



Outcomes global consultation for

- **WS.8 Accounting for Biological Resources**
- **WS.10 Valuation of Mineral and Energy Resources**
- **WS.11 Renewable energy resources**

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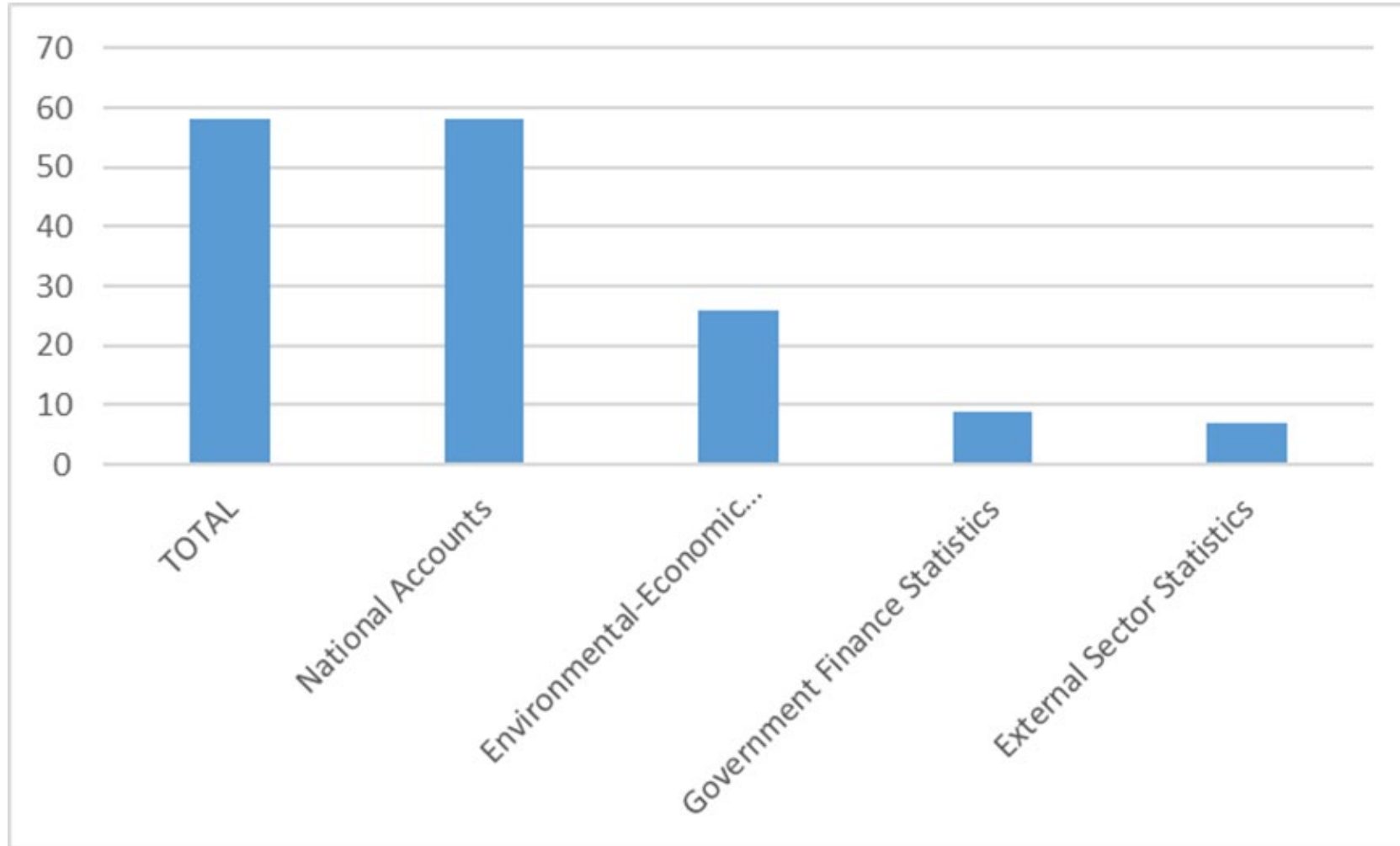
- Overview of responses
- Focus on two fundamental issues
- Other issues for discussion



Overview of responses



Overview of responses





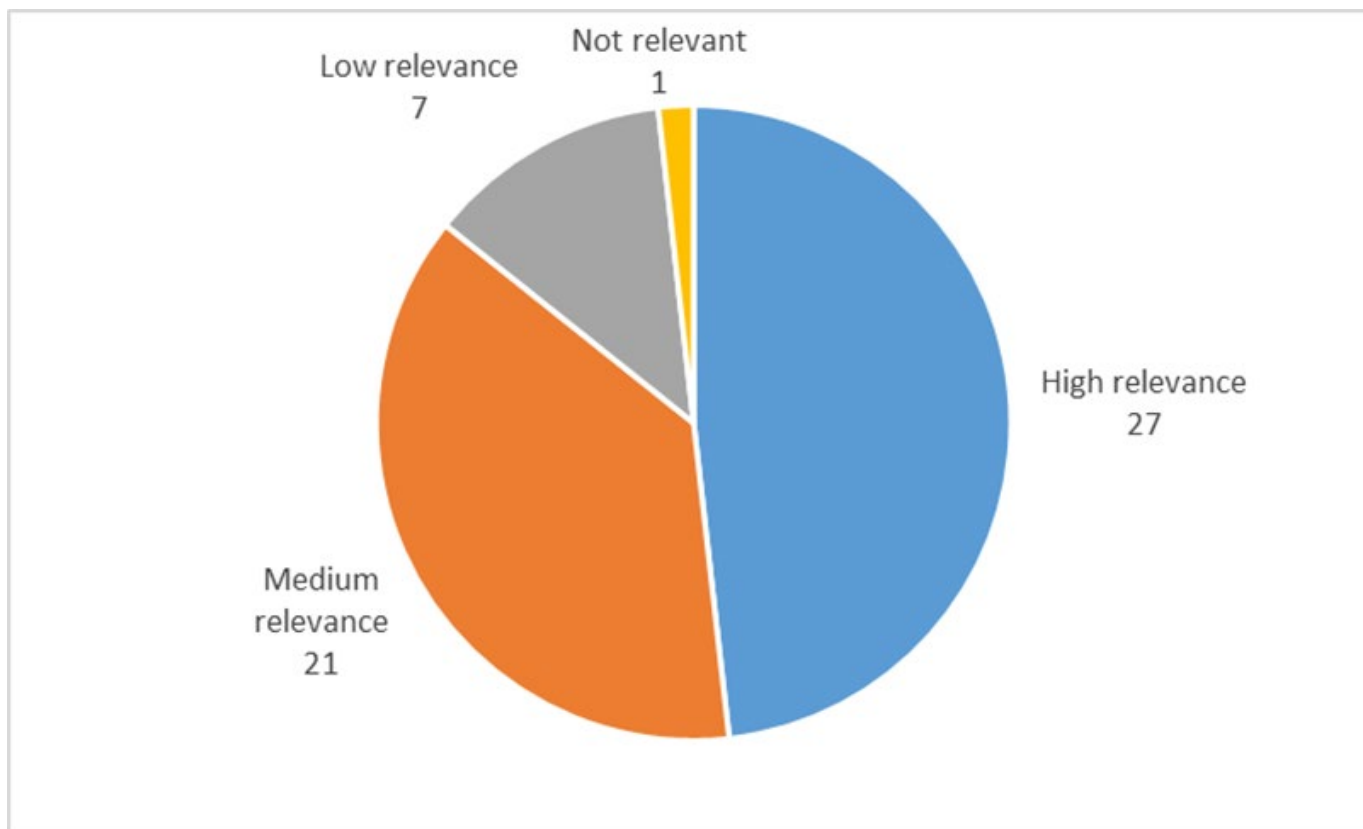
How relevant is the topic of accounting for biological resources for your country?

