our view.

To address some good points of the WS.11, the SNA simply needs a clarification that "land" (1) under dam reservoirs or (2) of the continental shelf (on which royalties for off-shore wind may be collected) needs to be adequately valued so to reflect future returns; as if the dam or the continental shelf were to be (hypothetically) auctioned. These two issues identified by

the authors are acknowledged, but these should not motivate the radical change in the SNA promoted in the GN.

Recording renewable energy resources as a separate asset merely because they provide earnings and would therefore be reflected in the value of equity (AF.5) in case these assets are held by a corporation, is not a good argument. First, as indicated, the value of the land owned by the corporation will reflect this earning potential. Second, the SNA 2008 does not recognise as an asset the goodwill generated internally (goodwill reflects that a company has earning potential in excess of its fair capital remuneration). The 2008 SNA recognises only goodwill when it is purchased, that is: realised.

Furthermore the solar beams and wind flows are by their very nature flows not stocks and are not enforceable and sellable. Therefore, including them as an assets would imply a total redefinition of what constitutes an asset. The right to collect the solar beam or wind fall might constitute an AN.22 type asset, if this right is sellable and is therefore separable from the value of the underlying land.

Another key problem concerns whether the WS.11 suggests adding an asset or merely splitting land value into two components. If the latter, the question is the usefulness of such split. If the former, the issue is the double counting of assets this would seem to imply. The GN WS.11 is wholly unconvincing when indicating that, on the one hand, private land is only marginally concerned by the renewable resources as assets (such that the double counting of asset would not be a problem) but that, on the other hand, public land is also not concerned because the leases of such land are generally at zero value (we wonder why?) and thus the renewable energy asset would generally be in the hands of the operator, following the split asset approach.

The Questionnaire contention that the WS.6 split asset approach is under review and may therefore eventually be dropped (which would implicitly be without effect on the questionnaire) is therefore highly debatable. This is because the split asset view is in fact essential in supporting the WS.11 line of reasoning.

We cannot agree with the claim by WS.11 that private land is not significantly/meaningfully concerned by the issue. We also cannot agree with the notion that there would be still be a natural asset if lessees do not pay royalties to government as a lessor, because then, according to our view of the market value foundations of the SNA, no resource rent can exist. The proof of the asset is in the royalties' pudding.

In concept, we do not think that it is justified to recognise such renewable energy assets on the notion that the SNA recognises subsoil assets. Firstly, in the case of subsoil assets, value fundamentally arises from scarcity, which is not the case of renewable energy (the case of dams, which are indeed scarce, is different and has been tackled above). Secondly, the SNA recognises subsoil assets even if not exploited, as WS.10 implicitly forcefully suggests, whereas the GN WS.11 (though somewhat ambiguously) seems to propose recognising the asset not on all land but only on land that is exploited.

Proposing not to record this asset on all land seems obviously reasonable, which otherwise would face ridicule. However doing that implies that the balance sheet value is not due to an asset that exists but due to the fixed asset added to the land.

The GN WS.11 insufficiently makes the parallel with constructible land and non-constructible land, with value in the former created essentially by administrative decision. Similarly, land that are suitable for generating energy from wind trade at a premium and there is no reason to split this premium as a separate asset, just like constructible land is not split in two. There is also no reason to split this value only if a wind mill has been added.
In addition, a large part of renewable energy installations currently benefit from subsidies and these should be excluded from any notion of resource rent, including feed-in-tariffs. Here again, the GN WS.11 is ambiguous.
The GN WS.11 insufficiently considers that any future increase in the share in wind energy will typically depress the average price of the wind Kwh, in the absence of any cheap storage solution, because wind or absence of wind tends to be lasting phenomenon at the continent level from one day to the next. Projecting the wind Kwh price of today in the future, as WS.11 proposes, seems therefore highly unrealistic.
Thus, we see little positive value of the resource rent on wind and solar at the moment, and we see a lot of uncertainty for the future.
The GN WS.11 does not express itself if negative resource rent should lead to negative assets.
Most of these issues have been flagged to the attention to the author, over the past 6 months.

**Australia (Australian Bureau of Statistics):** There was robust discussion within the ABS about this proposal, noting that the answer of no was borderline and the ability to provide comments was used as the tipping point, both positive and negative views towards this proposal were drawn from our discussions. We believe that there are benefits to the explicit measurement of renewable resources as an asset, however suggest that conceptually, the value of these assets are already partly included in land.
We suggest that conceptually land assets will already include the value of some renewable resources in the value of the land. We do acknowledge however that this is unlikely to be the case practically, and that measurement of land assets currently would unlikely include the value of renewable assets. We also suggest that it would be very difficult to separate out the value of the underlying renewable assets from land, however this is more a measurement issue rather than a conceptual one and we suggest that the accounts would benefit from attempting to explicitly partition the valuation of renewable resources from the value of land.
We agree that some renewable resources such as water and wind for offshore wind turbines will not be included either conceptually or practically and that there is merit in including these resources within the national accounts explicitly. We however agree that it is important to ensure that we are not double counting renewable assets, through their contribution to land assets and separate renewable assets, and note that there needs to be important consideration of how to achieve this, as untangling the value of natural resources from existing land estimates will be very difficult.
We do note that there are potential benefits of separately identifying renewable assets, perhaps as a separate asset category. Although we do not currently separately identify renewable resource assets, their importance is already demonstrated in the production accounts (i.e. through the Value Added they produce). As we shift away from using fossil fuels towards more renewable sources of electricity, by not showing renewable resources as assets, we will be missing measurement of one side of this shift. The run down in non-

renewable resources on the balance sheets with no demonstrated offsetting increase would not be accurately representing the shifts towards renewable resources. We also believe that by explicitly identifying renewable resources as assets, there will likely be improved measurement of them as there is currently a lack of insight into what is currently included in the core accounts, though acknowledge that there would likely be a high degree of modelling. We also acknowledge that this would be a very welcome change for users and policy makers in our country.
Overall we believe that additional thought, testing and guidance is required on this proposed change.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** We need additional information on the parameters that would be used for the valuation. The country is interested in participating in the tests. The country is still defining important regulatory frameworks related to renewable energies and faces difficulties to obtain fundamental information to calculate what would be the resource rent. Other difficulties include questions related to high uncertainty in relation to contracts, which discount rate use to consider all the risks, etc.

**France (NSI):** We think that this proposal is too artificial, and not actually in line with the present definition of assets. We understand that there is a need for comparative statistics between the various energy resources, however we think that this goal may better be achieved by the way of physical data, i.e in joules in this case, especially in respect of the weak reliability of the monetary values in the whole area.

**Germany (Federal Statistical Office (Destatis)):** Renewable energy resources in and of themselves are not scarce and therefore do not have value. Valuable are the land needed to build the power plants and facilities/equipment needed to produce energy. We agree with the idea of SEEA CF that the value of renewable energy resources is reflected in land prices.

**Italy (Istat):** There is a fundamental distinction between produced and non-produced resources (assets), reflected in their different role in production and income, and therefore in their relation to the production and allocation of income accounts.
Like all non-produced resources, renewable energy resources do not per se contribute to value added. They must undergo transformation through human activity, which is what the SNA should measure. In other terms, rent is an allocation of income, not a remuneration of a production factor, i.e. it is not a contribution to value added.
Also, if there is any rent on renewable energy resources use, it will be impossible or very difficult to distinguish it from the value of the site where the renewable energy is captured. In addition, also important, renewable energy resources cannot be used for saving purposes. If there are tradable exploitation rights - separate from those of the "land" where the energy is captured - and there is a market for these rights, then these are asset of their own, as in this case they can be used for saving purposes.

**New Zealand (Statistics New Zealand):** We feel that this proposed change is inconsistent with the principles of the SNA, in particular that of legal ownership. Each asset has a legal and economic owner, and to deviate from this is a significant change to the framework. We

are also concerned that the proposed change is attempting to include things in the SNA that are beyond its nature and purpose, and would shift the nature of the framework from being an accounting framework to being economic assessment framework.
Part of the problem is the lack of distinction between natural capital and natural resource assets. More thought needs to be put into how the SNA and SEEA relate to each other, with a distinction being made between natural resource assets and the economic value of natural resources (with the former being a sub-set of the latter, where property rights have been established). As a result, the proposed change seems far more appropriate in the SEEA. Moving away from using the term "physical assets", and in its place refer to physical stocks, may also help with the distinction.

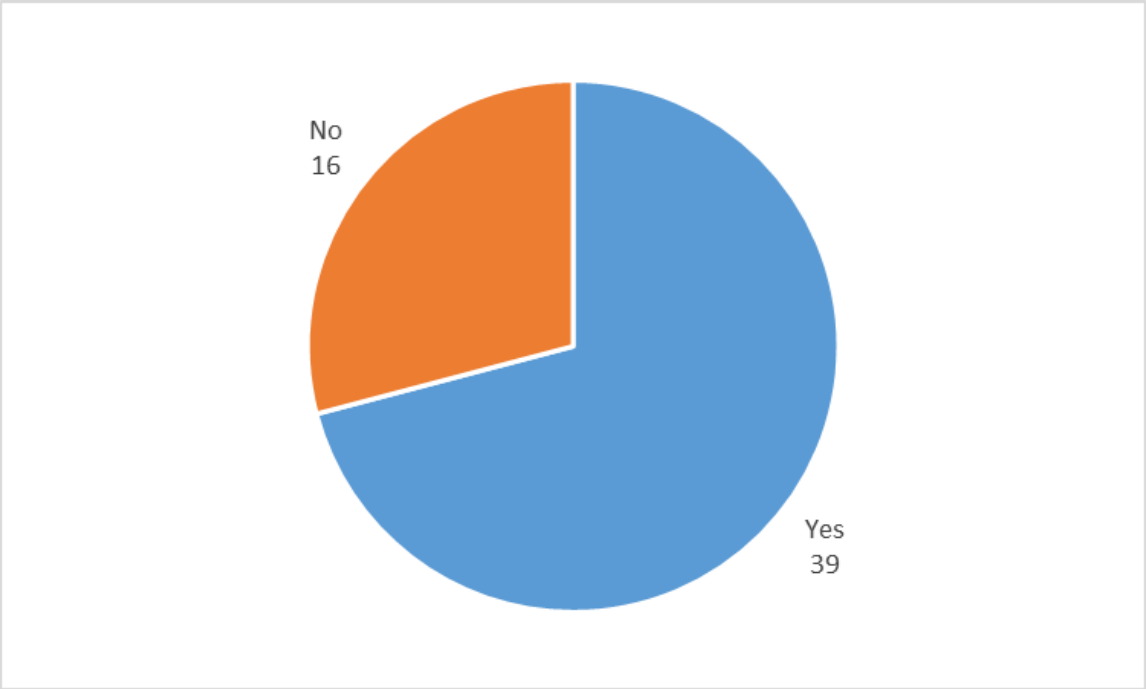
**Norway (Statistics Norway):** In principle, we think that this is not meaningful. We do not influence the amount of wind or sun by converting it to energy. However, the value of land when using it for energy production (or alternative uses) might be further explored. We appreciate the work on considering the environment in the SNA and hope that this will be further explored. also in relation to environmental capital accounting and whether this should be kept separate from the SNA (i.e. in SEEA) or incorporated.

**Romania (National Statistical Institute):** There is a big valuation problem, as sources for the valuation are not available.

**Sweden (Statistics Sweden, NSI):** Renewable energy resources do generally not meet the definition of assets since they are not used in production to transform inputs into goods and services. They are the very inputs used in the manufacturing process of electricity and heat. Furthermore, they are not possible to store and save for later periods. One exception might be water in dams for electricity production. But this resource can hardly be sold separately. What can be stored is the energy generated by the use of the renewable resources.

**United States (US Bureau of Economic Analysis):** There are too many conceptual and measurement issues to isolate renewable energy resources. The valuations in the paper are in the form of value of electricity produced NOT the value of the resource. See earlier comments

**8A. Do you agree that, in line with the guidance provided in the 2008 SNA, the method of the Net Present Value of future resource rents is appropriate in the case of accounting for natural resources, such as mineral and non-renewable energy resources, renewable energy resources and biological resources?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 39 | 39 | 19 | 5 | 5 |
| No | 16 | 16 | 5 | 3 | 1 |
| No response | 3 | 3 | 2 | 1 | 1 |
| TOTAL | 58 | 58 | 24 | 8 | 6 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** No

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** No

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 8B. If no, please elaborate:

**(European Union) (Eurostat):** We answer “no” because the question is ambiguous and misleading to us. The SNA does not prescribe using such NPV in general, and not for renewable energy and biological resources.
(1) The SNA foresees using such NPV only in the absence of any other information; compilers should use by priority observed transactions (including on similar assets).

(2) The SNA paragraph 13.41 explicitly prescribes a certain approach for timber, which is not the NPV of resource rent at all, but NPV of actual wood sales net of costs. SNA 13.41 should be amended, however, to make clear that a remuneration for use of land should also be netted. In many jurisdictions sale of standing timber is commonplace and such sale prices of timber are the information that should be used in priority, in line with comment (1). This should also be added to SNA 13.41.
(3) The SNA does not foresee renewable energy resources as assets.
We disagree with the notion that royalties are a bad measure of resource rents – rather we consider that the authors of WS.6 come to this conclusion due to measurement issues – e.g. not considering taxes on extraction of natural resources in their measurement. Additionally, we consider that what is proposed will be a considerable burden to compilers and risks creating further heterogeneity across countries.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** We do not totally discredit the Net Present Value method, but we believe that more experiments and more tests are needed to develop and improve the methodology. This is because we believe that it is very difficult to calculate all the benefits of a natural resource using the NPV method. We also chose the "no" alternative in question 8A, because we believe that a consensus has not been reached that the NPV is the best way to value these kinds of resources and that it would be important to analyze alternatives based on other studies. We think it would be important to further discuss certain issues (among others) such as, for example, which discount rates to use? The country has volatile interest rates (including long-term ones), due to regulatory uncertainty, risks related to contract performance, and the difficulty of estimating revenues and costs. It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Canada (Statistics Canada):** We agree on the method of the net present value (NPV) of future resource rents for the accounting/valuation of mineral and non-renewable energy resources, and renewable energy resources (residual value approach). However, for biological (non-cultivated) resources, we believe that the question remains open to debate. For example, government output is primarily nonmarket (in the absence of market prices for the goods and services it produces), so there is a need for a discussion of the role of government in maintaining/producing these assets/resources. Furthermore, in the case of timber, we have concerns about the issue of royalties (rent revenue) versus costs incurred by governments (research, planting, access roads, insect pest monitoring, forest fire prevention and control, etc.) potentially netting-out any rent capture by the government, as are the policy aspects of choosing to capture or not-capture rent...

**Costa Rica (Central Bank of Costa Rica):** The calculation cannot be generalized for this group of assets. The Net Present Value method is sensitive to the income forecast, period and discount rate. Therefore, the particularities of each resource must be evaluated.

**Cyprus (Statistical Service of Cyprus):** No detailed information in order to calculate the NPV of future resource rents.

**France (NSI):** Given our answer to question 7, you'll understand that we cannot provide a yes answer at this very question, since its wording refers to the 3 categories of natural resources ! However, as far as far as the case of mineral and non-renewable resources is concerned, we agree to the method of the the NPV of future resource rents.

**Germany (Federal Statistical Office (Destatis)):** Principally we agree. The method is already in practical use for mineral and non-renewable energy resources, but we want to stress that results are highly dependent on the assumptions made, especially concerning highly volatile energy prices and technological uncertainties regarding the relatively new renewable energy market. To a greater extend this holds for biological resources.

**Italy (Istat):** NPV is a forward looking (ex-ante) concept related to opportunity cost. This is at odds with the recording of past events (ex-post) in the national accounts and in statistical frameworks in general. Capital formation is the result of past events and at the best estimated by exchange values. Produced assets are not valued according to the income they provide to their users and owner. NPV can be considered equal to the discounted value of future income only under the assumptions of the General Equilibrium theory, where actual incomes equal opportunnity costs. It would however not be a good rationale for the adoption of the NPV-method for natural resources, unless we swap the idea of the SNA being a statistical framework based on observable facts, in favour of it being based on the Marginal Theory (which would mean also adoting NPV for the valuation of produced assets as well).