High:

- Significant amount and variety of biological resources in our country
- Immense natural capital that generates biological resources that are of great importance from a fiscal, economic, social and environmental point of view
- Good stewardship of these resources and policies focused on sustainable development depend directly on good assessment and monitoring of the value of these resources

Low:

- Our country does not have mineral and non-renewable energy resources





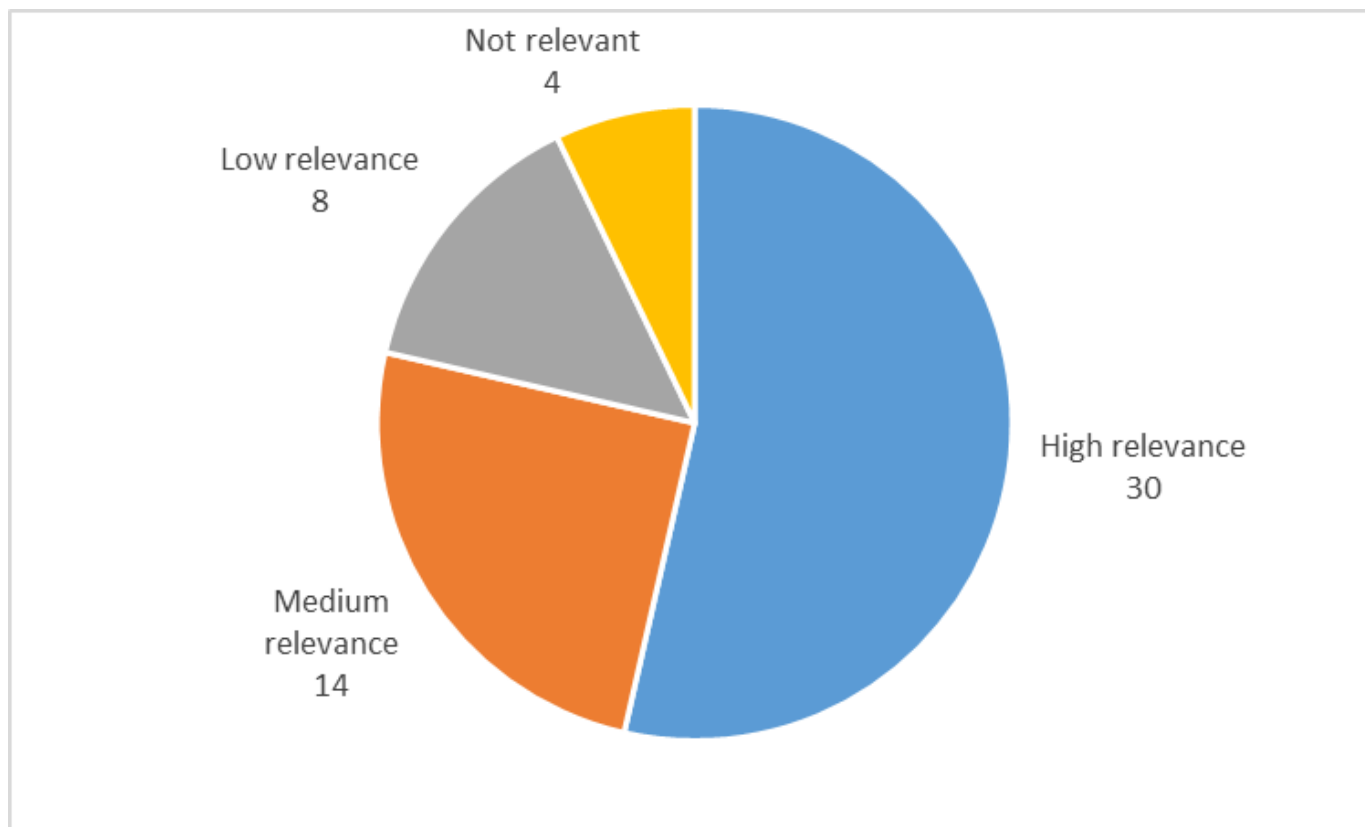
How relevant is the topic of valuation of mineral and non-renewable energy resources for your country?

High:

- Energy resources represent an important share of our economy
- It is important to measure how much economic growth is dependent on non-renewable resources
- As mineral and non-renewable energy resources are finite resources, it is important to put the appropriate value to them
- This is needed to provide better insights into the ongoing energy transition

Low:

- Our country does not have mineral and non-renewable energy resources





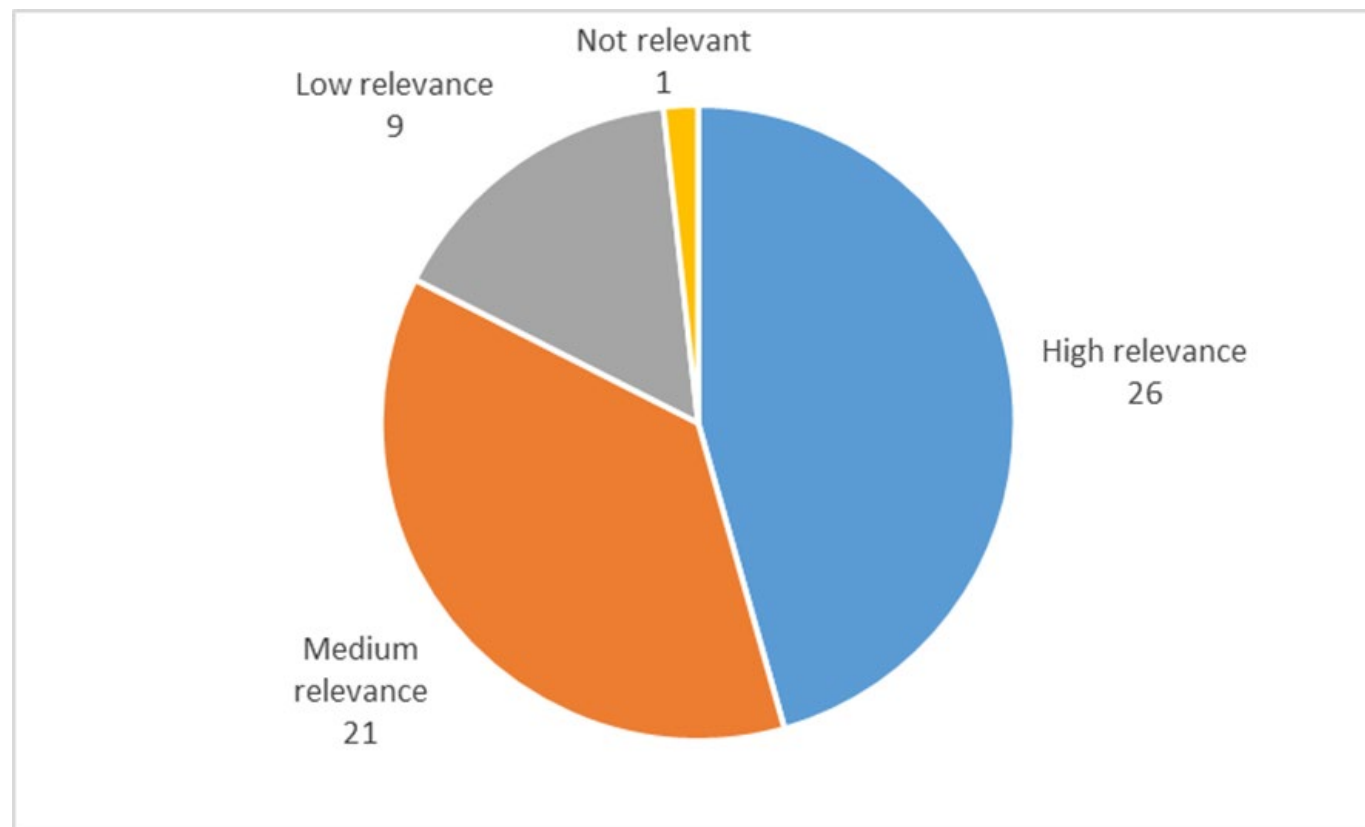
How relevant is the topic of accounting for renewable energy resources for your country?

High:

- The use of renewable energy resources is growing
- It is important to analyse how much economic growth is dependent on renewable resources
- Our country is largely reliant on renewable energy resources for electricity generation
- This is needed to provide better insights into the ongoing energy transition

Low:

- Main user demand is on renewable energy output, not stocks
- Data is lacking

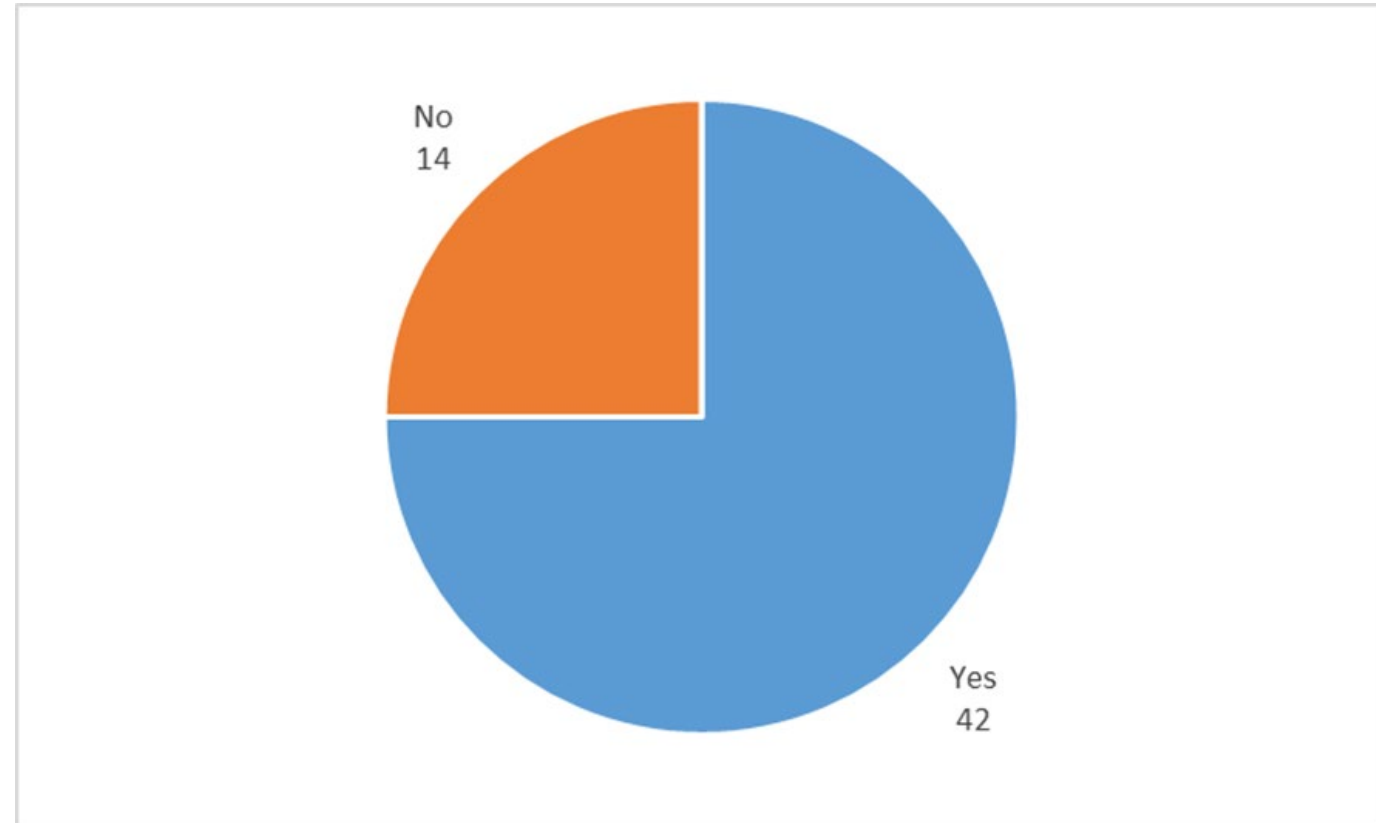




Do you agree to rely on three resources classes for mineral and non-renewable energy resources?