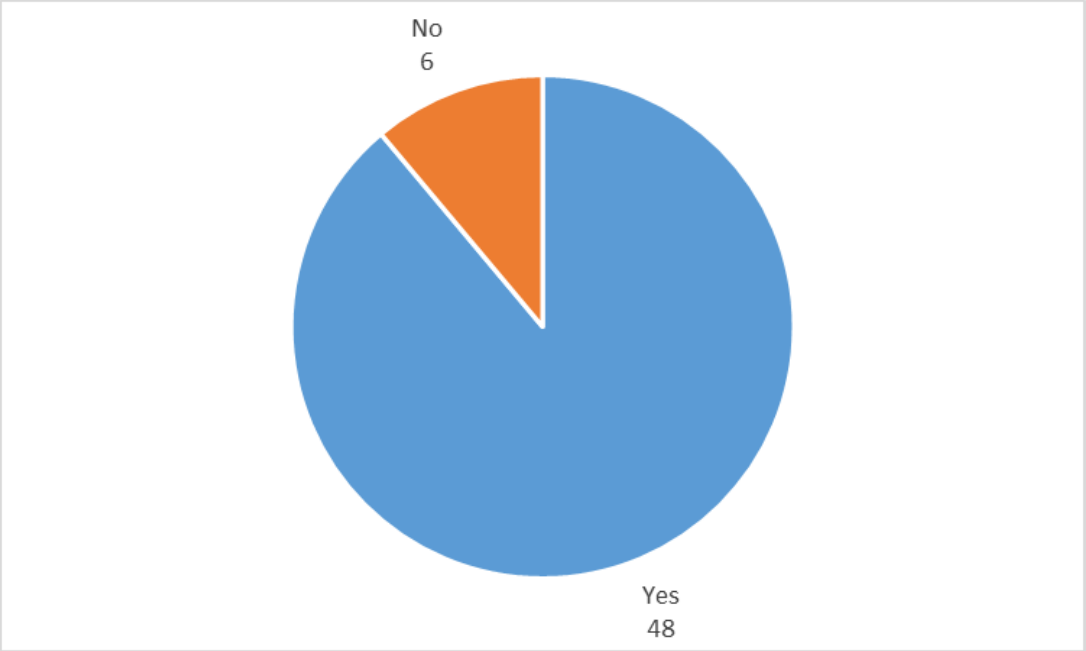
**New Zealand (Statistics New Zealand):** We have some concerns about the degree to which projections would be required for this approach. Therefore, our preference is to use the assessments of mining companies, or industry bodies, as the values would then relate to the those which industry base their decision on. This does, however, raise the question of the scope of the mineral resources considered assets, which we discuss in our response to 13.B
If the above approach isn't feasible, we believe that the NPV approach outlined in guidance note WS.10 would be the best approach. It would also have the benefit of consistency with the SEEA-CF, although, as discussed in our response to questions 7 and 13 we believe that they should have different scope.

**Romania (National Statistical Institute):** It is very difficult to know at present the future value of rents for all kind of natural resources.

**Sweden (Statistics Sweden, NSI):** The NPV is not a statistical method generating objective estimates of the natural resource value. The NPV relies on subjective assumptions aided by expert advice and should be avoided. If the value of the resource is not included in the land value, it is probably not recognised by economic agents.
The NPV-method does not provide an estimate consistent with the value of produced assets. All assets should be estimated in the same way either by the market transaction value or discounted present values. When productivity increases this gain also increases the net operating surplus. This will add to the value of the mineral resource and not the other assets used in production.

**United States (US Bureau of Economic Analysis):** Qualification. The NPV approach can be applied to all but NOT renewable energy resources. This question should not have combined all of the resource categories.

### 9A. Do you agree to add clarifications on the calculation of Net Present Values, amongst others by including text in the SNA in line with Chapter 5 in the SEEA 2012, or at least by explicitly referring to the latter guidance?




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 48 | 48 | 22 | 7 | 6 |
| No | 6 | 6 | 1 | 1 | |
| No response | 4 | 4 | 3 | 1 | 1 |
| TOTAL | 58 | 58 | 23 | 8 | 6 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** Yes

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** Yes

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 9B. If no, please elaborate:

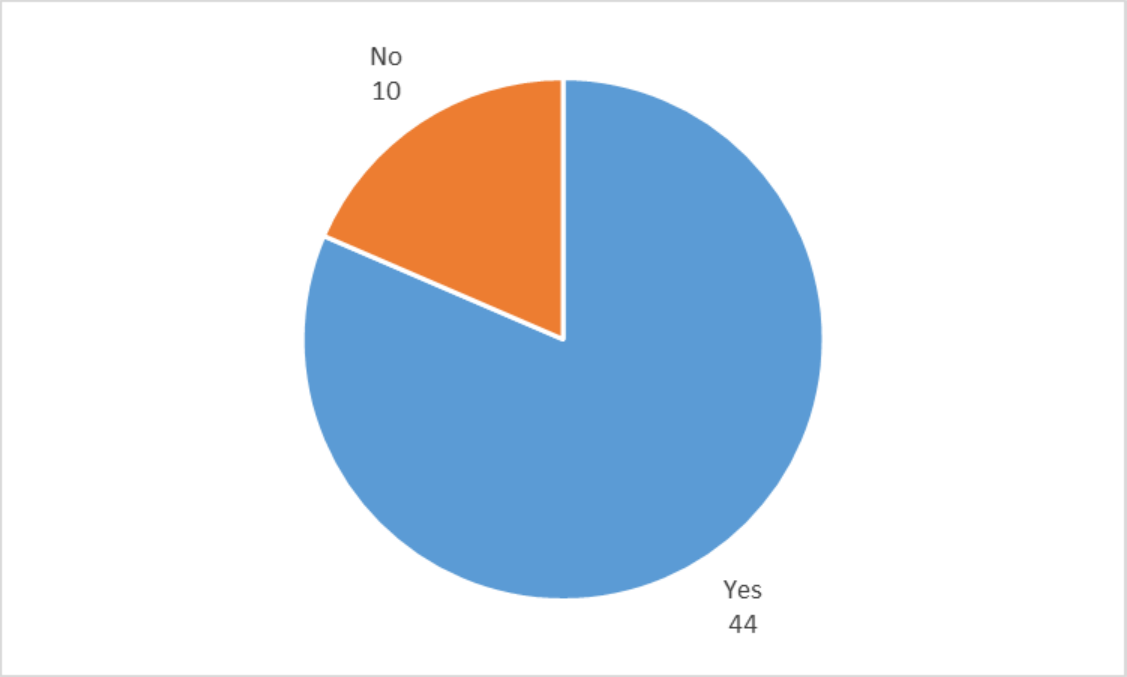
**(European Union) (Eurostat):** We can generally support to insert useful clarifications, but we want to know which ones before answering yes. We do not support approaches of WS. 6, 8 and 10 regarding NPV, and we do not support inserting any of their wording on this in the SNA. Thus we say “no”. A simple cross-reference to SEEA can be envisaged and is enough for us.

**Cyprus (Statistical Service of Cyprus):** No detailed information to calculate the NPV of future resource rents.

**Italy (Istat):** Including such clarification would mean endorsing the NPV method. The clarification needed, if the NPV is adopted are about its inconsistency with the general framework. For instance, according to theory, in a state of GE, the capitalised costs are equal to the discounted future net income. However, the costs according to SNA corresponds to the use of human resources, so simply stated the only consistent value within the SNA is zero, since the resource is a non-cultivated one.

**Sweden (Statistics Sweden, NSI):** The guidance in SEEA does not apply for the SNA. The use of the guidance will not produce accurate results that are made in the current prices of the period and at the same time fulfil the conditions set up for the resource rent and the rate of return/discount factor assumed. Furthermore, smoothing of the resource prices will add to the inconsistency of the model regarding the demand for an estimate in the current prices of the period.

**10A. More specifically related to biological resources, such as timber resources, do you agree to add clarifications on the distinction between work-in-progress (inventories) and the underlying asset?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 44 | 44 | 20 | 5 | 5 |
| No | 10 | 10 | 3 | 3 | 1 |
| No response | 4 | 4 | 3 | 1 | 1 |
| TOTAL | 58 | 58 | 23 | 8 | 6 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** Yes

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 10B. If no, please elaborate:

**(European Union) (Eurostat):** We do not support WS.8 at all. The SNA 2008 separates work in progress (as well as fixed assets) in trees from land, and we think this is good enough. We also think the WS.8 is unclear because the numerical example 1 in annex 2 seems wrong to us. The annex 2 seems to forget the production of trees during the (first) accounting period. In example 1, there is no Other Change in Volume (of 45) in the SNA recording. In the case of cultivated asset, the decline in value is destocking in the lessor account. In the (marginal) case

of non-cultivated asset, the 45 should be sale of asset according to SNA 17.329 (because the numerical example seems to imply clear felling of the forest).
We also think that the Webinar slide 14/15 is erroneous, as the underlying asset of 100 falling over time to zero is time-inconsistent. In this case the author omits the value of land and its remuneration. Because of the existence of the land, one cannot simplify the examples with taking discount rates at 0 (land value go then to infinity), contrary to what the author thinks. This point is basics of financial accounting. Use of zero discount rate is also impairing the WS.8 table 1 (because the fish resource is not worth 450 or 300, but the present value of 30 to infinity – which will be 600 with a discount rate of 5% or 1000 with 3% and so on). The 300 itself is the value of the quota/permit for 10 years only.
Finally, we do not understand if the GN WS.8 proposes a three way split of forests or a two way split. A two way split will remove any land recording for forests and we wonder why this should be the case and whether this should be extended to agricultural land with fruit-trees, vineyards and other agricultural land. In case of three way split, the author should explain on what basis it would be done.
In any case, a change to the 2008 SNA should not be based on erroneous accounting examples (beyond clear typos).

**Canada (Statistics Canada):** Not in the current Canadian context as timber/fish for example are not considered as produced (cultivated) nonfinancial assets - see also answer and comments for question 14A. We recognize that the forest versus trees is a useful concept but our recommended focus on treating timber as non-produced assets means only the value of harvested trees is relevant in a SNA context (only harvested trees enter the production boundary). Physical accounts and underlying assets seem to be better covered on the ecosystem accounting/services side. Furthermore, Statcan doesn't release or produce a physical timber account at this point. Of note is the issue of cultivated agricultural assets in the Canadian context, which are a work in progress not yet fully covered in the balance sheet.

**Cyprus (Statistical Service of Cyprus):** No analytical data for the distinction

**Germany (Federal Statistical Office (Destatis)):** We do not think this distinction is really necessary or helpful.

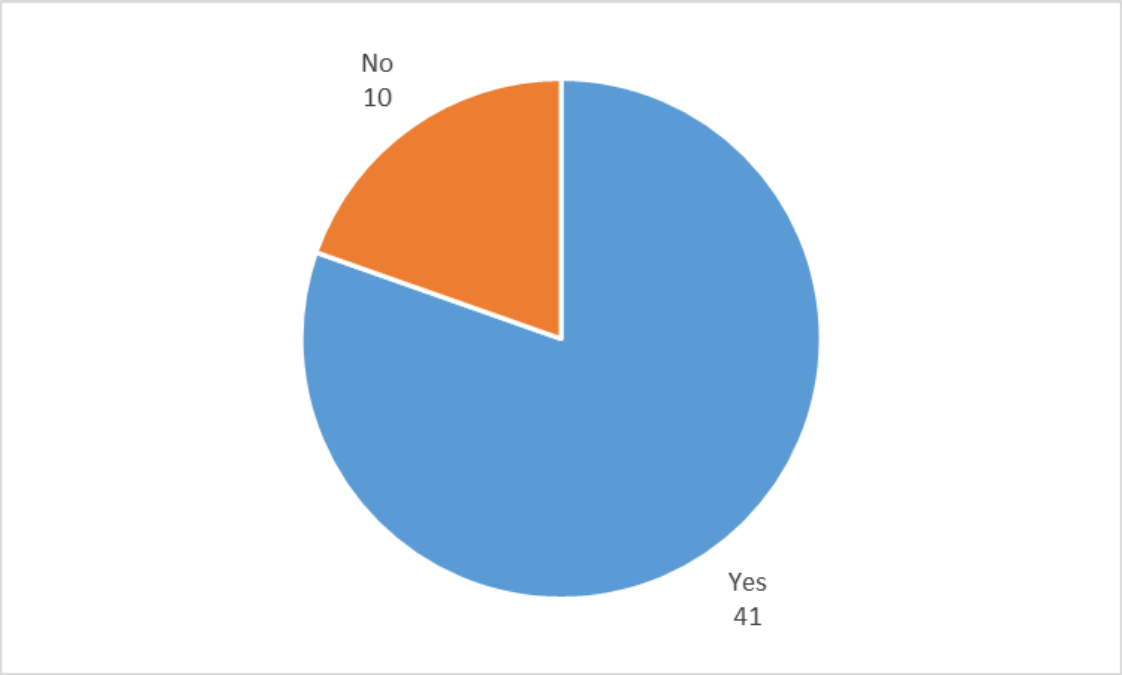
**New Zealand (Statistics New Zealand):** While we recognise the importance of the underlying asset in the production of biological resources, we question whether this is the correct framework for identifying it. As in the case of timber, the recognition of the underlying asset is not a specific claim in itself (an object of property rights) or resulting from production which can lead to the partitioning of a composite asset (such is the case with land improvements).

As a result, although the underlying asset contributes to biological production, and is in turn affected by land use practices, the attribution of value to the underlying asset is analytical in nature. We consider the SEEA-EA to be a more appropriate place for this to be considered.

Our preference is for the treatment to be as consistent as possible with observable phenomena recorded by economic actors, as this is also the basis for their decision making.

**Sweden (Statistics Sweden, NSI):** The only underlying assets are land and other surface areas with ownership rights. The distinction between what can be harvested from the area and the area itself is rather straightforward.

**11A. More specifically related to mineral and non-renewable energy resources, do you agree to add clarification that compilers should try to compile the value of these resources at a disaggregated level, ideally at the deposit level, and then sum the obtained values up to the national level?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 41 | 41 | 19 | 6 | 5 |
| No | 10 | 10 | 3 | 2 | 1 |
| No response | 7 | 6 | 3 | 1 | 1 |
| TOTAL | 58 | 58 | 22 | 8 | 6 |

**(European Union) (Eurostat):** Yes

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** Yes

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 11B. If no, please elaborate:

**Australia (Australian Bureau of Statistics):** We believe that this should be the aim for the compilation of all areas of the accounts but more specifically believe that this level of guidance would be more appropriately placed in a compilation manual rather than the core SNA.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** The country is very large, with many mineral and non-renewable energy resources which makes it more complex to collect the data needed to individually value these reserves (cost information, production estimates,

production efficiency, etc.). These issues would make it difficult to analyze the data at a very disaggregated level.

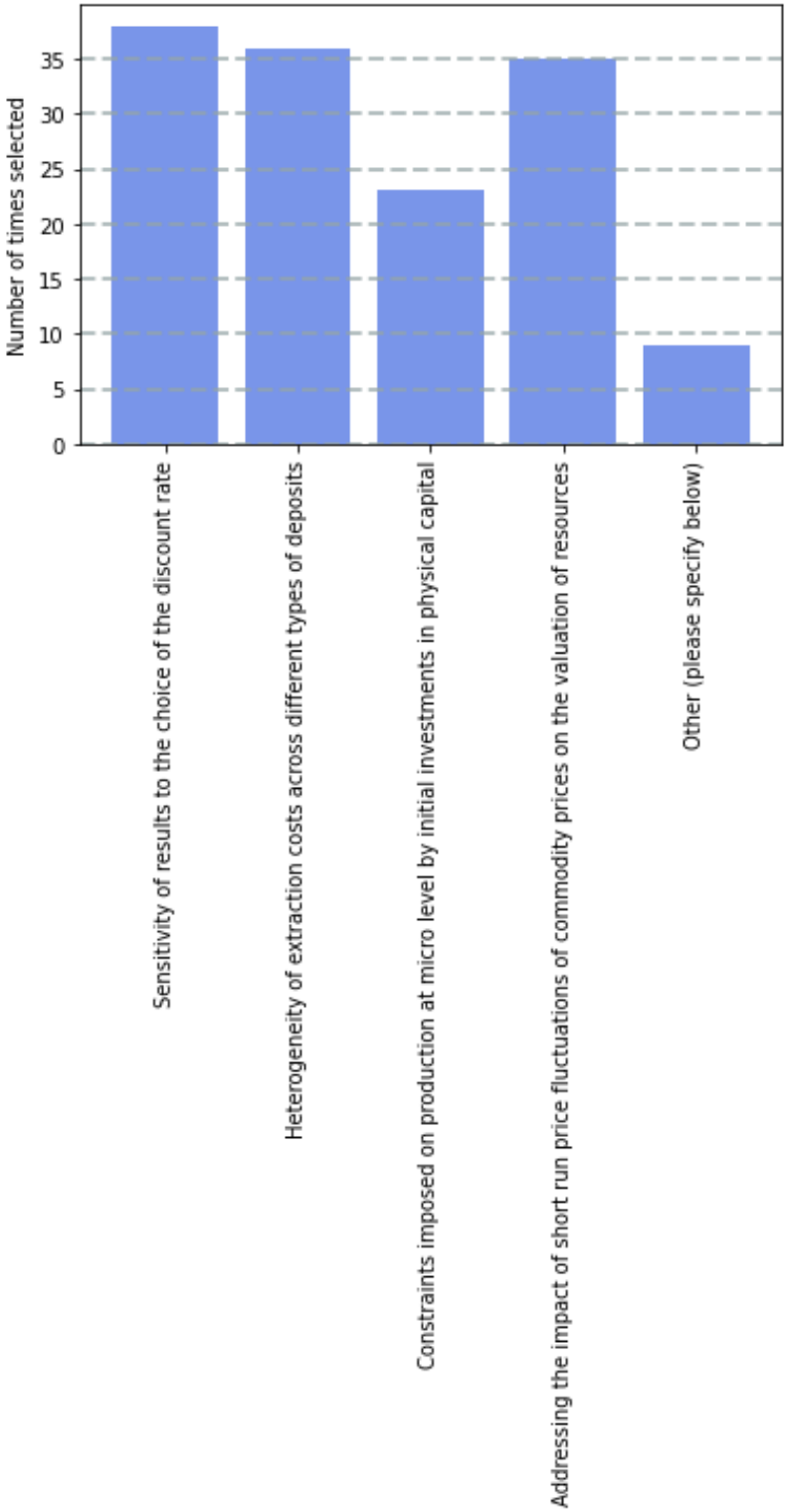
**Canada (Statistics Canada):** The recommended approach in the guidance note is not reasonably possible given the very high number of mines and wells in Canada, as well as the way data is collected through existing surveys for revenues, costs, and capital employed (e.g. by company/establishment, not by basin or mine). Company level information does have some analytical relevance however.