No:

- *'Commercially recoverable resources'* and *'potentially commercially recoverable resources'* seem sensible, but *'non-commercial and other known deposits'* does not meet the asset boundary
- The last category does not have current economic value
- Concerns how the various categories will/should be valued
- Concerns about available data sources and methodologies to compile the results

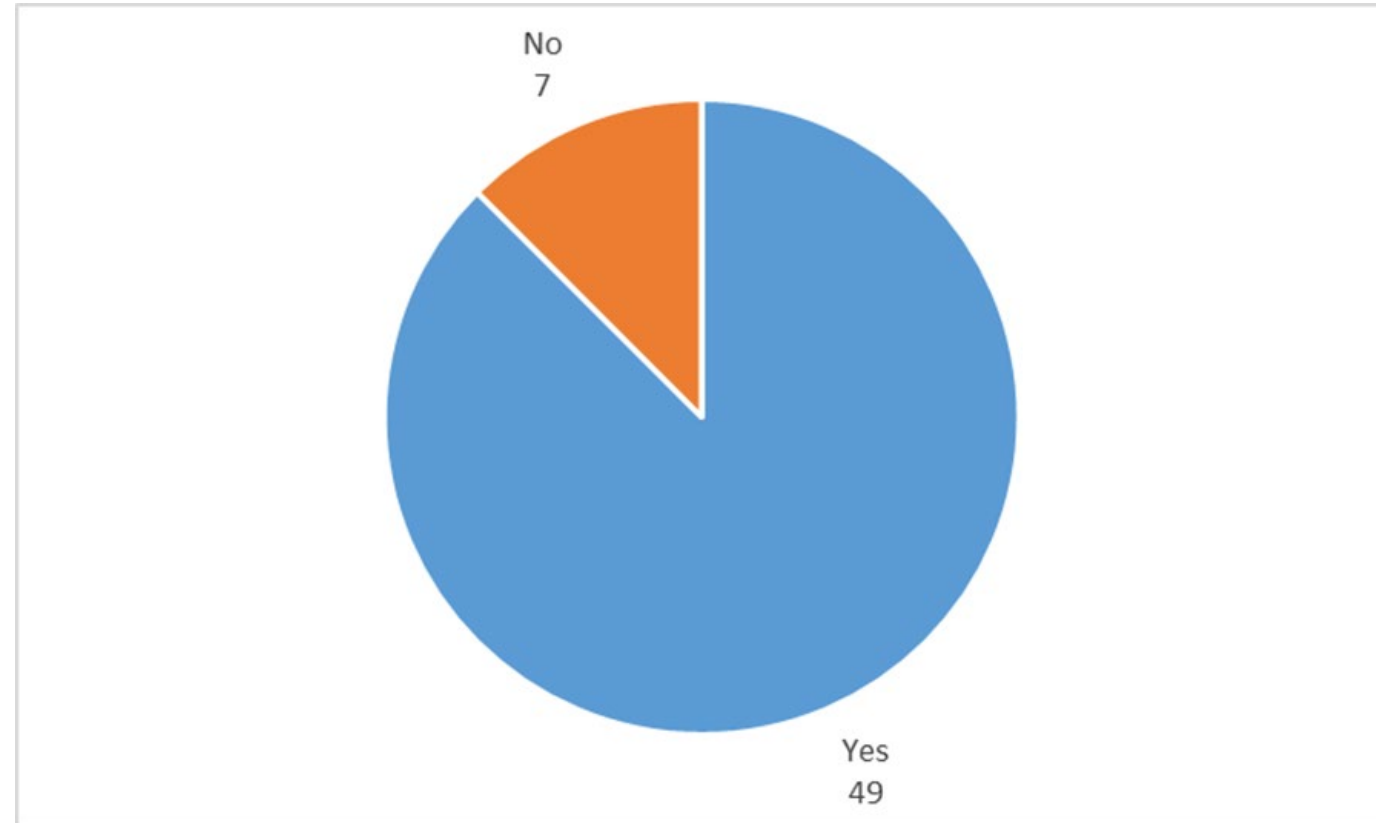




Do you agree not to extend the asset boundary in physical terms?

No:

- The question is unclear as the SNA only accounts assets in monetary terms. It would be preferable to start with the fact that all land/forest is owned and potentially of value, even if close to zero
- All biological resources are socially relevant given challenges regarding biodiversity and ecosystems
- Information presented as physical data is irrelevant if the corresponding value is excluded from NA

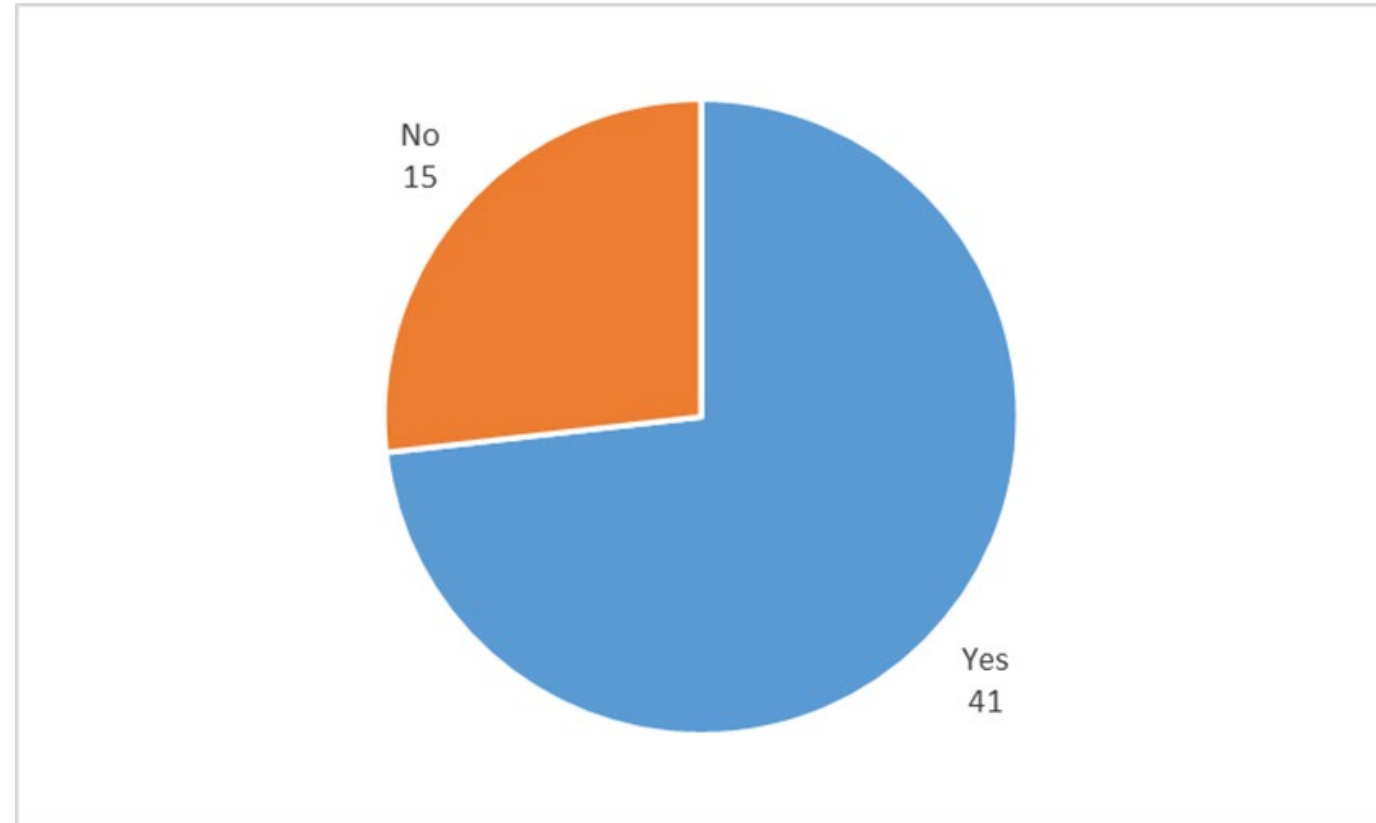




Do you agree to extend the asset boundary in monetary terms by including renewable energy resources?