**Cyprus (Statistical Service of Cyprus):** No detailed information available for disaggregation

**Germany (Federal Statistical Office (Destatis)):** Basically we are not opposed but we severely doubt that the necessary source data will be available. Hence, a valuation might become too subjective.

**Sweden (Statistics Sweden, NSI):** The principal problems with the method does not disappear by a more granular approach to the estimation.

**12. Which of the following compilation issues should be explicitly emphasized in the updated SNA in relation to the valuation of mineral and non-renewable energy resources, renewable energy resources and biological resources?**



**(European Union) (Eurostat):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits

**Aruba (CBS):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits

**Australia (Australian Bureau of Statistics):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Sensitivity of results to the choice of the discount rate; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**Burundi (ISTEEBU):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital

**Canada (Statistics Canada):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**Chile (Central Bank):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Costa Rica (Central Bank of Costa Rica):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Cyprus (Statistical Service of Cyprus):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Denmark (Statistics Denmark):** Sensitivity of results to the choice of the discount rate; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Finland (Statistics Filand):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**France (NSI):** Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Georgia (National Statistics Office of Georgia):** Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital

**Germany (Federal Statistical Office (Destatis)):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits

**Indonesia (BPS Statistics Indonesia):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Israel (Israel's Central Bureau of Statistics):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Italy (Istat):** Sensitivity of results to the choice of the discount rate; Other (please specify below)

**Jordan (department of statistics):** Sensitivity of results to the choice of the discount rate; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Malaysia (Department Of Statistics Malaysia):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Mexico (INEGI):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Nepal (Central Bureau of Statistics):** Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Netherlands (Statistics Netherlands):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**New Zealand (Statistics New Zealand):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Norway (Statistics Norway):** Sensitivity of results to the choice of the discount rate; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Perú (Instituto Nacional de Estadística e Informática):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Qatar (Planning and Statistics Authority):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Romania (National Statistical Institute):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**South Africa (Statistics South Africa and the South African Reserve Bank):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**South Korea (The Bank of Korea):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Sudan (central Bureau of Statistics -CBS):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Sweden (Statistics Sweden, NSI):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**Thailand (Office of the national economic and social development council):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**Ukraine (State Statistics Service of Ukraine):** Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources

**United Kingdom (UK Statistics Authority):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Constraints imposed on production at micro level by initial investments in physical capital; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

**United States (US Bureau of Economic Analysis):** Sensitivity of results to the choice of the discount rate; Heterogeneity of extraction costs across different types of deposits; Addressing the impact of short run price fluctuations of commodity prices on the valuation of resources; Other (please specify below)

### 12B. Please specify other issues that should be emphasized.

**(European Union) (Eurostat):** All these issues seem relevant to address. One issue not properly addressed by WS.10 concerns the existence (and use for SNA compilation) of extensive commodity “futures” (prices) markets. In some market (oil), “futures” exist covering the very distant future (decades). Such markets can go in pronounced contango or backwardation (in an alternative way), such that volatility of current prices does not translate in similar volatility of these long-term “futures”. resource rent to use to value the asset should use these “futures” information.

Thus, restraining the impact of short-run fluctuation in commodity prices should not come out of a “stability” principle, but does flows from the existence of such “futures”, and their observed higher stability.
Some commodity markets (such as gold) stay permanently in contango, reflecting interest rates, such that “futures” tend to move more systematically with cash prices (although the differential cash/futures also move, quasi-automatically, with long term bonds).

**Australia (Australian Bureau of Statistics):**
- Sensitivity to mid/long term pricing and changing extraction
- Treatment of stock collapses in the environment (i.e when an ecosystem collapses and biological resources are restricted or unavailable)
- We also believe that these compilation issues are better suited for a compilation guide or similar than the SNA

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Regarding asset valuation, it is important to have a greater discussion on how to deal with high volatility in prices (commodities) and interest rates, among other variables (which are more common in developing countries).

**Canada (Statistics Canada):** For biological resources specifically: more guidance on the methodology/thresholds for designating biological resources as cultivated/non-cultivated would be very useful (level/degree of management practices and active human involvement in the growth of the biological resource). The guidance/clarifications could build on/align with the concepts used in the SEEA-CF e.g. using timber as an example, to be designated as a cultivated resource, management practices must constitute a process of economic production (the control of regeneration, seeding, planting, thinning, supervision of weeds/parasites)...and these should be significant (costs) relative to the value of the timber resource.

**Italy (Istat):** The fundamental distinction between produced and non-produced resources (assets), and its reflection in the different role of the two kinds of assets in terms of production and income, and therefore in their relation to the production and allocation of income accounts. Also the different status of non-produced (i.e. provided for free to mankind) resources for society, on the one hand - participating in production but not productive - and for individual economic units (which may appropriate them, regard them as sources of income and use the right to use them for saving purposes). Only human activity is productive in the SNA, and this is what the SNA should measure in the first place. As for assets, the "right to use" Nature kind of assets should be recognised as assets of in their own right, entitling their owners to income but not contributing the kind of effort (direct or indirect human labour) measured by the SNA production account.
The role of the resource rent is crucial in all these valuation issues. The proposal of recording rents as payments for services is in line with the view of Nature being alike to an economic unit providing ecosystem services. However it ignores where the rent actually goes, dealing with it as if it went to Nature ad not to economic units, which are necessarily in the antropic realm. The rent, in fact, goes to the economic owner of the service, i.e. the unit who

appropriates the service in the first place. This may be the legal owner or not, depending on institutional arrangements. Rent as price for the provision of a service (i.e. not rent anymore) would require several adjustments. First, the services should feature in products' classifications. Second, the sheer possession of Nature and possibly its conservation (avoiding to destroy it conceived as equivalent of cultivation) should feature in economic activities classifications. Indeed, the services are provided not by Nature, but by their economic owners, carrying out this sheer possession activity. Third, the services constitute an output for the producing unit and an intermediate consumption for the using unit. But still, the appropriation of the functions of Nature, which in the exchange between economic units become a service, is free of charge for the direct user that is the economic owner of these functions. If these functions are used in production by the owner itself, the rent is embodied in its outputs' value. So, fourth, in order to see the rent as a service, a notional unit should be defined as that part of the economic owner/user unit that appropriates the functions of Nature and transforms them into services, separate from the part of the same unit that use the service, and the rent should be recorded as an internal intermediate service flow. The impact of short run price fluctuations of commodity prices on the valuation of resources is not a matter for the SNA as a statistical framework. Smoothing means deviating from the actual market prices on output, which implies the need to adjust value added and operating surplus as well. The correspondence between the asset value and the current resource rent will otherwise, be lost. This brings the SNA further from being a theory-free statistical framework. There is no good way of escaping the volatility of raw material prices.

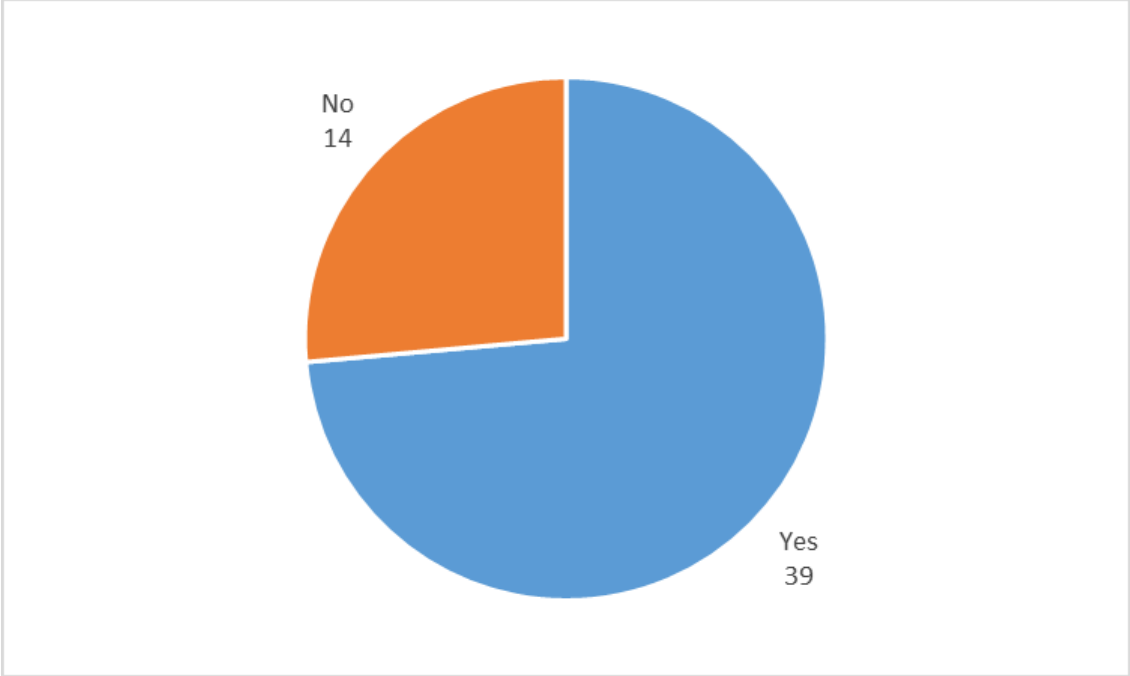
**Netherlands (Statistics Netherlands):** Extraction path is very important for the valuation. How to deal with exploration costs in applying the resource rent method?

**Sweden (Statistics Sweden, NSI):** Volatility of output prices of natural resources and exchange rates. The problem of estimating the volume of stranded assets.

**United Kingdom (UK Statistics Authority):** The U.K. believes another compilation issue should be, "Sensitivity to changes to tax treatment and that they cannot consider the potential for Stranded Assets due to regulations.

**United States (US Bureau of Economic Analysis):** The proposed valuation is extremely problematic--if renewables should be pursued the value of the resource has to be distinguished from the value of the electricity produced.

**13A. Do you agree that, in line with the guidance provided in SEEA 2012 and the recommendations on mineral and non-renewable energy resources as included in the Guidance Note WS.6 on Economic ownership and depletion of natural resources, a split-asset approach should be recommended in cases that the resource rents from renewable energy resources and biological resources are shared between the legal owner and the extractor?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 39 | 39 | 15 | 3 | 2 |
| No | 14 | 14 | 7 | 4 | 3 |
| No response | 5 | 5 | 4 | 2 | 2 |
| TOTAL | 58 | 58 | 22 | 7 | 5 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** No

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** No

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** No

**United States (US Bureau of Economic Analysis):** No

### 13B. If no, please explain:

**(European Union) (Eurostat):** We fundamentally object to the notion of split asset in WS.6 and to the idea that this split can be made based on NPV of imagined resource rent, and to its extension to regenerating resources: biological or renewable energy.
First, the resource rent is not calculable simply observing the NOS of the extractor (net of funding costs) as the WS.6, 8 and 11 presume. The unallocated NOS of the extractor can cover

hidden costs (in particular terminal costs that are common in oil/mining industries), costs reported lower down in the sequence of accounts (taxes, insurance, penalties, compensatory payments), or the remuneration of capital (as the market may request a high return, to account for the perceived risk).
The NPV of resource rent can only be used in the absence of market valuation, i.e. for an oil field owned or not exploited. When an oil field is leased, this precisely put a value to the subsoil assets, using the NPV of royalties/lease payments or assimilated (such as surtaxes). It is clear that special taxes, fees or surtaxes are substitutes to royalties and should be considered as D.45 and for the appropriate valuation of the subsoil assets. Similarly, public corporations exploiting the assets may be distributing income through large dividends that have the nature of rent).
Second, the SNA does not split assets in general, so that there is no reason to do so in the context of natural resources. We do not agree that the lessee is sharing economic ownership of the asset in general with the lessor. The SNA recognises that the lessee may have an asset, when the lease is transferrable/realisable, but this is then another asset (of the AN.22 class). One could envisage extending such AN.22 recognition of the SNA 2008 to non-transferable leases. This would change the SNA 2008, but would be a more modest move than the split asset, and possibly a move in the right direction. The AN.22 could also be thought as a financial asset (of the AF.7 class) instead of a non-financial asset, which could also solve some other problems. This notably allows recording the leased assets in the balance sheet of the lessor for their unencumbered value. This is more satisfactory, at least for natural assets, because then leased natural assets appear in the national balance sheet at their full value (instead of split between AN.21 and AN.22, in the lessor and lessee balance sheets, respectively, as currently the case in the SNA 2008 for a transferrable lease). Sometimes, the SNA 2008 splits assets: (1) for instance between land and fixed asset, but this is inside the same owner, (2) between owners of inherited assets or some joint ventures, but in this case the % ownership is fixed by contract/law.
Splitting the asset would be a radical change in the SNA and would impact other areas, such as PPP.
We also wonder how splitting assets could change the accounting of some legal arrangements, existing in a significant number of jurisdictions, where ownership can be split between usufructus (that benefit from the rental potential) and the owner of the naked property, the latter in effect owning a building leased for no rent. In our view, the usufructus holder is not an SNA (economic) owner and the building should be reported in the account of the naked property owners, at the encumbered value, like any other lease that is non-transferable.
The split of asset can perhaps be defended for subsoil asset to the extent that a lease on subsoil assets is de facto economically a purchase of inventories in advance, even if this is not portrayed as such in the SNA 2008. Such is not the case for other natural assets that are of indefinite life (land) or that regenerates naturally (trees, most forested land). The split asset approach involves a capital transfer at time of lease against a transfer of subsoil asset to the lessee, which is not acceptable from a GFS point of view. When a lease is not at market value and contains a subsidy element, a grant can/should be

recognised in the SNA. But the counterpart should be a payable of government (not a non-financial asset) that would gradually unwound as an additional imputed rent would be recorded (to boost the rent to a suitable market level). [This approach is similar to recording a capital transfer at inception in the case of concessional loans, which received significant support in another GN.]
From a practical point of view, we consider that what is proposed will be a considerable burden to compilers and risks creating further heterogeneity across countries.

**Australia (Australian Bureau of Statistics):** We do not agree that a split asset approach should be recommended. Split asset approaches need broader consideration for other assets where rewards are shared (eg public private partnership agreements for infrastructure). Treatment of natural resource leases could be expanded on its own, but it is not clear why natural capital should be treated differently to infrastructure.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** In many cases, royalties do not adequately represent the shared risk of exploiting renewable and biological resources. In addition, in practice, the country does not have such per-company accounting at the establishment level.

**Cyprus (Statistical Service of Cyprus):** No available data

**France (NSI):** From a general point of view, we think that it is iconoclast to split assets, it is an "innovation" that would damage the understandability of national accounting. In this very area, it looks unavoidable that there exists some variability in the share of the resource rent between the involved parties. Natural resources being, by construction, non produced, the usual market mechanisms cannot be effective to change the share of the benefits between parties. In addition, governments being present in many arrangements, their behaviour may not be fully in line with market considerations. The control criterion has also to be considered when assessing the ownership.

**Germany (Federal Statistical Office (Destatis)):** We are not convinced that the split asset approach is justified. The sharing of risks and rewards is not exclusive to natural resources and in the case of PPPs and EPCs the accounting solutions respect the risks and rewards approach promoted in national accounts. However, if it were found out that the risk and rewards approach might reach its limits, we would welcome a fundamental discussion on what to apply else.
In that case we would prefer the option B (or D if permits are transferable) presented in paragraph 66 to value biological resources.

**Indonesia (BPS Statistics Indonesia):** Base on intense discussion between Statistics Indonesia and the Ministry of Finance, we do not agree a split-asset approach in cases that the resource rents from renewable energy resources and biological resources are shared between the legal owner and the extractor because it will potentially violate the constitution in which stated that all natural belong to government as the legal owner.

**Italy (Istat):** The proposal of split ownership is coherent with the perspective on assets defined by the allocated income and not primarily on the relation between the owner and the user of the asset in production. This perspective is questionable as it does not add internal coherence to the SNA, but brings it further from it being a statistical system for the measurement of human activity, moving in the direction of a marginal-theory-based wellbeing and sustainability estimation tool but still being far from it because of the design of the general framework is not GE-based.
A common set up between government and private corporations is by establishing a joint venture (JV). This kind of arrangements should be regarded as separate institutional unit. The income claimed by the owner of natural resources should in normal cases be recorded as payments of rent. In case the government is the owner and the agreement cannot be treated as a rent or a JV, the payment might instead be regarded as a tax.

**Netherlands (Statistics Netherlands):** Wait for testing results and learn from it.

**New Zealand (Statistics New Zealand):** The split asset approach focuses on aligning income values and assets values, yet it seems to ignore aligning the nature of the income and assets. The income earned by governments (or landowners in certain jurisdictions) is not through the use of the natural resource, but through getting compensation (e.g. royalties) for allowing another institutional unit extract and benefit from the resource.
Additionally, the income earned by government (or the landowner) is contingent on certain events occurring (both the creation and transfer/sale of the permit, and the extraction of the resource).
Therefore, we believe clarification is required with regards to the nature of the asset (how do we delineate a natural resource as an asset?) and the asset recognition criteria.
The current recommendations are built on a certain understanding of government owning resources on behalf communities. This needs clarification, as we believe that it is possible to differentiate between two situations. One where government owns assets with the intention to achieve collective goods outcomes (such as the conservation estate land), and another where government has control over resources from which individuals can derive individual benefits (such as through the extraction of minerals). We believe that assets held for the former objective (collective outcomes) should be identified as an asset for government, but that latter (individual outcomes) requires further discussion.
As part of this it is important to understand whether there is a difference between government having control over the resource (legislative or policy), or even having the right to the resources, and identifying an asset (for use in production or as a store or value). Government (or the landowner) tends to be a passive beneficiary in mining operations, rather than resources being associated with their production.
Additionally, the recognition of the resource when it is essentially contingent in nature, seems to be contributing to the double counting and revaluation problems discussed in the Guidance note.
The ability for Government to benefit is generally contingent on selling/auctioning permits. Government doesn't benefit from the actual use of the resource (extraction), and it doesn't relate to the nature of their production function. Our preference is for natural resources for

which a specific claim on a particular resource can't be identified despite there being a quota system, such as for fish in open water, not to be recorded as an asset (it is the right to catch a certain type of fish in a certain region, not the right to catch a specific individual identifiable fish). The capture of such fish would be the event where the property rights are established over the fish, and the right to capture fish (the permit) would be expensed (or the value of a perpetual fishing right would decline in a similar fashion to a bond will decrease in value after a coupon payment). This prevents the double counting and revaluation problems. The economic value of a Nation's entire fish stock would be captured within the SEEA framework. This is consistent with our preference that the mineral or non-renewable energy resource assets aren't recognised until the mining operation is set-up (recording it when the mining right is transferred/auctioned/sold would create problems, as it remains contingent on exercising a right), and recognising the asset as the mineral deposits associated with the exercised mining right (which would align with question 11 to measure if possible at the deposit level, and the supplementary information that can be recorded in enterprise based financial accounts). Defining what a natural resource is, will help clarify where the risks and rewards fall, and whether the resource is considered to be fully depleted or only partially, as looking at the mineral estate in its entirety may result in a different conclusion to when deposits are considered separately. The cost of the mining right would also be capitalised at the time of establishing the mine.

At the establishment of the mine site, we would see the natural resource recognised as an asset for the mining enterprise (as they take on the majority of the risks and rewards), the recognition of a provision for terminal costs, as per WS.9, and a provision for the present value of future royalties (which government, or the landowner, would recognise as an asset aligning income value and type with asset value and type).

Additionally, it only makes sense for depletion to be recognised as a cost of production (in the form of an internal transaction) if the natural resource is recorded as being owned by the mining enterprise. For any portion of the mineral or non-renewable energy resource is allocated to government or the landowner (partially or fully), this treatment makes less sense.

While this treatment wouldn't result in all the natural resource wealth of a nation being recorded, it does represent where property rights have been established. It could be recommended that supplementary information is presented with the accounts showing the economic value of mineral natural resources, where assets would be a subset, providing useful analytical insights. This would also help delineate between the roles of the SNA and the SEEA, and clarify the distinction between natural capital and natural resource assets.

**Norway (Statistics Norway):** The split-asset approach is a possible solution, but in our view it is not yet sufficiently analysed to be included in a guidance note.

Statistics Norway agrees that a correct inclusion of natural resources is of great importance, and welcomes work to include it in the SNA 2025 revision. Our response to question 13A reflects that we believe the guidance note should be further elaborated before concluding.

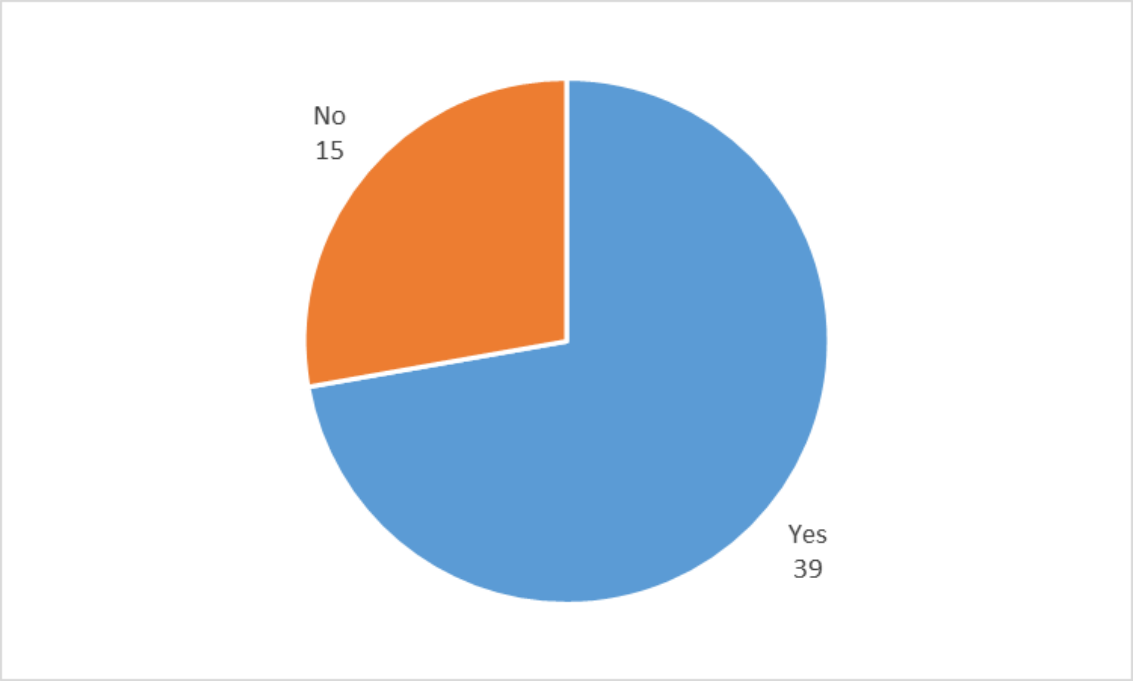
An alternative could be to record it as a form of "negative rent" for use of the resource (a current benefit from the owner to the extractor).

**Sweden (Statistics Sweden, NSI):** Economic ownership is about which unit uses the resource as a factor of production. Only one unit at time can use the resource. The split-ownership approach starts with the wrong perspective that it is the allocated income that defines assets. When the owner of the resource receives part of the income this is rent or some other form of income distributed due to ownership claims and not as a remuneration to the owner for contributing to output by participating in the productive activity.

**United Kingdom (UK Statistics Authority):** The U.K. believes that there is good reason to agree with the above question, and in principle support a 'yes', however, the U.K. believes that the guidance note as drafted provides insufficient focus on the treatment of items already included in the national accounts. An example is the need to consider the implications on assets such as permits, and whether these differ between "economically meaningful permits" and "peppercorn permits".

**United States (US Bureau of Economic Analysis):** A qualified NO because of the bundling of resource types.. A split asset approach can work for mineral and non-renewable resources. Whether it can work for biological resources has to be investigated but it is worthwhile to try. For renewables, it makes no sense because of the kinetic energy nature of the renewable natural energy.

**14A. More specifically related to biological resources, do you agree with the proposals, as explained in Guidance Note WS.8, to change the distinction between cultivated and non-cultivated biological resources?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 39 | 39 | 15 | 3 | 2 |
| No | 14 | 14 | 7 | 4 | 3 |
| No response | 5 | 5 | 4 | 2 | 2 |
| TOTAL | 58 | 58 | 22 | 7 | 5 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** No

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

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**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 14B. If no, please explain:

**(European Union) (Eurostat):** We do not agree at this stage to drop this distinction and we think the WS.8 is rather ambiguous about it.
First we are not convinced by the WS.8 argument that the cultivated boundary is not clear to establish. On the contrary, while some forest are fully or nearly fully exploited, many others are only very partially exploited and some others not or nearly not exploited. Second, the WS.8 does not recommend to record all natural growth as output and the unexploited part as own consumption of the owner, as would be logical if the

cultivated/uncultivated distinction was truly abolished. This alternative option was proposed in the Task Team but not followed, perhaps on the erroneous view that this would translate into considerable output and own consumption; but such additional consumption and own production should be valued at market value, which is often very low (or zero) for mountain forests or (deep) Amazon forests. Instead, the WS.8 suggests to apportion the output to the share of exploitation. But this implies that a distinction is made between cultivated and uncultivated forests, contrary to what the WS.8 wants the reader to believe. Maybe the distinction should be between fully cultivated and non-fully cultivated. Perhaps some cultivated/uncultivated distinction can be maintained, but at the same time to move the uncultivated asset within the produced asset.
Overall, the GN WS.8 has not satisfactorily tackled the issue at this stage.

**Australia (Australian Bureau of Statistics):** We found it difficult to follow the guidance on this issue and had different interpretations of the proposals within our group, suggesting that further work and clarity should be put into this proposal. In general we do not agree that there should be changes made to the distinction between cultivated and non-cultivated biological resources as there are concerns of the expansion to include assets where there is next to no management involved and which have no monetary value. While there is some conceptual merit, the change would introduce other measurement issues, and the use of a spectrum approach rather than a clearly defined distinction between what resources should be and should not be included would be confusing. Biological resources are plentiful in Australia and this change would result in the inclusion of significant amount of assets with little or no monetary value.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA. The valuation part within ecosystem services is still experimental, including in SEEA-EA.

**Canada (Statistics Canada):** Not in the current Canadian context as timber/fish for example are not considered as produced (cultivated) nonfinancial assets. As mentioned before, the stock of exploitable timber resource is considerable (using timber as an example) as the data required to reasonably estimate the inventories, natural growth, depletion, other economic flows related to wildfires, infestations, etc. We are not convinced of the merits of not distinguishing between cultivated and non-cultivated biological resources, with reference to Eurostat practices, but we understand that a clear-cut division between cultivated / non-cultivated is very difficult. It is however very important to note that in Canada, the timber production is largely done from Crown lands under procurement regimes that can vary significantly from province to province. Regulation and surveillance relating to the sustainable exploitation of forests has evolved rapidly in recent years. And although the operations of government on the ground to manage the resource jointly with forest companies are generally important, it is very difficult to determine with certainty, according to the current orientations of the manuals, that it is controlled and actively managed resource at a level such that it must be considered as a produced asset. As such, a decision tree /

summary table could be articulated in the updated SNA to distinguish between cultivated (produced) and non-cultivated (non-produced) biological resources, resource yielding repeat products vs resource yielding once-only products, and the appropriate accounting/statistical treatment (GFCF-CFC vs change in inventories vs OCVA...).

**Cyprus (Statistical Service of Cyprus):** No available data for distinguishing these two categories

**France (NSI):** The GN is unintelligible on this point.

**Germany (Federal Statistical Office (Destatis)):** We prefer Option 1 (strict application of the significance of management practices) as laid out in the Guidance Note at page 9. Option 2 requires in our view the need to record the development of all non-migrating resources even if they are not or barely cultivated and irrespective of their economical significance.

**Italy (Istat):** The distinction between cultivated and non-cultivated biological resources might pose some practical problems in deciding where to draw the line. Since this is a basic distinction in the SNA between human activity that contributes to value added (GDP) and natural processes that have impact on the economic activity but are not part of it, it is of vital importance to keep it as it is, as it means keeping some causes of economic phenomena distinct from their consequences, i.e. from the economic phenomena themselves. In this case legal ownership plays the role of drawing the line. The owner will care for the resources under ownership but there might be little incentive to care for common resources. In case the owner is allowing another unit to use an uncultivated resource, the payment to the owner cannot be regarded a payment for output. The owner is only granting the resource against a payment without having contributed to it and it is still an uncultivated natural resource.

**Netherlands (Statistics Netherlands):** In principle we stand positive to changing the distinction between cultivated and non-cultivated biological resources, however, the text provides several options / proposals, so it is not clear what now exactly is being proposed here, We stand positive by treating natural resources as a separate class which would allow for not having to make a distinction between produced and non-produced assets.

**New Zealand (Statistics New Zealand):** We have concerns about the deviation of scope for biological resources included beyond where private property rights exist, blurring a distinction between assets and natural capital. More generally, with regards to natural resources, how different property rights regimes are treated in the SNA needs to be clarified, so that the institutional reality gets presented in the accounts.
While we accept that the distinction between cultivated and non-cultivated may be problematic at times, if the treatment moves away from using this distinction, we believe that property rights should be a necessary (but not necessarily sufficient) condition for the recognition of assets and output on an accrual basis. Additional to that, the intent and ability to harvest (extract economic benefits) would be a secondary criterion, and production could be recognised regardless of the level of cultivation/management. This would also give a

clearer basis for recognising and derecognising assets, and hopefully align with enterprise level accounting.

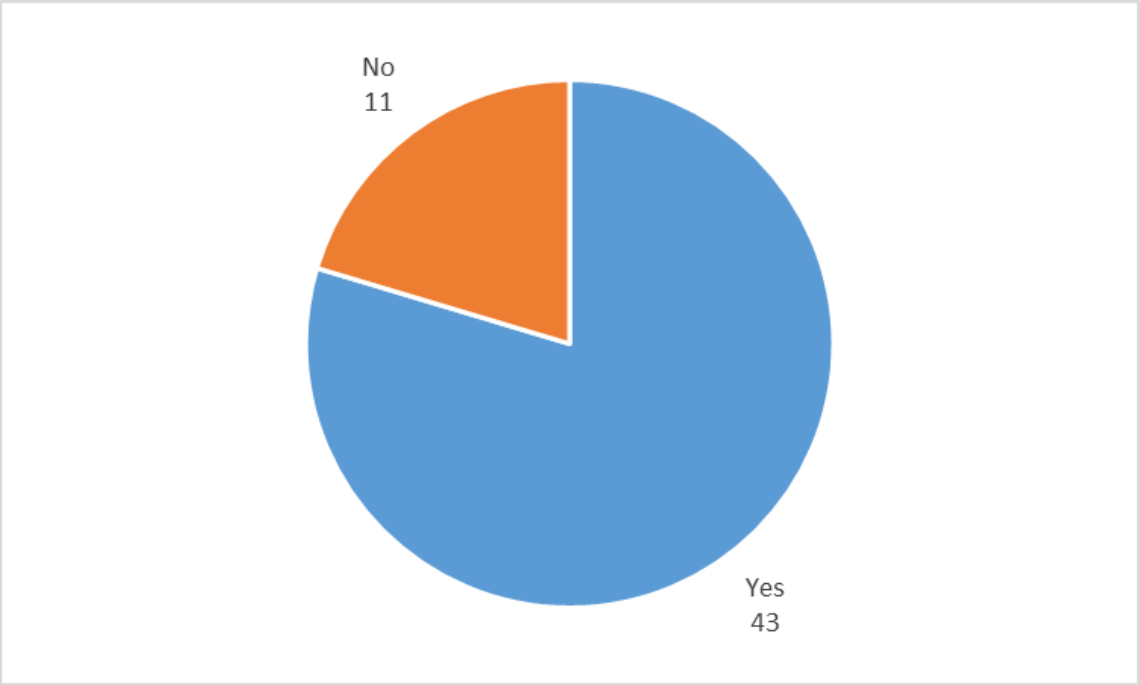
For this reason, we believe that scope of natural resources considered to be assets is extremely important, as discussed in our response to question 13.

With regards to the question as to whether the biological resource is produced or not, this may just be a matter of terminology and the interpretation of production. Economic activity can be significantly different for different industries, and therefore more explanation of the nature of economic activity linked to natural resources, as suggested by question 17, may help clarify this.

As discussed in our response to question 13, being able to present biological assets alongside supplementary information on the economic value of all biological resources would be analytically useful. Therefore, being able identify biological assets as a separate asset class may be useful and help delineate between the role of the SNA and SEEA on recording biological resources.

**Sweden (Statistics Sweden, NSI):** The distinction between cultivated and non-cultivated is a fundamental principle in the SNA. This distinction is a basic one for defining what is included in GDP and how to organise the sequence of accounts in SNA.

**15A. More specifically related to cultivated biological resources, do you agree that, in line with the guidance provided in SEEA 2012 and the recommendations on mineral and non-renewable energy resources as included in the Guidance Note WS.6 on Economic ownership and depletion of natural resources, depletion should be accounted for as a cost of production; and that the regeneration of these resources (i.e., negative depletion) should be recorded as gross fixed capital formation?**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 43 | 43 | 18 | 5 | 5 |
| No | 11 | 11 | 5 | 3 | 1 |
| No response | 4 | 4 | 3 | 1 | 1 |
| TOTAL | 58 | 58 | 23 | 8 | 6 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** No

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 15B. If no, please explain:

**(European Union) (Eurostat):** Not at all. This is total confusion between a non-renewable resource and a renewable one.