No:

- Potential benefits from renewable energy are already captured by the value of land
- Seems to imply a split-asset approach
- Solar beams and wind flows are flows not stocks, and are not enforceable and sellable
- It seems to propose recognising the asset only if the land is exploited
- Projecting the future price seems unrealistic
- These resources are not scarce and therefore do not have value
- There is an issue of legal ownership
- They cannot be stored and saved for later periods

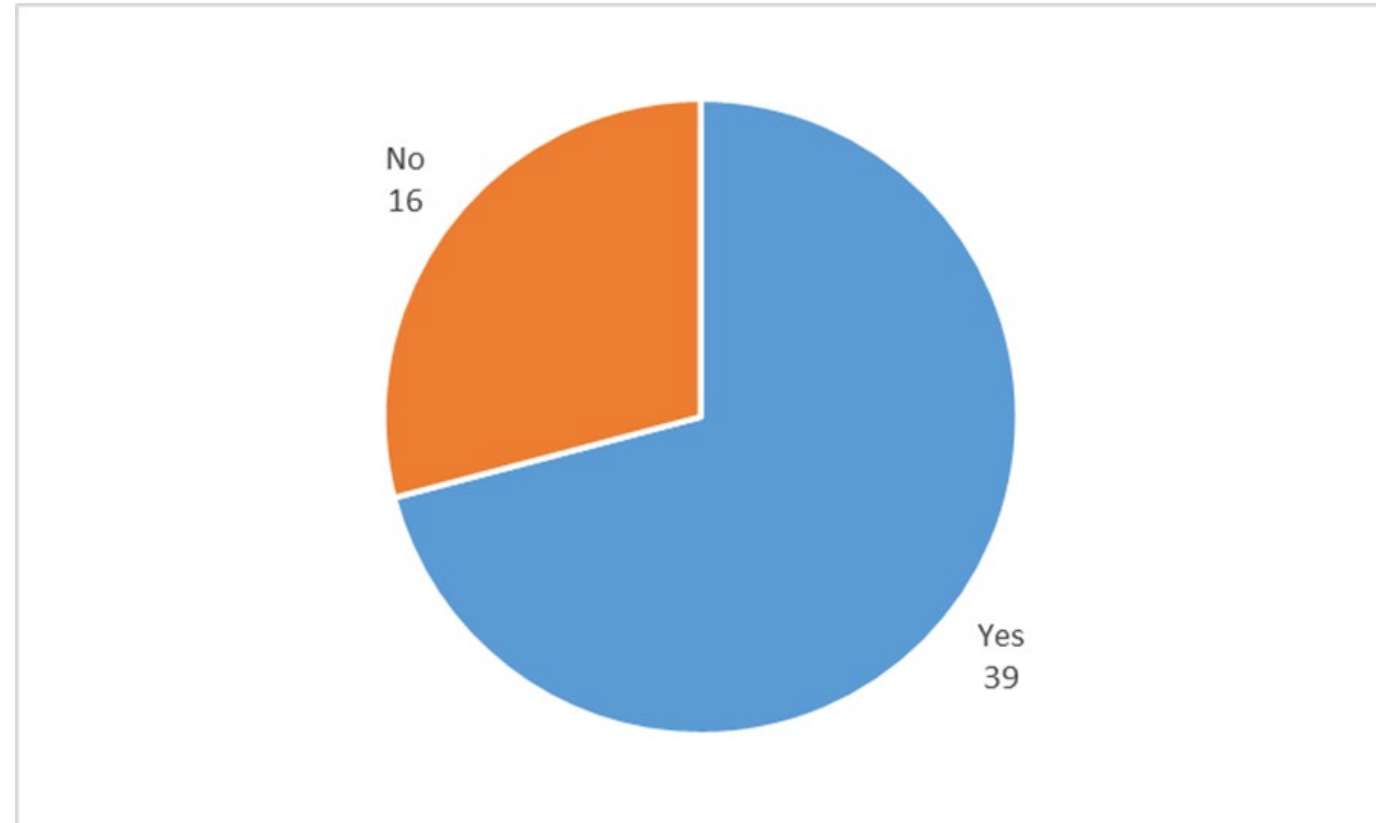




Do you agree that the NPV of future resource rents is appropriate for accounting for natural resources?

No:

- If possible, compilers should focus on observed transactions
- It would be relevant to explore alternatives and to conduct experimentation and testing
- We have doubts to apply it to biological (non-cultivated) resources
- We are in favour, but would like to stress the sensitivity to assumptions
- It would be best to rely on assessments of mining companies or industry bodies and only apply NPV as a last resort
- It may be better to rely on dynamic optimisation models to value the assets