The WS.6 had a business case that royalties on subsoil assets are not genuinely revenue/(net) income because in fact extraction (and associated royalties proceeds) is merely swapping an asset (subsoil) against another (cash) and is inherently net worth/own funds neutral. Booking a consumption of capital in the subsoil case is (partly) legitimate, so that the net income of the producing country at time of extraction is correctly measured (note however that the "income" of the producing country is understated over time because discoveries are not income either). But this is not extendable to renewable assets.
Depletion, in the case for instance of forests, merely involves extracting more than regeneration/production (which is the definition of depletion according to WS.8 para 74). As such it is merely destocking (as long as the trees are in the inventories).
The SNA 2008 already recognises fruit trees as fixed capital formation (and amortisation), for gross values. But this is different from what is proposed, which is net.
The numerical examples in annex 2 are also not comprehensible. We do not understand if the annex 2 concerns cultivated forests or (as some believe) uncultivated forests, such that example 1 (which is supposed to reflect the SNA 2008 recording) is not conclusive.
If the annex 2 reflects a lease of cultivated assets, as one would suppose, being the most important case in real life, then example 1 misses the output due to growing trees in the account of the lessor. In turn the lease payment (of 30) is in fact purchase of trees, which is destocking (P.52) in the landlord/lessor account (and P.2 in the lessee accounts, such that P.1 is 100, or P.52 if goods for resale, such that P.1 is 70 and not 100). The 450 asset is also to be restated to 300 (or allocated to land for 150). As a result, there is no Other change in Volume (OCV) of -45, contrary to what the numerical example say.
If the annex 2 reflects a lease of uncultivated assets, because the fall in asset value, assumed to be 45, which is also the same as the resource rent, we can suppose that the lease involves clearly felling, and SNA 17.329 prescribes recording a sale of asset, such that there is no OCV either.
Seeing annex 2 as example of uncultivated assets does not make much sense anyway, because uncultivated forests would presumably become cultivated by virtue of the lease, at least if this involves full wood exploitation. If the lease involves marginal wood exploitation, then the forest can be deemed uncultivated though leased.
The annex 2 seems also deficient in example 4 where extraction is deemed to be below regeneration (growth). But in a cultivated forest, output in the landlord account should show the full production and not the net addition, and be recorded as P.52 inventories, not P.51g (we are not talking about fruit trees).
The numerical example and the GN fails also to discuss if the output of trees should feature in the lessee or in the lessor accounts. Under the SNA 2008, we think that the growth of trees is in the lessor accounts unless the lease is on cleared land, and the lessee can replant at will, and the lease termination will involve clear land again – in that very restrictive framework, growth of trees may possibly be recorded in the lessee accounts. This is not the case in the example 1/2/3, because the fall in value shows that there is strong tree cutting activities.
The numerical example of WS.8 is nearly identical to that of WS.6 on subsoil assets. But this cannot be because, contrary to subsoil asset where extraction = depletion, biological assets

are renewable. As such the problematics are completely different and therefore the annex 2 is erroneous.
These problems have been raised with the author a number of times.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA. The impacts of implementing this methodology in the main structure of the SNA are not clear on its macro aggregates.

**Canada (Statistics Canada):** Yes and no! This question covers two topics with different answers. Depletion of resources does seem to be a valid cost of production. However depending on the decision on the asset boundary (produced/non-produced) it is not resolved that a gross fixed capital formation entry would be appropriate for negative depletion. There is also some debate on how one might estimate this given potentially different boundaries on, for example, the forest vs timber productive forest land currently being exploited economically for timber extraction.

**Germany (Federal Statistical Office (Destatis)):** In general, we decline that depletion should be recorded in the core accounts. We suggest instead that the recording of depletion could be subject of an additional table. We strongly oppose the recording of regeneration as capital formation.

**Indonesia (BPS Statistics Indonesia):** If depletion should be accounted for as a cost of production; and that the regeneration of these resources (i.e., negative depletion) should be recorded as gross fixed capital formation then the same approach should be accounted for depreciation (consumption of fixed capital) as a cost of production?

**Italy (Istat):** Depletion can be accounted for as a cost of procduction, and regeneration as GFCF, only if the contribution of Nature to productionis seen as a marginal contribution like the one provided by man-made capital. Such a treatment ignores the fundamental distinctions produced/non-produced and output/income, that are reflected in the production and income allocation accounts. It parallels the identification of the rent with a payment for a service, which requires a completely different set-up of the whole system.

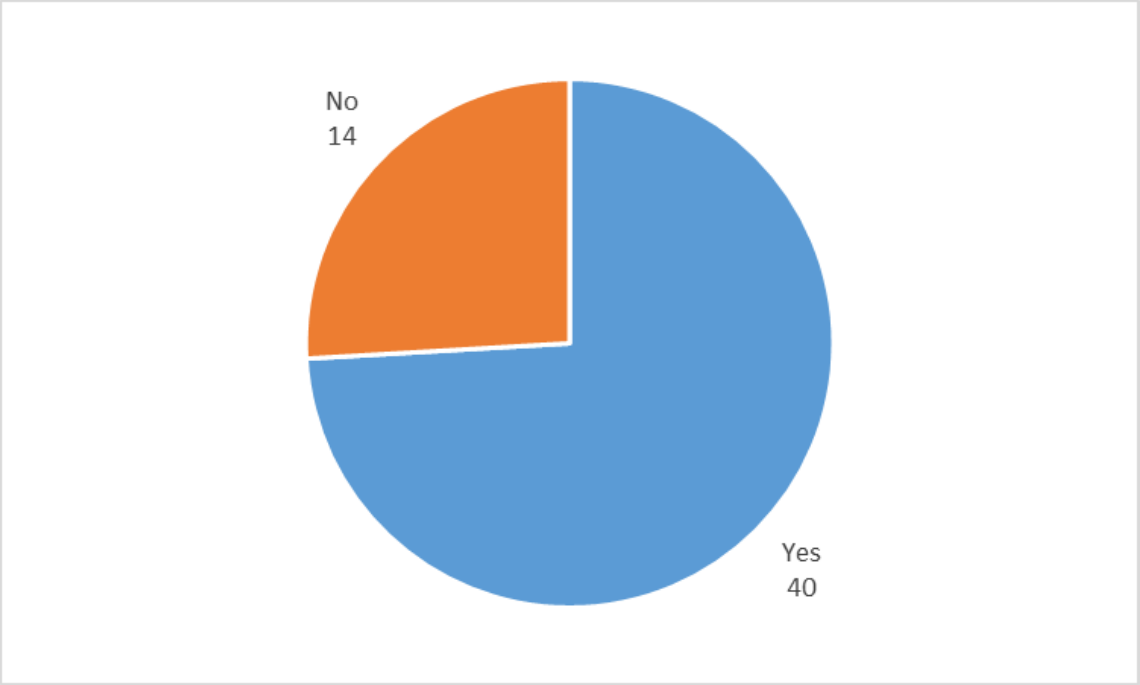
**New Zealand (Statistics New Zealand):** With regards to recording biological resources as Gross Fixed Capital Formation, we have concerns about the logic of the associated transactions. Identifying it as fixed capital, that is then depleted, only to then appear as the supply of a commodity lacks coherence.
With regards to recording the depletion of biological resources as depletion, we are concerned about the impact it will have on GVA. While we appreciate that the intent is to put more emphasis on net measures, gross measures are still important, and more meaningful for some uses.

If the split-asset approach is adopted, the treatment of depletion as a cost of production doesn't make sense, as it doesn't relate to the production function of government (as it is an internal transaction relating to the use of resources).
We support the identification of natural resources as a separate asset class of assets, but this also needs to account for differences within the class, including accounting for the differences between non-renewable and renewable.

**Norway (Statistics Norway):** Statistics Norway agrees that a correct inclusion of natural resources is of great importance, and welcomes work to include it in the SNA 2025 revision. Our response to question 15A reflects that we believe the guidance note should be further elaborated before concluding. Could the GN also discuss further why use of natural resources should be depletion of capital, or if it could be seen as use of inventories?

**Sweden (Statistics Sweden, NSI):** Including depletion and regeneration in the production account is wrong from a principal point of view. Depletion and natural growth are not regarded as costs or output since no human labour has been used to produce the resource that is depleted or the natural growth. They do not have the properties of assets used in production to process inputs. After extraction natural resources have the properties of inventories being used as inputs in the production process.

**16A. Do you agree to distinguish natural resources as a separate class of assets, as proposed on Guidance Note WS.8 (see Table A.2 in Annex 1), including the further elaboration for renewable energy resources proposed in Guidance Note WS.11 (see Table 3)?[2]**




| | TOTAL | National Accounts | Environmental-economic accounting | Government Finance Statistics | External Sector Statistics |
|---|---|---|---|---|---|
| Yes | 40 | 40 | 19 | 4 | 4 |
| No | 14 | 14 | 4 | 4 | 2 |
| No response | 4 | 4 | 3 | 1 | 1 |
| TOTAL | 58 | 58 | 23 | 8 | 6 |

**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** No

**Canada (Statistics Canada):** No

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

[2] Please note that this proposal still needs to be further elaborated for natural resources other than renewable energy resources and biological resources. A more complete proposal will be put forward as part of Guidance Note WS.12 on SEEA classifications.

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 16B. If no, please explain:

**(European Union) (Eurostat):** We do not see the merit of bringing natural resources together. We need to keep the produced asset delineation, as well as the land delineation. One can certainly add some memorandum items to group various items together that are

worth grouping. So we could have land and inventories added to have the value of forests. This could be done also for some other items as well, such as real estate values, where land and fixed asset (and possibly inventories, for construction in progress) could be added.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Burundi (ISTEEBU):** les données ne sont pas facile à obtenir

**Canada (Statistics Canada):** We would prefer further information about classes of assets being proposed as part of GN WS.12 before commenting on this proposal and confirming if it is possible to implement in the Canadian context.

**Cyprus (Statistical Service of Cyprus):** No analytical data

**France (NSI):** Given our disagreement with the case of renewable energy resources, we cannot support 16A as it is presently worded. However, we agree with the proposal to have a natural resource as a separate class.

**Germany (Federal Statistical Office (Destatis)):** We are convinced that this distinction would complicate the asset classes (produced (non-produced) natural resources would be separated from produced (non-produced) fixed assets). We also oppose the recording of renewable energy resources.

**Italy (Istat):** Really the answer is yes, but this answer does not allow comments... Alignment with the SEEA CF is a first step, but is not fully satisfactory. Alignment should consider environmental assets at large and explain first of all that the ways in which economies tell apart specific components or aspects ("chunks") of Nature, and regulate their appropriation by economic units, thus transforming them into economic assets (rights to use) does not make reference to any single coherent overall a-priori partition of Nature.
The SEEA itself presents two different partitions of environmental assets, The SEEA CF deals with one based on, and expanding, the traditional "reductionist" SNA approach, dealing with specific material and space resources (whose exchange value is observable in transactions, and which are used as stores of value by individual units). The SEEA EA takes a wholly different approach, starting from ecosystems as unitary assets, but then reducing them, for the purpose of monetary valuation, to a bundle of repeated yields of final ecosystem services. Both SEEA CF's "use and availability of natural resources" and SEEA EA's "ecosystems and their repeated yield of services" concern non-produced items, which exist prior to economic activity, whose existence is an essential pre-requisite of economic activity, and which can be transformed into assets (from the income and store of value perspectives, first, and then through the marginal theory also into productive ones) only by subdividing them into chunks and establishing property rights on them. These chunks are not established once and for all, and are not the same for different Countries, so it is difficult to establish a generally valid mutually exclusive classification.

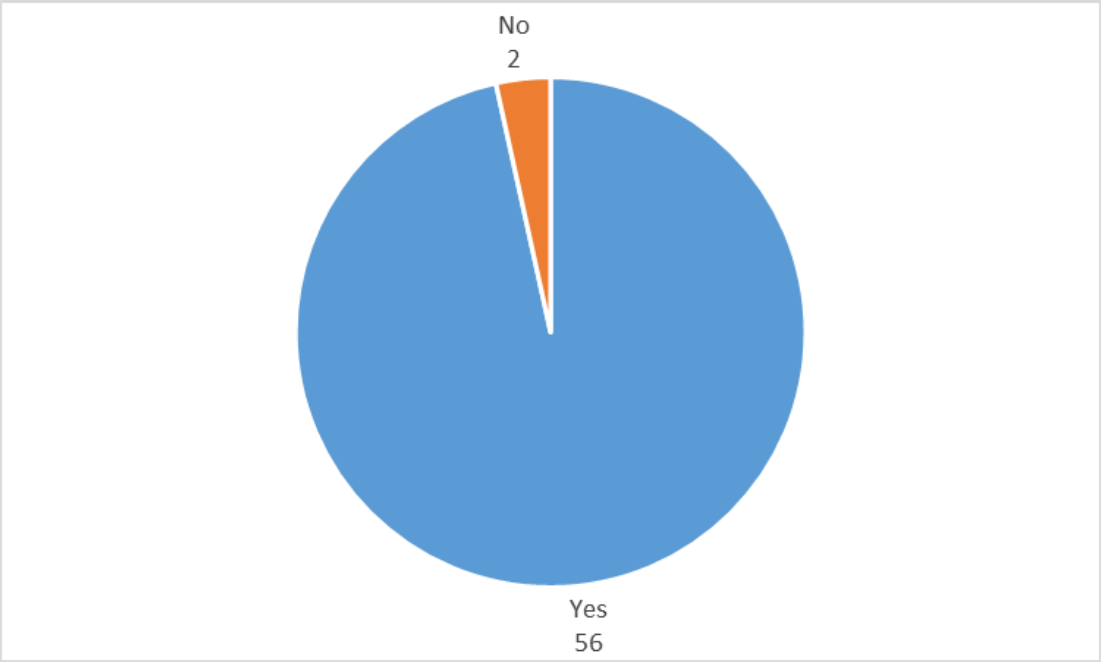
The SEEA EA partition, especially the one into ecosystem services is more and more used in economic activity and regulation, as markets emerge spontaneously or through policies. For instance, the restrictions may concern whole portions of land – including the subsoil, the ecosystems present on the surface, and the air above them – or very specific resources such as for instance metal ores in general, or the very space of an area (e.g. if nothing is allowed to the owner of a park, but levying a fee on entrance). This poses practical problems in assessing ownership and avoiding double counting, and will pose more as the subdivision of Nature into non-mutually exclusive right-to-use chunks progresses.
In synthesis, it can be said the right to use itself is the asset, not the underlying resources. It is the institutional arrangements embodied in the right to use the chuncks of Nature specified in the various situations (whether these chunks are incorporated in a product or directly into a tradable title), that make non-produced "things" valuable in exchange value terms, as they fix the conditions and price of access to them.
The SNA should possibly adopt a flexible approach with respect to enrionmental assets,starting from the concept that they come free to society and become assets only to the extent and in the way they are subdivided into chuncks subject to property rights.

**New Zealand (Statistics New Zealand):** We would like to see natural resources as a separate class of assets, as they often play a very different role in production to physical capital. It will also make their role in the economy more visible, and help with alignment with SEEA accounts. However, as per our response to question 7, we have significant concerns with renewable energy resources being considered as an asset.

**Sweden (Statistics Sweden, NSI):** In SEEA the natural resources excludes cultivated resources. Making the distinction in SNA would not promote coherence but rather add to the confusion.

**United States (US Bureau of Economic Analysis):** This should not be done because it will contaminate the concept of balance sheets in the SNA, especially if it is used to give resources a zero value until they are economically viable. A zero-value asset approach here seems to blur the lines of the SNA and SEEA, with little benefit. Moreover, the inclusion of renewables into such a category without addressing the measurement issues identified earlier makes no sense and would also contribute to confused balance sheets.