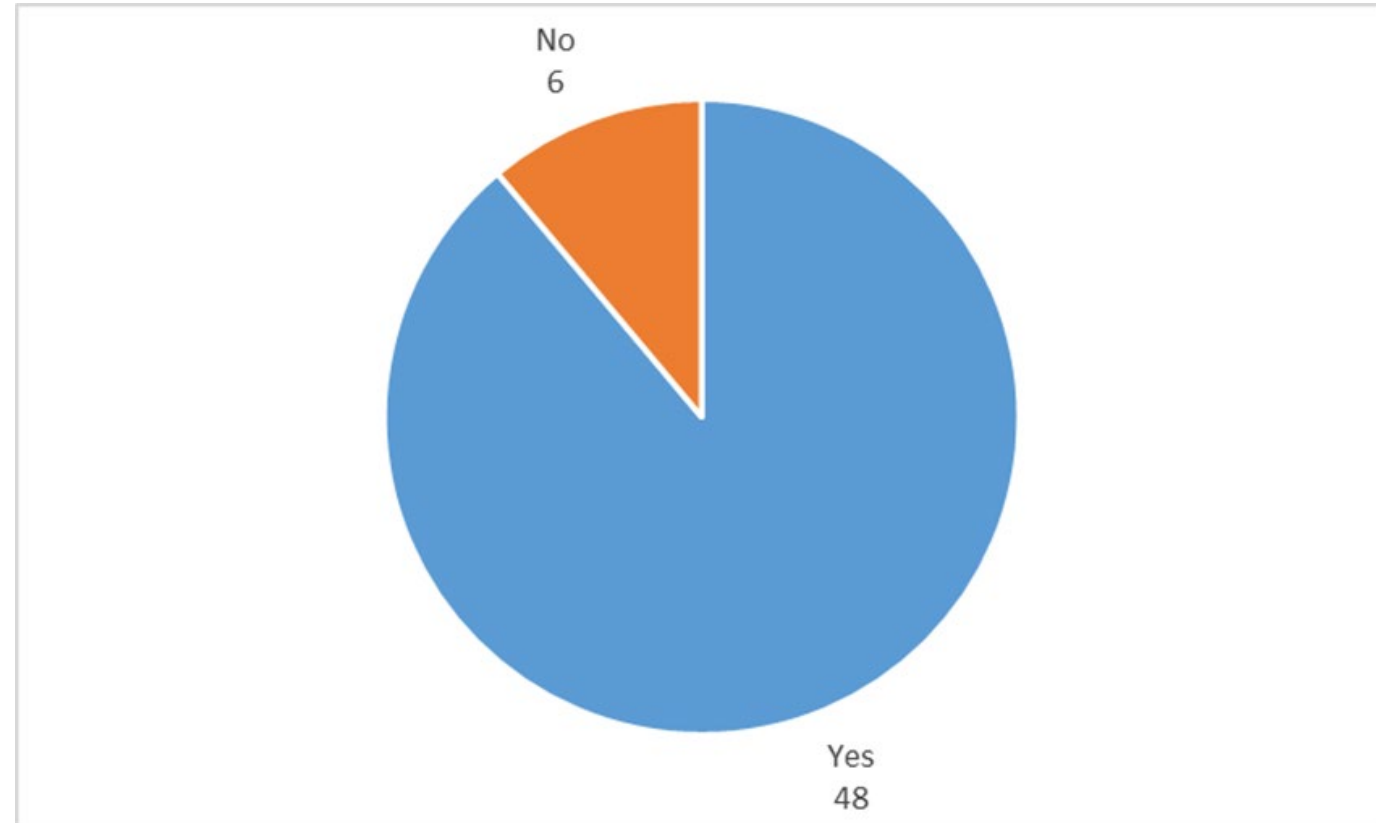




Do you agree to add clarifications on the calculation of the NPV?

No:

- We would like to know the specific clarifications
- We do not agree with the NPV for valuing assets in the SNA
- Lack of data sources to apply the NPV

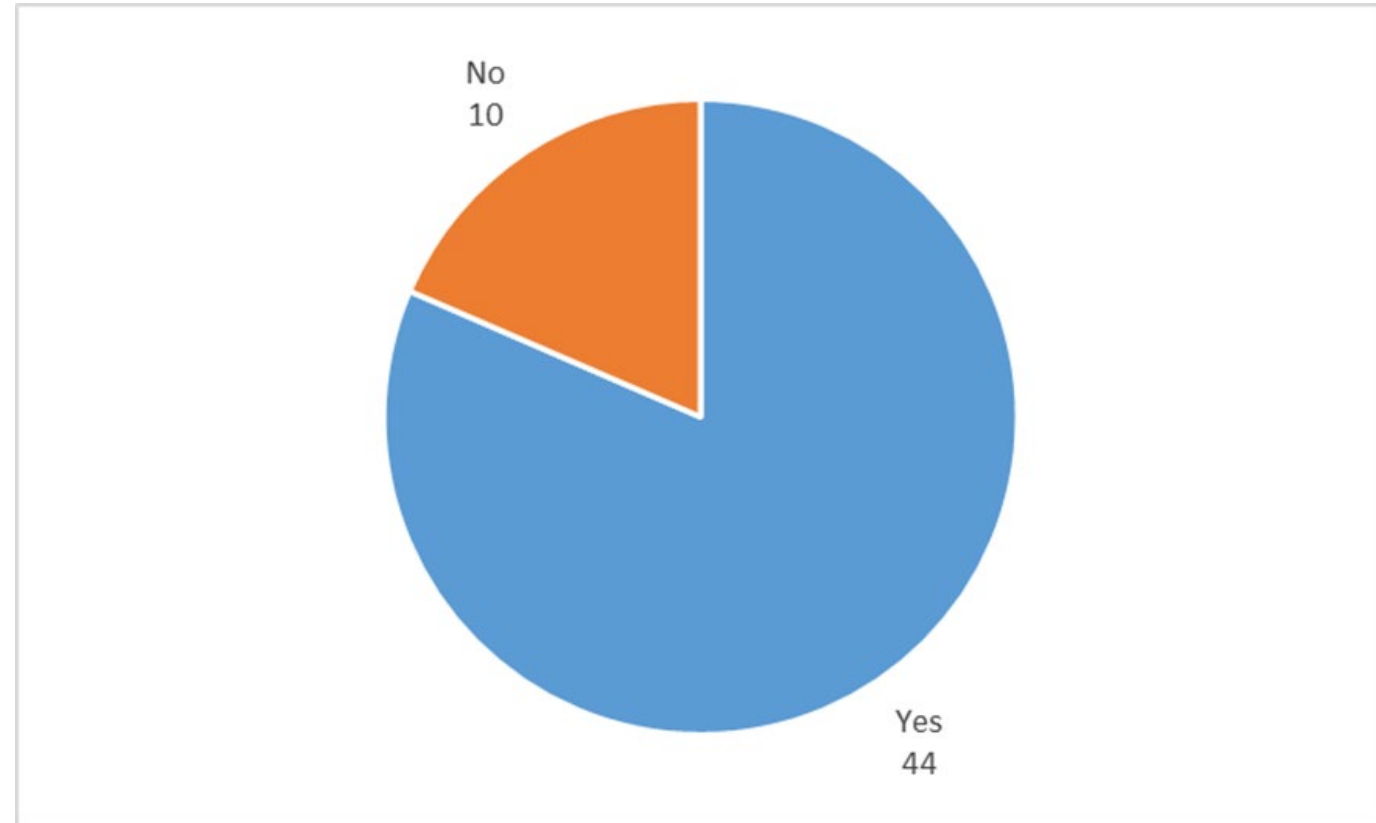




Do you agree to add clarifications on distinction between work-in-progress (inventories) and underlying asset in case of biological resources?