**17A. More generally, do you agree to add more clarification on the recording of natural resources in the updated SNA?**




**(European Union) (Eurostat):** No

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** Yes

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** Yes

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** Yes

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** Yes

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** Yes

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** Yes

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** Yes

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** Yes

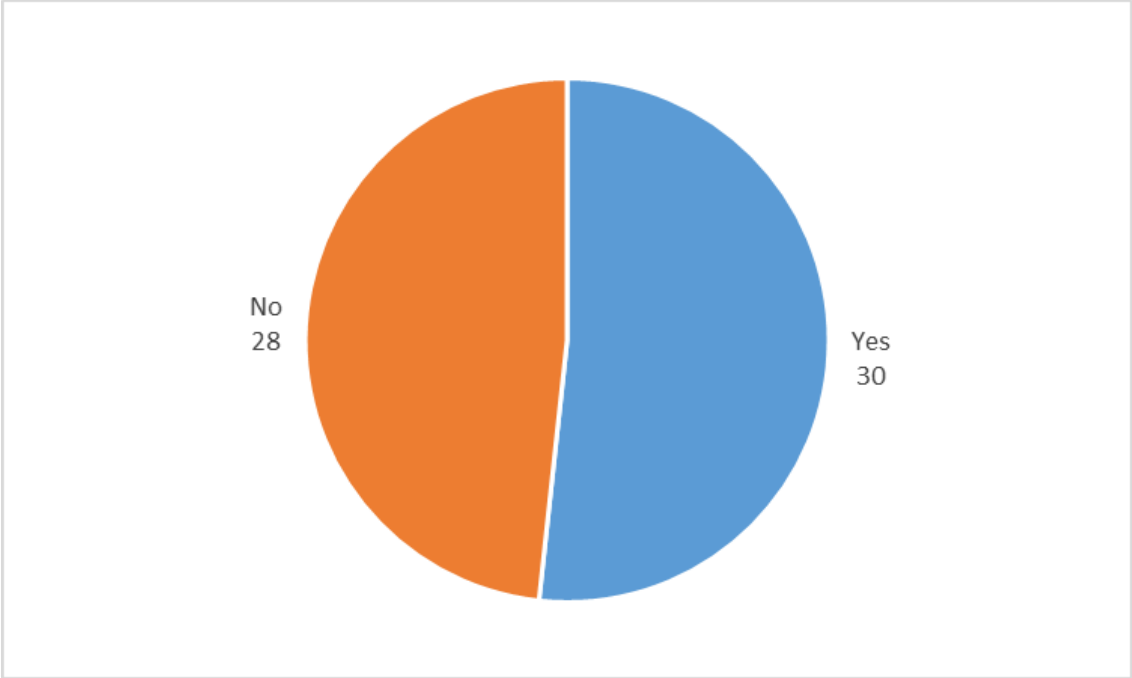
**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** Yes

### 17B. If no, please explain:

**(European Union) (Eurostat):** We answer no, because we prefer to keep the SNA succinct rather than add clarifications we do not agree on, along the lines of WS.6, 8 and 11.

### 18A. Do you already compile estimates of mineral and non-renewable energy resources?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** No

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** No

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** Yes

**Italy (Istat):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** No

**Qatar (Planning and Statistics Authority):** No

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** No

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** No

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** No

**United Kingdom (UK Statistics Authority):** No

**United States (US Bureau of Economic Analysis):** Yes

### 18B. If no, what is the main reason for not compiling these estimates yet?

**Aruba (CBS):** Not relevant

**Brasil (Instituto Brasileiro de Geografia e Estatística):** There are two main reasons: (i) absence of some quantity information and (ii) reduced workforce. However, it was also necessary to spend time working on Environmental Accounts as flow variables and not assets variables.

**Chile (Central Bank):** Lack of coordination with other govenrmental organizations.

**Costa Rica (Central Bank of Costa Rica):** In the case of Costa Rica this estimation does not apply because we do not have inventories of non-renewable energy resources.

**Finland (Statistics Filand):** These data are not obligatory in EU-countries and we do not have any resources to do calculations. In Finland the Geaological Survey of Finland in compiling these data.

**Germany (Federal Statistical Office (Destatis)):** Unfortunately, Germany is poor in mineral and non-renewable energy resources. The deposits of stone coal are depleted, the deposits of brown coal and natural gas cannot be mined for technical and societal reasons and the deposits of crude oil and uranium are insignificant. Moreover, there are severe data gaps.

**Italy (Istat):** Not very relevant for Italy

**New Zealand (Statistics New Zealand):** There are data source limitations for the stock of some minerals and for values of most, and the customer focus has been on quantity rather than value. These quantity estimates are produced by other agencies, and have yet to be compiled as SEEA accounts.

**Perú (Instituto Nacional de Estadística e Informática):** No se tiene la compilación de la valorización de los recurso mineros y energéticos no renovable. Solo se cuenta con estimación de las reservas mineras a nivel macro (en prospecto).

**Qatar (Planning and Statistics Authority):** Qatar is currently not producing estimates for the stock of assets. Estimates of mineral and non-renewable energy resources have not been attempted.

**South Africa (Statistics South Africa and the South African Reserve Bank):** Statistics South Africa has in the past compiled annual mineral accounts as part of the EEA compendium. From 2017 our work was more focussed on the testing and piloting of then SEEA EA as part of South Africa's participation in the NCAVES project from 2017 to 2021. These previous estimates could be developed more and some assistance could also be required to finalise this process.

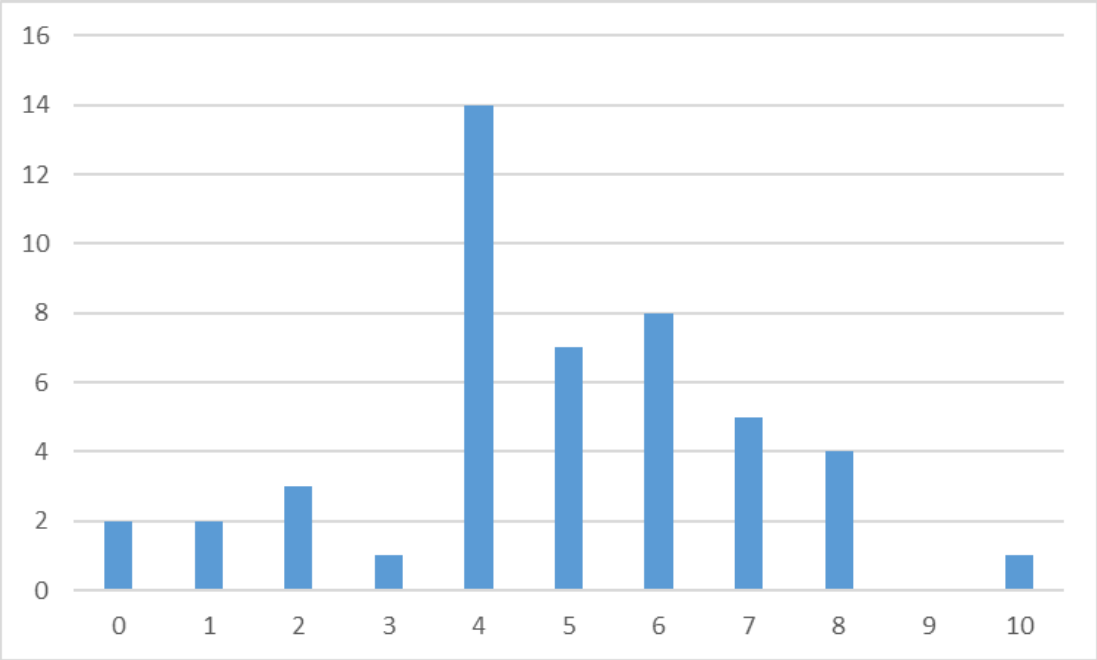
**Sudan (central Bureau of Statistics -CBS):** Because No Data and Surveys

**Sweden (Statistics Sweden, NSI):** There is no clear ownership rights. Government has allocated the right to use but not ownership. The possibility of transferring the resources between institutional units can only be done by a transfer of the unit having the right to use the resource.

**Ukraine (State Statistics Service of Ukraine):** Problems related to getting access to information and assessing indicators

**United Kingdom (UK Statistics Authority):** The U.K. Lack of resources to date though we will do this in the future.

### 19A. How do you regard the feasibility of applying the guidance as described in Guidance Note WS.10 (0-10 from not feasible at all to highly feasible)?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** 9

**Australia (Australian Bureau of Statistics):** 5. Moderately feasible

**Brasil (Instituto Brasileiro de Geografia e Estatística):** 5. Moderately feasible

**Burundi (ISTEEBU):** 5. Moderately feasible

**Canada (Statistics Canada):** 9

**Chile (Central Bank):** 6

**Costa Rica (Central Bank of Costa Rica):** 0. Not feasible at all

**Cyprus (Statistical Service of Cyprus):** 6

**Denmark (Statistics Denmark):** 7

**Georgia (National Statistics Office of Georgia):** 8

**Germany (Federal Statistical Office (Destatis)):** 2

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** 5. Moderately feasible

**Indonesia (BPS Statistics Indonesia):** 9

**Israel (Israel's Central Bureau of Statistics):** 6

**Italy (Istat):** 7

**Jordan (department of statistics):** 6

**Malaysia (Department Of Statistics Malaysia):** 6

**Mexico (INEGI):** 9

**Nepal (Central Bureau of Statistics):** 6

**Netherlands (Statistics Netherlands):** 8

**New Zealand (Statistics New Zealand):** 8

**Norway (Statistics Norway):** 5. Moderately feasible

**Perú (Instituto Nacional de Estadística e Informática):** 6

**Qatar (Planning and Statistics Authority):** 8

**Romania (National Statistical Institute):** 3

**South Africa (Statistics South Africa and the South African Reserve Bank):** 7

**South Korea (The Bank of Korea):** 5. Moderately feasible

**Sudan (central Bureau of Statistics -CBS):** 3

**Sweden (Statistics Sweden, NSI):** 3

**Thailand (Office of the national economic and social development council):** 5. Moderately feasible

**Ukraine (State Statistics Service of Ukraine):** 3

**United Kingdom (UK Statistics Authority):** 5

**United States (US Bureau of Economic Analysis):** 8

### 19B. Please explain where you see the main challenges.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It is a great challenge to build asset accounts and, especially, to discuss the valuation of these assets. We believe there is a need for greater robustness in methodologies, and a continuous construction of global and mainly local capacities. As mentioned, there is a management of environmental accounts at the National Institute of Statistics that intends to give progress to these agendas in the coming years. We do not have a historical series related to the produced assets. It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Burundi (ISTEEBU):** data availability

**Canada (Statistics Canada):** We already compile and disseminate such estimates in the Canadian Macroeconomic Statistics. The main challenges lie in the availability of data.

**Chile (Central Bank):** Coordination with governmental organizations.

**Cyprus (Statistical Service of Cyprus):** The main challenge is the data limitation from companies engaged in such activities.

**Georgia (National Statistics Office of Georgia):** Timeliness and accuracy of information.

**Germany (Federal Statistical Office (Destatis)):** Please see our answer to question 18B.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** The main challenge is to compile the estimates at a granular level given the data constraints

**Indonesia (BPS Statistics Indonesia):** choosing discount rate for different type of resources

**Israel (Israel's Central Bureau of Statistics):** In theory, we believe we will be able to apply the guidance. however, applying the Guidance Note would require relying on data and estimations from the producing companies. as we have not inquired them about said data, some unexpected issues may surface.

**Italy (Istat):** Calculation of the resource rent as a specific part of the otherwise unexplained value-added

**Jordan (department of statistics):** there are no intergraded between SNA and Environmental statistics

**Malaysia (Department Of Statistics Malaysia):** Further explanation and clarifications on the definition of mineral and energy resources as well as compilation issues should be available.

**Mexico (INEGI):** The selection of the discount rate and the volatility of commodity prices

**Netherlands (Statistics Netherlands):** You need a lot of granular data executing the Guidelines. This data is not always available. Some resources in the Netherlands are very small and some are quite large. Scarcity of capacity forces us to prioritize the large ones over the small ones. At meso level, proposals seem to be feasible

**New Zealand (Statistics New Zealand):** The main challenges are likely to be collecting all the necessary data at the deposit level, and reaching agreement on the valuation assumptions.

**Perú (Instituto Nacional de Estadística e Informática):** Conocimiento de la metodología, coordinaciones con los sectores involucrados en el tema y los recursos financieros para el desarrollo de las actividades.

**Romania (National Statistical Institute):** The identification of data sources and their quality are the main issues.

**South Africa (Statistics South Africa and the South African Reserve Bank):** The calculation of NPV is a challenge as well as the availability of the data on the value of resources at disaggregated levels

**South Korea (The Bank of Korea):** Collecting datasets about the quantity and price of renewable energy resources by type(ex) river water energy resources, tidal energy resources, wave energy resources) would take a long time and a lot of costs. Also, estimating a precise deflator of each renewable energy resource would be challenging.

**Sweden (Statistics Sweden, NSI):** Valuation in a objective manner and consistent with other assets included in the NA.

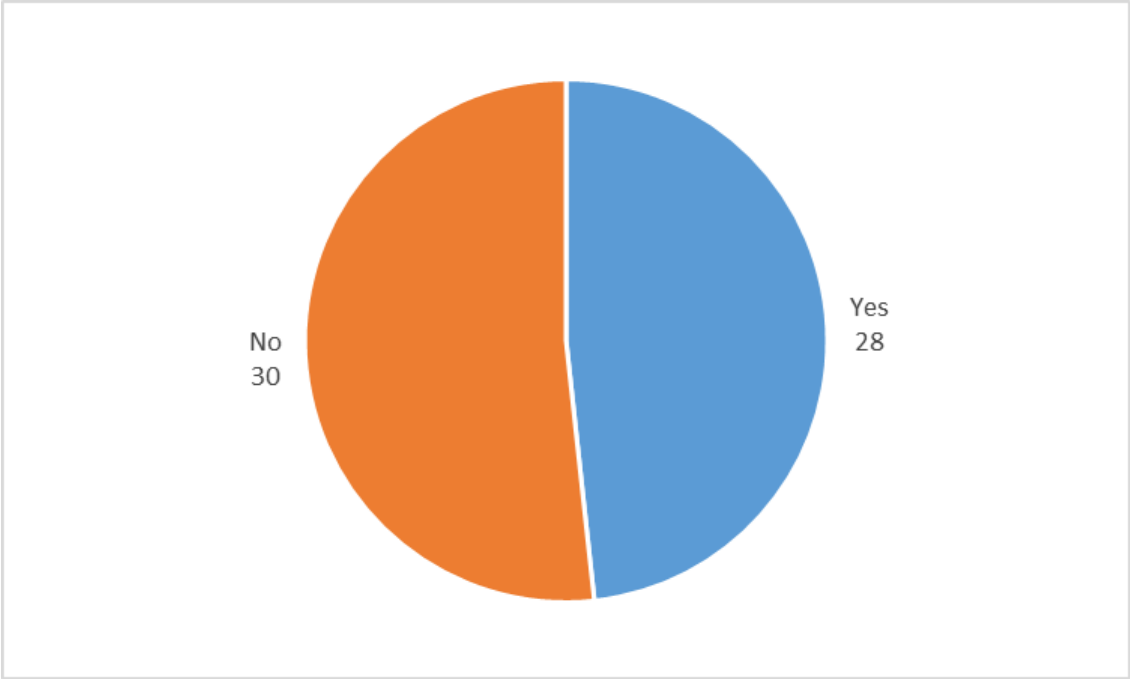
**Thailand (Office of the national economic and social development council):** There is a lack of sufficient and consistent data for calculation.

**Ukraine (State Statistics Service of Ukraine):** Problems related to getting access to information and assessing indicators

**United Kingdom (UK Statistics Authority):** Whilst the data is generally available in the UK, the U.K. sees that there are challenges around the risk of duplication of data between the SNA and the SEEA and the need for additional guidance where these changes will impact other assets already within the national accounts, such as permits and mineral exploration.

**United States (US Bureau of Economic Analysis):** Acquiring the necessity data

### 20A. Would your institution be interested in participating in an experimental estimate exercise on the valuation of mineral and non-renewable energy resources?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** No

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** No

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** No

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** No

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** Yes

**Romania (National Statistical Institute):** No

**South Africa (Statistics South Africa and the South African Reserve Bank):** Yes

**South Korea (The Bank of Korea):** No

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** No

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 20B. If yes, what technical assistance, if any, would you need?

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** To hold a workshop to train the teamwork on how to valuate the mineral and non-renewable energy resources.

**Australia (Australian Bureau of Statistics):** Interested in participating pending priorities and resources.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Financial assistance and assistance from specialists on the subject would be important to be able to process and systematize this information. We are especially interested in the valuation of oil and natural gas reserves, as we already have more systematized information on these resources from the regulatory body (production, 1P, 2P, 3P reserves, etc.).

**Burundi (ISTEEBU):** Technical assistance; La collecte et traitement des données

**Canada (Statistics Canada):** We would be pleased to participate in international discussions/working groups on this issue.

**Denmark (Statistics Denmark):** We can share previous work, however some only in Danish.

**Georgia (National Statistics Office of Georgia):** More practical trainings.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Assistance is required both at the technical side (methodological aspects) as well as on the financial side.

**Indonesia (BPS Statistics Indonesia):** experts, capacity building, communication strategy

**Jordan (department of statistics):** Examining the experiences of successful countries in applying economic accounts

**Mexico (INEGI):** We probably need technical assistance with the modeling (dynamic optimization)

**Nepal (Central Bureau of Statistics):** Technical Support on capacity building

**Perú (Instituto Nacional de Estadística e Informática):** Capacitación en la metodología de trabajo y la asistencia técnica por parte de personal con experiencia en la aplicación de dicha metodología. Cabe precisar que para la valoración de recursos minerales y energéticos no renovables se necesita de la coordinación con otras instituciones vinculadas directamente con recursos minerales y energéticos a las cuales habría que comprometer en el ejercicio de estimación experimental.

**Qatar (Planning and Statistics Authority):** Assistance on data collection and valuation methods.

**South Africa (Statistics South Africa and the South African Reserve Bank):** SARB would like technical assistance with the calculation of the NPV and advice on the collection of the data needed.

**Sudan (central Bureau of Statistics -CBS):** Technical assistance and capacity building for employees

**Thailand (Office of the national economic and social development council):** Training on the model used in calculation is required. We also need instructions for collecting and organizing information.

**United Kingdom (UK Statistics Authority):** The U.K. believes that in order to have strong estimates, it is important to have the ability to have collaboration and multilateral conversations with others. Forums to share this information would be useful. We would strongly encourage working with the UN Network of Economic Statisticians who have a strong model for delivering this engagement.

### 21. Do you have any other comments and suggestions in relation to valuation of mineral and non-renewable energy resources?

**(European Union) (Eurostat):** Given that it is not possible to elaborate when answering "yes" - on question 11: We can support the disaggregated approach, although we note that an aggregated approach is sometimes to be taken in national accounts (for instance when separating land value from fixed assets).
General comment:
Having a consolidated questionnaire on three completely different topics (based on the commonalities between some of them) increases further the difficulty of answering, in particular given that each of the key GN WS.8 and WS.11 are both very difficult to understand and a radical change to the 2008 SNA. The underlying assumptions and implications (problems) of the proposed changes are in our view not adequately examined - for example please refer to our comments on accounting examples.
We disagree strongly with splitting the subsoil assets between the owner and the extractor to reflect the resource rent capture by the extractor that the GN WS.6 authors believe to exist (which Eurostat GFS is strongly objecting to, on conceptual grounds but also due to adverse implications on GFS).

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** No

**Australia (Australian Bureau of Statistics):** '- participation in this exercise would be based on competing priorities and resources.
- Work on the underlying possible assumptions.
- Feasibility testing could focus on the level of detail that is suggested in the SNA/compilation guidance. EG while deposit level estimates would be ideal, it may be difficult (if not impossible) in resource rich countries.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It would be very useful if some practical cases were added in this paper, showing how different countries applied this methodology. Moreover, it was missed more operational and conceptual issues for each one the methodology steps. It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Burundi (ISTEEBU):** No

**Canada (Statistics Canada):** For question 12A: The case of COVID where mines were closed while the resources still have value on the international market. A mine closure due to the pandemic yields no production and hence no rent, but we'd argue that the value of the reserve should not reflect zero in that case. Guidance on these unusual circumstances would be potentially helpful in other cases. Thank you for your consideration.

**Germany (Federal Statistical Office (Destatis)):** -

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** NIL

**Indonesia (BPS Statistics Indonesia):** Discussion on valuation of resources should also include stakeholders from the fiscal community i.e. ministry of finance and/or central banks

**Jordan (department of statistics):** no

**Malaysia (Department Of Statistics Malaysia):** No

**Mexico (INEGI):** We have no additional comments

**Nepal (Central Bureau of Statistics):** No

**Netherlands (Statistics Netherlands):** More and better communication of GDP adjusted for depletion. Guidance on how to communicate this number is welcome as well. Make more clear to users that we valuate only economically viable resources (question 5). How to deal with intra-year and inter-year price volatility of prices ? Guidelines needed here.

**Perú (Instituto Nacional de Estadística e Informática):** No

**Qatar (Planning and Statistics Authority):** No.

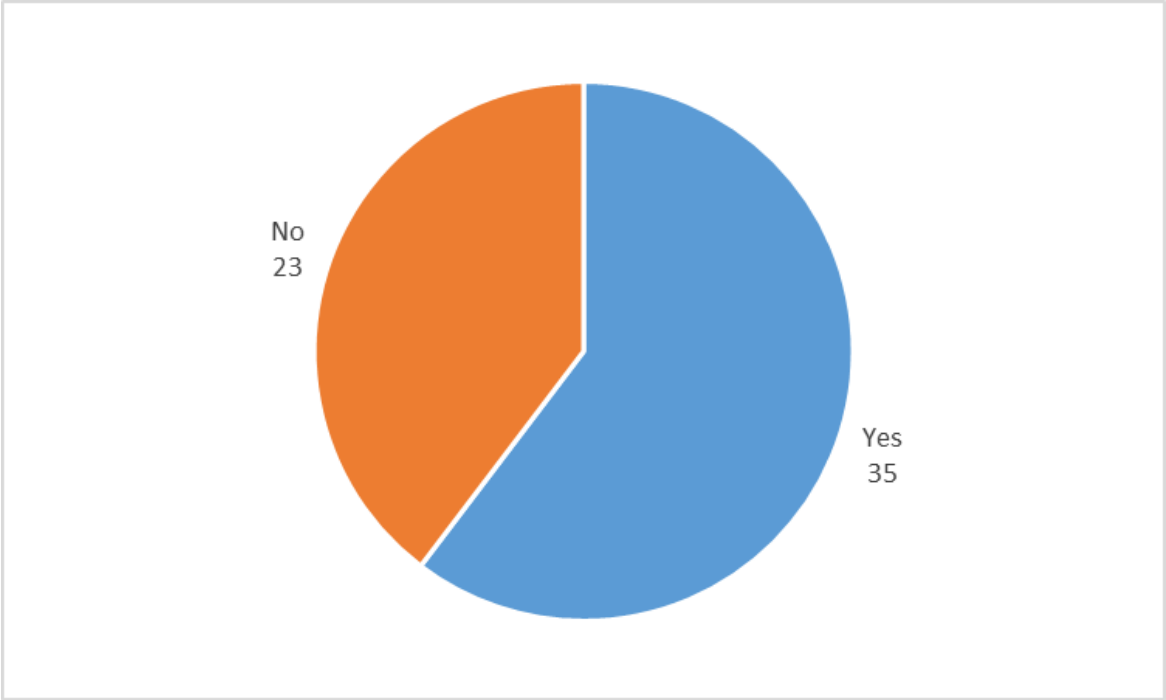
**Romania (National Statistical Institute):** No.

**South Africa (Statistics South Africa and the South African Reserve Bank):** No

**Sudan (central Bureau of Statistics -CBS):** No comment

**United States (US Bureau of Economic Analysis):** It is extremely important that guidance be given on how to conduct robustness tests and communicate the results. This is especially true with respect to the selection of the discount rates. The appendix to chapter 5 in SEEA-CF is a good place to start.

### 22A. Do you already compile estimates of biological resources, more particularly of resources yielding once-only products?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** Yes

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** Yes

**Denmark (Statistics Denmark):** Yes

**Finland (Statistics Filand):** No

**France (NSI):** Yes

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** Yes

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** Yes

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** No

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** Yes

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** No

**Romania (National Statistical Institute):** Yes

**South Africa (Statistics South Africa and the South African Reserve Bank):** No

**South Korea (The Bank of Korea):** Yes

**Sudan (central Bureau of Statistics -CBS):** No

**Sweden (Statistics Sweden, NSI):** Yes

**Thailand (Office of the national economic and social development council):** No

**Ukraine (State Statistics Service of Ukraine):** Yes

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 22B. If no, what is the main reason for not compiling these estimates yet?

**Aruba (CBS):** Not relevant

**Brasil (Instituto Brasileiro de Geografia e Estatística):** The answer was “no” because we record biological resources only as production. We are still advancing in the preparation and development of asset accounts. As it is a very complex topic, we would need to have more data available and more explanations about NPV to do it. In any case, the management of environmental accounts at the National Institute of Statistics, although recent, already exists, and it is planned to develop these types of accounts.

**Burundi (ISTEEBU):** data not available

**Canada (Statistics Canada):** As discussed in previous questions, these are essentially related to data limitations. We are only compiling and disseminating estimates for timber monetary account at this time.

**Chile (Central Bank):** Lack of information.

**Israel (Israel's Central Bureau of Statistics):** Cultivated biological resources are compiled based on their book value, with adjustments to bring them to current value. Otherwise, the topic is relatively immaterial in Israel's economy. Furthermore, there isn't sufficient and reliable data to compile said estimates.

**Nepal (Central Bureau of Statistics):** non-cultivated biological resources are not accounted till now.

**New Zealand (Statistics New Zealand):** While there is data and a methodology for estimates of biological resources to the extent that they are needed for our production account and balance sheet estimates, these aren't published as separate series. Customers have in the past been more interested in quantity estimates, which are available through other sources. Estimates for value of some biological resources have also been infrequently produced on a SEEA basis.

**Qatar (Planning and Statistics Authority):** Data is not collected and methods have not been developed.

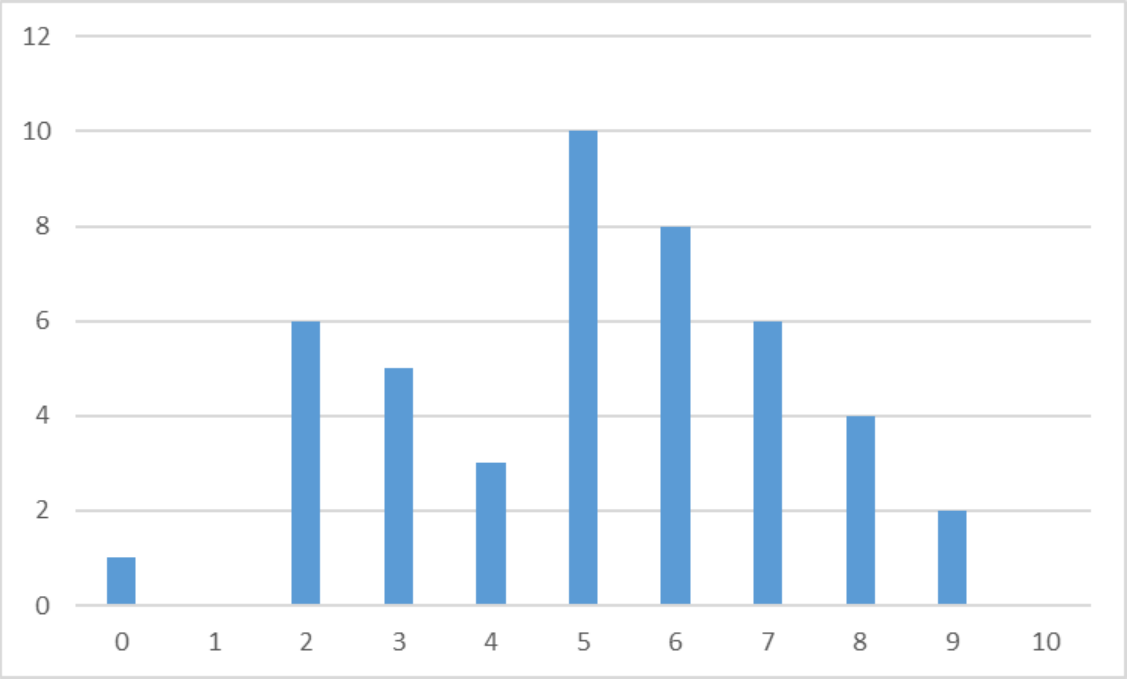
**South Africa (Statistics South Africa and the South African Reserve Bank):** Compiled from the National Accounts perspective as part of the GFCF, but NCA (SEEA CF and SEEA EA) currently only compiled in physical terms - monetary valuation is part of future expansion/improvement.

**Sudan (central Bureau of Statistics -CBS):** There are no recent surveys and data

**Thailand (Office of the national economic and social development council):** We still don't have enough data that is coverage all of the biological resource which require for the SNA.

**United States (US Bureau of Economic Analysis):** Data and staff resources

### 23A. How do you regard the feasibility of applying the guidance as described in Guidance Note WS.8 (0-10 from not feasible at all to highly feasible)?]




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** 9

**Australia (Australian Bureau of Statistics):** 2

**Brasil (Instituto Brasileiro de Geografia e Estatística):** 5. Moderately feasible

**Burundi (ISTEEBU):** 4

**Canada (Statistics Canada):** 5. Moderately feasible

**Chile (Central Bank):** 4

**Costa Rica (Central Bank of Costa Rica):** 3

**Cyprus (Statistical Service of Cyprus):** 6

**Denmark (Statistics Denmark):** 6

**Georgia (National Statistics Office of Georgia):** 8

**Germany (Federal Statistical Office (Destatis)):** 4

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** 5. Moderately feasible

**Indonesia (BPS Statistics Indonesia):** 7

**Israel (Israel's Central Bureau of Statistics):** 2

**Jordan (department of statistics):** 6

**Malaysia (Department Of Statistics Malaysia):** 7

**Mexico (INEGI):** 9

**Nepal (Central Bureau of Statistics):** 5. Moderately feasible

**Netherlands (Statistics Netherlands):** 6

**New Zealand (Statistics New Zealand):** 4

**Norway (Statistics Norway):** 6

**Perú (Instituto Nacional de Estadística e Informática):** 6

**Qatar (Planning and Statistics Authority):** 7

**Romania (National Statistical Institute):** 2

**South Africa (Statistics South Africa and the South African Reserve Bank):** 7

**South Korea (The Bank of Korea):** 3

**Sudan (central Bureau of Statistics -CBS):** 3

**Sweden (Statistics Sweden, NSI):** 6

**Thailand (Office of the national economic and social development council):** 3

**Ukraine (State Statistics Service of Ukraine):** 3

**United Kingdom (UK Statistics Authority):** 5

**United States (US Bureau of Economic Analysis):** 2

### 23B. Please explain where you see the main challenges.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It is a great challenge to build asset accounts and, especially, to discuss the valuation of these assets. We believe there is a need for greater robustness in methodologies, and a continuous construction of global and mainly local capacities. It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Burundi (ISTEEBU):** data sources

**Canada (Statistics Canada):** As discussed in previous questions (see comment for question 14-B in particular), these are essentially related to data limitations (especially for resources other than timber) but we also have concerns about the elimination of the delineation of cultivated (produced assets) and non-cultivated (non-produced) biological resources. For example, we consider timber and fisheries as non-cultivated biological resources (only the goods produced by catching the fish/felling the trees enter the SNA production boundary, depletion/growth treated as OCVA and transfers related to leasing are recorded as rent). We believe that the delineation between cultivated and non-cultivated assets should remain in the updated SNA manual.

**Cyprus (Statistical Service of Cyprus):** Limited data availability

**Denmark (Statistics Denmark):** Difficult to include. Based on assumptions estimates.

**Georgia (National Statistics Office of Georgia):** Timeliness and accuracy of information.

**Germany (Federal Statistical Office (Destatis)):** It's highly dependent on the biological resource considered: For cultivated forests and timber we enjoy an established forest accounting. We also have information stemming from our agricultural accounting. But for resources currently not relevant to agriculture and forestry data are merely missing.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** The main challenge is to compile the estimates at a granular level given the data constraints.

**Indonesia (BPS Statistics Indonesia):** Data on stock of biological resources, more particularly of resources yielding once-only products, its addition to stocks i.e. natural growth/regeneration, non-market products, abundance types of biological resources, etc.

**Jordan (department of statistics):** some of main challenges in this stage we need to the help for evaluation work from the technical assistance

**Malaysia (Department Of Statistics Malaysia):** The related agencies should be able to provide the latest data available.

**Mexico (INEGI):** Migratory biological resources can be very difficult to measure due to lack of information, as well as measuring the depletion of natural resources as a cost of production.

**Nepal (Central Bureau of Statistics):** Data collection on non-cultivated biological resources and assessing its value

**Netherlands (Statistics Netherlands):** Granularity of the data needed to compile reliable figures. We do not always have these details. Time consuming, probably small numbers so low priority. A lot of different crops have different harvest times. How to value these in a proper way?

**New Zealand (Statistics New Zealand):** There are data limitations for biological resources for which private property rights haven't been established, such as open water fisheries.

**Perú (Instituto Nacional de Estadística e Informática):** Conocimiento de la metodología, coordinaciones con los sectores involucrados en el tema y los recursos financieros para el desarrollo de las actividades.

**Qatar (Planning and Statistics Authority):** Data collection and valuation method.

**Romania (National Statistical Institute):** Lack of data information in the details required.

**South Africa (Statistics South Africa and the South African Reserve Bank):** Data availability

**South Korea (The Bank of Korea):** Collecting data about the quantity and price of biological resources, especially migrating biological resources yielding once-only products, would be an arduous task before compiling a production account for biological resources.