No:

- The current guidance of separating work-in-progress in trees from land is good enough
- We currently don't consider timber/fish as produced non-financial assets. For us, only the harvested trees are relevant
- This distinction is not deemed necessary or helpful
- Data is lacking

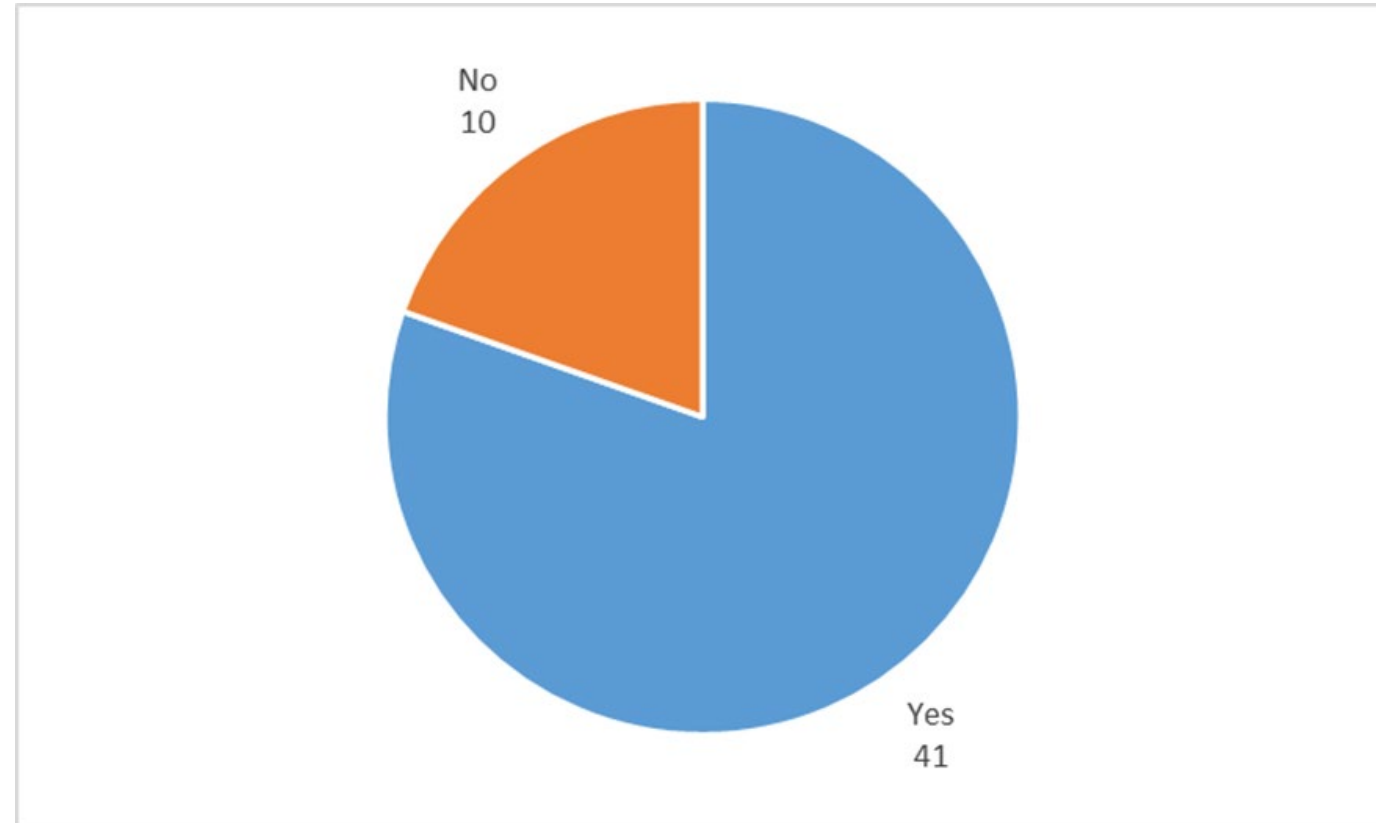




Do you agree that the values of mineral and non-renewable energy resources should be compiled at a disaggregated level?

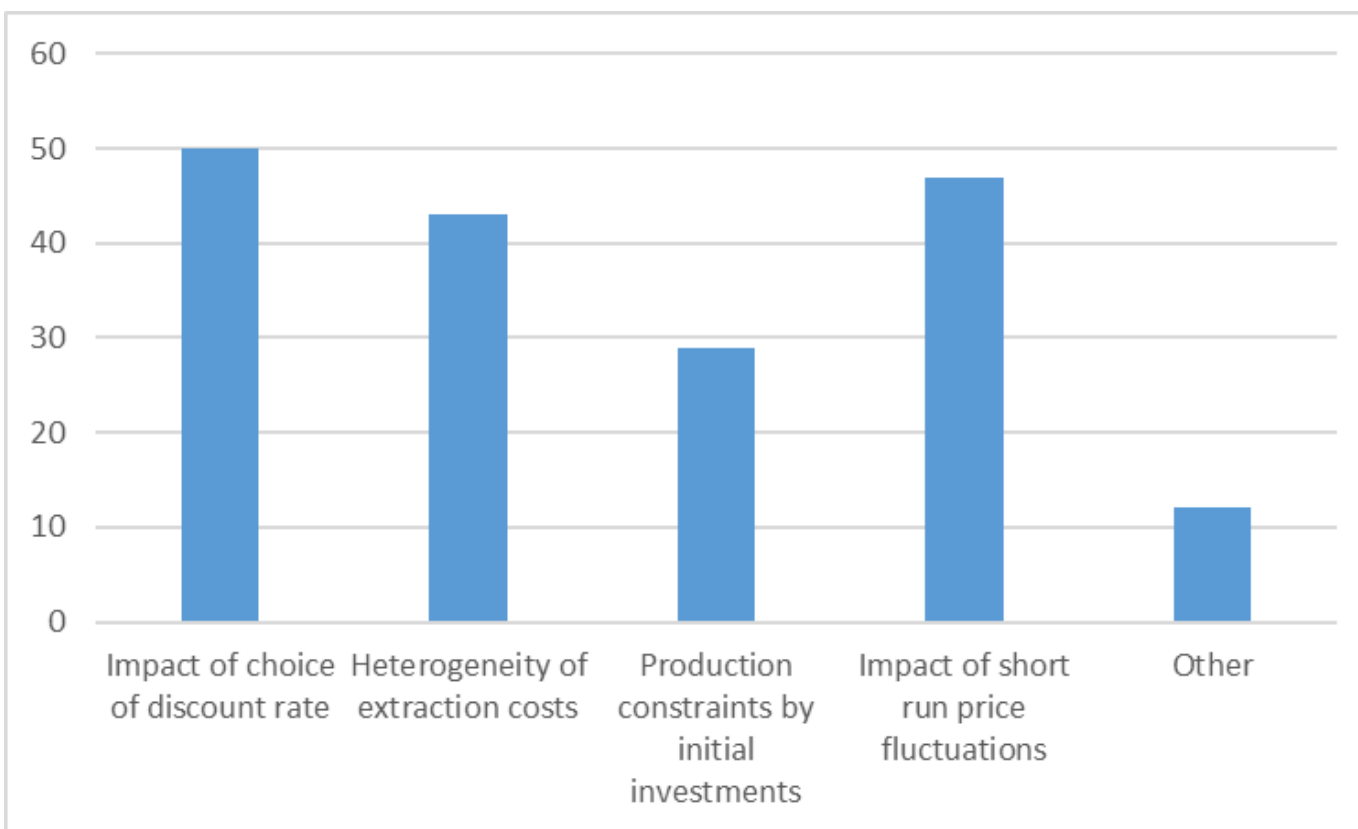
No:

- It would be more relevant for a compilation guide
- Not reasonably possible given the very high number of mines and wells in our country
- No available data
- Concerns about the basic methodology to start with





Which issues should be explicitly emphasized in relation to the valuation of mineral and non-renewable energy resources?