**Sweden (Statistics Sweden, NSI):** Estimation and valuation of work in progress.

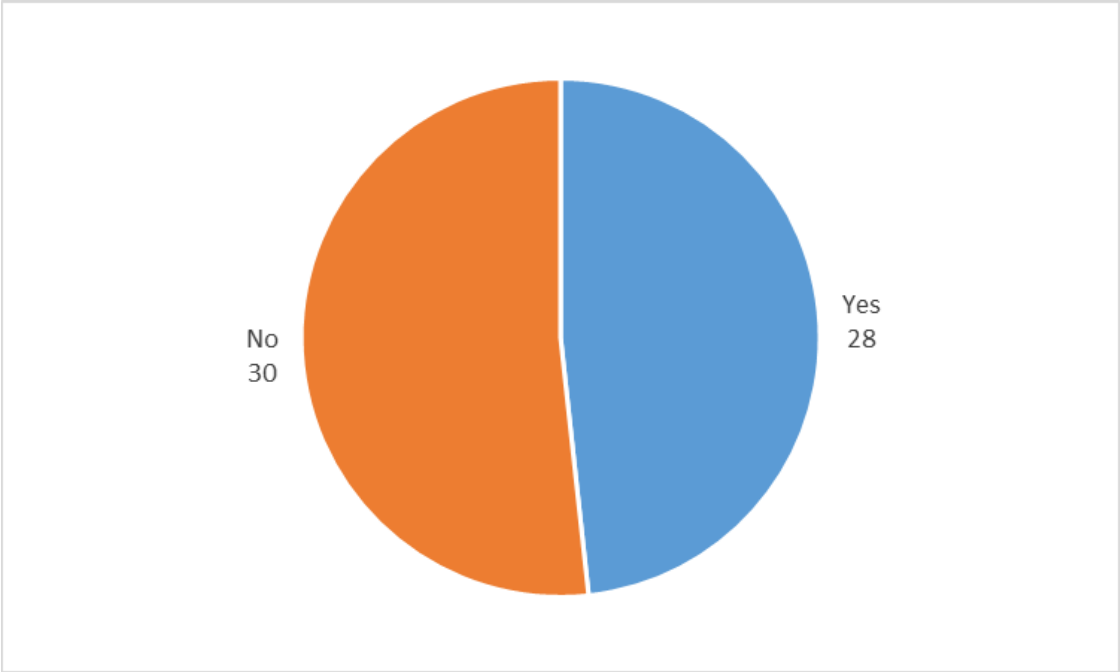
**Thailand (Office of the national economic and social development council):** It is a new matter that require time for further study, both the theory and method.

**Ukraine (State Statistics Service of Ukraine):** Problems related to getting access to information and assessing indicators

**United Kingdom (UK Statistics Authority):** Whilst the data is generally available in the UK, the U.K. sees that there are challenges around the risk of duplication of data between the SNA and the SEEA and the need for additional guidance where these changes will impact other assets already within the national accounts, such as permits and cultivated assets.

**United States (US Bureau of Economic Analysis):** Data and staff resources

### 24A. Would your institution be interested in participating in an experimental estimate exercise on the recording and measurement of biological resources?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Yes

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** No

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** No

**Finland (Statistics Filand):** No

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** No

**Jordan (department of statistics):** No

**Malaysia (Department Of Statistics Malaysia):** No

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** No

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** No

**Romania (National Statistical Institute):** No

**South Africa (Statistics South Africa and the South African Reserve Bank):** No

**South Korea (The Bank of Korea):** No

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** No

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 24B. If yes, what technical assistance, if any, would you need?

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** To hold a workshop to train the teamwork on how to record and measure the biological resources.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** Financial assistance and assistance from specialists on the subject would be important to be able to process and systematize this information. We are especially interested in methodologies for recording and measuring natural growth.

**Burundi (ISTEEBU):** Technical assistance; la collecte et traitement des données

**Canada (Statistics Canada):** We would be pleased to participate in international discussions/working groups on this issue.

**Georgia (National Statistics Office of Georgia):** More practical trainings.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Assistance is required both at the technical side (methodological aspects) as well as on the financial side

**Indonesia (BPS Statistics Indonesia):** experts, capacity building, communication strategy

**Mexico (INEGI):** At first glance it does not seem that technical assistance is required

**Nepal (Central Bureau of Statistics):** Technical capacity building

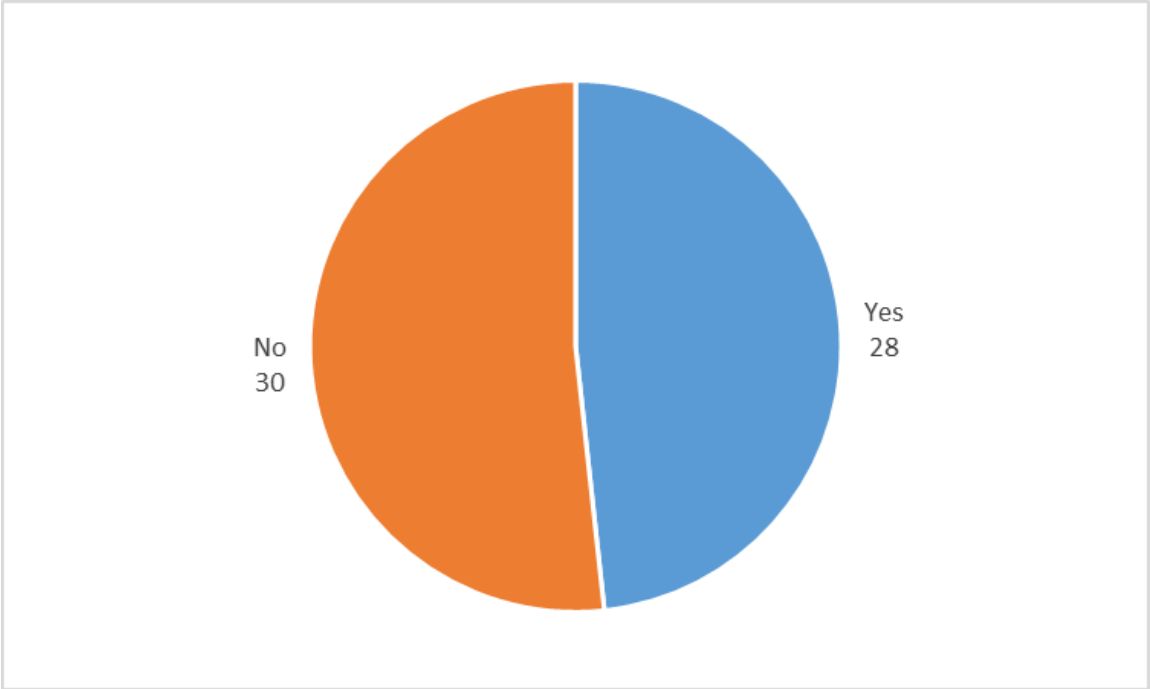
**Perú (Instituto Nacional de Estadística e Informática):** Capacitación en la metodología de trabajo y la asistencia técnica por parte de personal con experiencia en la aplicación de dicha metodología. Cabe precisar que para la valoración de recursos biológicos se necesita de la coordinación con otras instituciones vinculadas directamente con estos recursos.

**Sudan (central Bureau of Statistics -CBS):** Technical training for knowledge of assembly and calculation of indicators

**Thailand (Office of the national economic and social development council):** Training on the theory and the data collecting is required.

**United Kingdom (UK Statistics Authority):** The U.K. believes that in order to have strong estimates, it is important to have the ability to have collaboration and multilateral conversations with others. Forums to share this information would be useful. We would strongly encourage working with the UN Network of Economic Statisticians who have a strong model for delivering this engagement.

### 25A. Would your institution be interested in participating in an experimental estimate exercise for renewable energy resources?




**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** Yes

**Aruba (CBS):** No

**Australia (Australian Bureau of Statistics):** No

**Brasil (Instituto Brasileiro de Geografia e Estatística):** No

**Burundi (ISTEEBU):** Yes

**Canada (Statistics Canada):** Yes

**Chile (Central Bank):** No

**Costa Rica (Central Bank of Costa Rica):** Yes

**Cyprus (Statistical Service of Cyprus):** No

**Denmark (Statistics Denmark):** No

**Finland (Statistics Filand):** No

**France (NSI):** No

**Georgia (National Statistics Office of Georgia):** Yes

**Germany (Federal Statistical Office (Destatis)):** No

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Yes

**Indonesia (BPS Statistics Indonesia):** Yes

**Israel (Israel's Central Bureau of Statistics):** No

**Jordan (department of statistics):** Yes

**Malaysia (Department Of Statistics Malaysia):** No

**Mexico (INEGI):** Yes

**Nepal (Central Bureau of Statistics):** Yes

**Netherlands (Statistics Netherlands):** Yes

**New Zealand (Statistics New Zealand):** No

**Norway (Statistics Norway):** No

**Perú (Instituto Nacional de Estadística e Informática):** Yes

**Qatar (Planning and Statistics Authority):** No

**Romania (National Statistical Institute):** No

**South Korea (The Bank of Korea):** No

**Sudan (central Bureau of Statistics -CBS):** Yes

**Sweden (Statistics Sweden, NSI):** No

**Thailand (Office of the national economic and social development council):** Yes

**Ukraine (State Statistics Service of Ukraine):** No

**United Kingdom (UK Statistics Authority):** Yes

**United States (US Bureau of Economic Analysis):** No

### 25B. If yes, what technical assistance, if any, would you need?

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** To hold a workshop to train the teamwork on how to estimate the renewable energy resources.

**Burundi (ISTEEBU):** la collecte et traitement des données

**Canada (Statistics Canada):** We would be pleased to participate in international discussions/working groups on this issue.

**Costa Rica (Central Bank of Costa Rica):** Valuation tecnhiques

**Georgia (National Statistics Office of Georgia):** More practical trainings.

**India (SOCIAL STATISTICS DIVISION,NSO,MOSPI):** Assistance is required both at the technical side (methodological aspects) as well as on the financial side

**Indonesia (BPS Statistics Indonesia):** experts, capacity building, communication strategy

**Jordan (department of statistics):** evaluation work in the scope of the energy accounts

**Mexico (INEGI):** We first need to assess whether we have the data required to carry out the measurements.

**Nepal (Central Bureau of Statistics):** Technical capacity building

**Netherlands (Statistics Netherlands):** Understanding and quantifying the effect on the price of land. Make clear why renewable energy resources above oceans should be treated in a different way.

**Perú (Instituto Nacional de Estadística e Informática):** Se requiere asistencia técnica y recursos financieros.

**Sudan (central Bureau of Statistics -CBS):** Technical training for knowledge of assembly and calculation of indicators

**Thailand (Office of the national economic and social development council):** Training on this particular topic is required.

**United Kingdom (UK Statistics Authority):** The U.K. believes that in order to have strong estimates, it is important to have the ability to have collaboration and multilateral conversations with others. Forums to share this information would be useful. We would strongly encourage working with the UN Network of Economic Statisticians who have a strong model for delivering this engagement.

### 26. Do you have any other comments and suggestions in relation to the recording and measurement of renewable energy resources?

**Arab Republic of Egypt (Central Agency for Public Mobilization and Statistics):** NO

**Australia (Australian Bureau of Statistics):** We believe that there should be a very explicit distinction between the differing roles of the SNA and SEEA, where the SNA covers monetary flows and the SEEA physical flows. We acknowledge however that there are definitions and some guidance which could come together between the two manuals.

We believe a better conceptual definition of renewable resources would be welcome to ensure there is no double counting. Specifically, understanding what the renewable energy resource represents and whether any renewable energy resources are currently captured on the balance sheet (eg land).
We also note that guidance on the sensitivity of estimates to NPV assumptions would be welcome.
We also note that there are a number of proposals made to expand guidance and define compilation issues, we believe that much of this would be best suited for compilation guides rather than the SNA.
In relation to question 9 relating to the inclusion of further clarifications on the calculation of Net Present Values, amongst others by including text in the SNA in line with Chapter 5 in the SEEA 2012, we disagree that the guidance should be prescriptive and think that there should be some flexibility on the assumptions made and future extraction rates (not just historical rates). Assumptions should be clearly articulated. We believe there should be recommendations on how best to calculate the NPVs but also the freedom to make sound judgements.
In relation to question 15, we agree in principle, but it may be difficult to assign in practice. This change would go against the definition of a transaction in the SNA, though could be good in principle from the SEEA perspective. It is agreed that these transactions would be similar to depreciation, where an exception to the definition of a transaction is made. Similar exceptions would need to be made in the case of depletion and guidance would need to be provided for this.

**Brasil (Instituto Brasileiro de Geografia e Estatística):** It would be very useful if some practical cases were added in this paper, showing how different countries applied this methodology. Moreover, it was missed more operational and conceptual issues for each one the methodology steps. It would be important to first develop such methodologies more comprehensively within the scope of SEEA-CF and, only after we have solid practical results, introduce them into the SNA.

**Finland (Statistics Filand):** Does the recommended renewable energy source classification include biomass (for examble wood/timber) as a energy source?

**Nepal (Central Bureau of Statistics):** Need assistance for the development of energy accounts and water accounts

**Netherlands (Statistics Netherlands):** Make more clear how to deal with subsidies and why.

**Romania (National Statistical Institute):** For the time being, this is very difficult to implement in Romania because of lack of data and information requred for such estimates.

**United Kingdom (UK Statistics Authority):** The U.K. has expressed interest in participating and providing estimates, however the U.K. identifies the overall risk of duplication between the SNA and the SEEA. Yet, the U.K. recognises the importance of the consultations and wants to respond positively. We have found this survey challenging as to provide detailed comments we have had to say 'no' to access a text box. Having the opportunity to express comments alongside the yes/no questions would enable this significantly.

**United States (US Bureau of Economic Analysis):** The WS11 proposal appears to confuse the production process with the asset, or does not do enough to bridge the traditional view of assets in the SNA and the new view proposed. For example, one can have a mineral mine as an asset. What is the comparable concept for solar/radiant energy? If it is simply part of the land, the WS11 needs to provide more specific guidance on how to decouple the value of the solar energy. The guidance should be similar to how the SNA approaches other assets embodied in land on the balance sheet. If solar/radiant energy is like a structure or subsoil asset that needs to be decoupled with the residual land value, WS11 needs to do more to bridge its proposed guidance with existing approaches in the SNA more explicitly. Here are relevant SNA passages that WS11 should do more to bridge these approaches, both conceptually and practically (from a measurement standpoint) with traditional concepts of land-related assets in the SNA:

1. Chapter 10 talks about how mineral and energy rights are usually separable from land (again, emphasis of mine is in bold):

1. "10.179 Mineral and energy resources consist of mineral and energy reserves located on or below the earth's surface that are economically exploitable, given current technology and relative prices. Ownership rights to the mineral and energy resources are usually separable from those to the land itself. Mineral and energy resources consist of known reserves of coal, oil, gas or other fuels and metallic ores, and non-metallic minerals, etc., that are located below or on the earth's surface, including reserves under the sea. The transactions recorded in the capital account refer only to those mineral and energy resources over which ownership rights have been established. In most cases, mineral and energy resources may be owned separately from land below which they are located, but in other cases the law may stipulate that the ownership of the mineral and energy resources is inseparably linked to that of the land.
2. 10.180 The transactions in mineral and energy resources recorded in the capital account refer to acquisitions or disposals of deposits of mineral and energy resources in which the ownership of such assets passes from one institutional unit to another. Reductions in the value of known reserves of mineral and energy resources resulting from their depletion as a result of extracting the assets for purposes of production are not recorded in the capital account but in the other changes in the volume of assets account.

2. Chapter 7 describes how rent and royalties are separable from land and subsoil resources (and, by extension, it could also be renewables).

1. "7.154 Rent is the income receivable by the owner of a natural resource (the lessor or landlord) for putting the natural resource at the disposal of another institutional unit (a lessee or tenant) for use of the natural resource in production. Two particular cases of resource rent are considered, rent on land and rent on subsoil resources. Resource rent on other natural resources follows the pattern laid out by these two instances.

2. 7.160 The owners of the assets, whether private or government units, may grant leases to other institutional units permitting them to extract such deposits over a specified period of time in return for the payment of rent. These payments are often described as royalties, but they are essentially rent that accrues to owners of the assets in return for putting them at the disposal of other institutional units for specified periods of time and are treated as such in the SNA. The rent may take the form of periodic payments of fixed amounts, irrespective of the rate of extraction or, more commonly, they may be a function of the quantity or volume of the asset extracted. Enterprises engaged in exploration may make payments to the owners of surface land in exchange for the right to make test drillings or investigate by other means the existence and location of subsoil resources. Such payments are also to be treated as rent even though no extraction is taking place.

Decoupling assets from land value is inherently difficult and requires good data. There is a deep literature on decoupling land and structure values for residential properties, for example. WS11 makes it seem like there is a settled science here for decoupling solar asset value and land value, because if we can do it for structures it should be straightforward to do it for renewable assets. This is not a valid assumption, or it at least needs further explanation. The reality is that there is far less data and far less literature testing out methods for this particular application, which is why it is important to have very specific guidance and worked national examples to draw on. Cross-national comparisons will be nearly impossible of countries use vastly different approaches, given the lack of clarity on how to do this.

Regarding valuing the asset, according to Appendix 6 the value of solar energy at a point in time is given by the before-tax accounting profit for the solar power producer and includes the return to risk for the producer. Even if the cost of capital included the risk compensation, using such a profit measured does not measure value of the solar energy. Compare to the case of oil in which the valuation includes price of a barrel of oil, the quantity of oil and the extraction costs—note it is not about the consequent electricity produced.

The broad argument in WS11 seems to be that because renewables are topical and important, conceptual problems such as units of measurement and the attending price, double counting, and establishing ownership should be minimized or overlooked, leaving vague/incomplete guidance to national statistical offices on how to approach measuring these assets.

All this is not to say that the importance of renewable resources used in the production of electricity should be absent from national accounts. Perhaps an account showing the production of electricity by different means; a list of "of which" items that shows the importance of the various methods of producing electricity. The importance of renewables does not provide a free pass to vague guidance and incomplete conceptual consistency with the SNA. On the contrary, the importance of renewables for 21st century economies should

demand a very careful, consistent approach that is both consistent with traditional SNA methods and provides practical, worked examples of its implementation