Other:

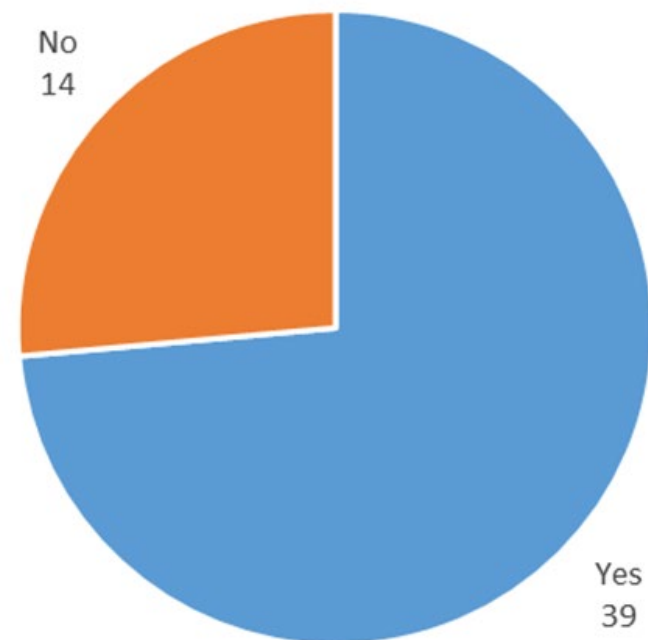
- Use of information from commodity futures markets
- Treatment of stock collapses in environment
- How to deal with high volatility in prices, interest rates and exchange rates?
- More guidance on distinction cultivated versus non-cultivated
- How to estimate future commodity prices?
- How to deal with exploration costs?
- Estimating the volume of stranded assets



Do you agree with the split-asset approach in case resource rents are shared between legal owner and extractor?

No:

- Resource rent cannot simply be derived by observing net operating surplus of extractor
- SNA does not split assets in general; we should assess implications on other areas, such as PPPs
- Alternative is to consider a transferable contract or a financial asset
- Income for governments is not through the use of the asset, but through getting compensation for another unit to use and benefit from it
- Economic ownership is about which unit uses the resource as a factor of production. Only one unit at a time can use the resource
- It will pose practical challenges with the risk of heterogeneity across countries

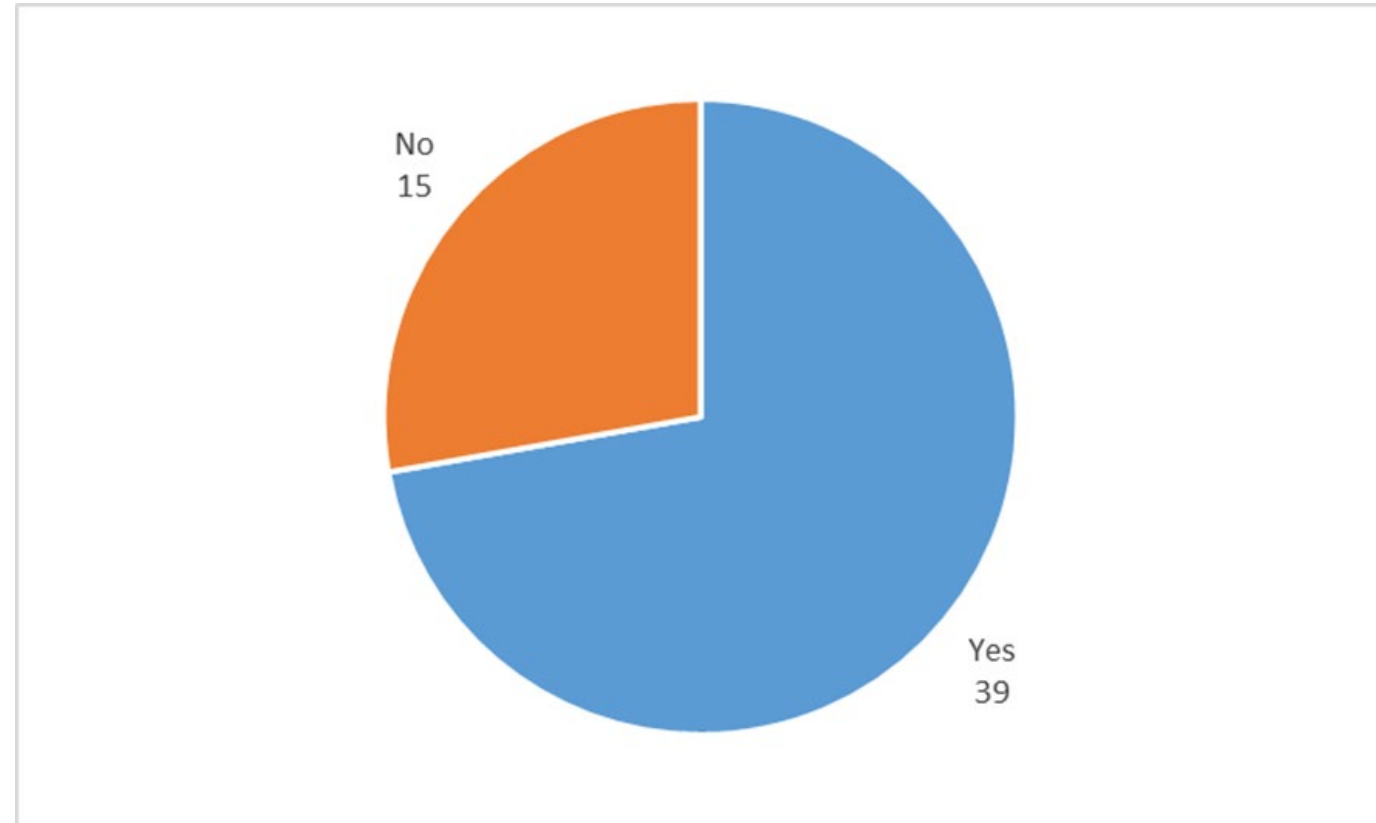




Do you agree to change the distinction between cultivated and non-cultivated biological resources?

No:

- The cultivated boundary is clear to establish
- The GN does not recommend to record all natural growth as output and unexploited part as own consumption of the owner
- Concerns to include assets where there is no management and no monetary value
- Not convinced of the merits, although we see that a clear-cut division between cultivated and non-cultivated is very difficult
- Property rights should be a necessary condition to recognise assets and output
- A decision tree would be useful
- We first need to develop methodology

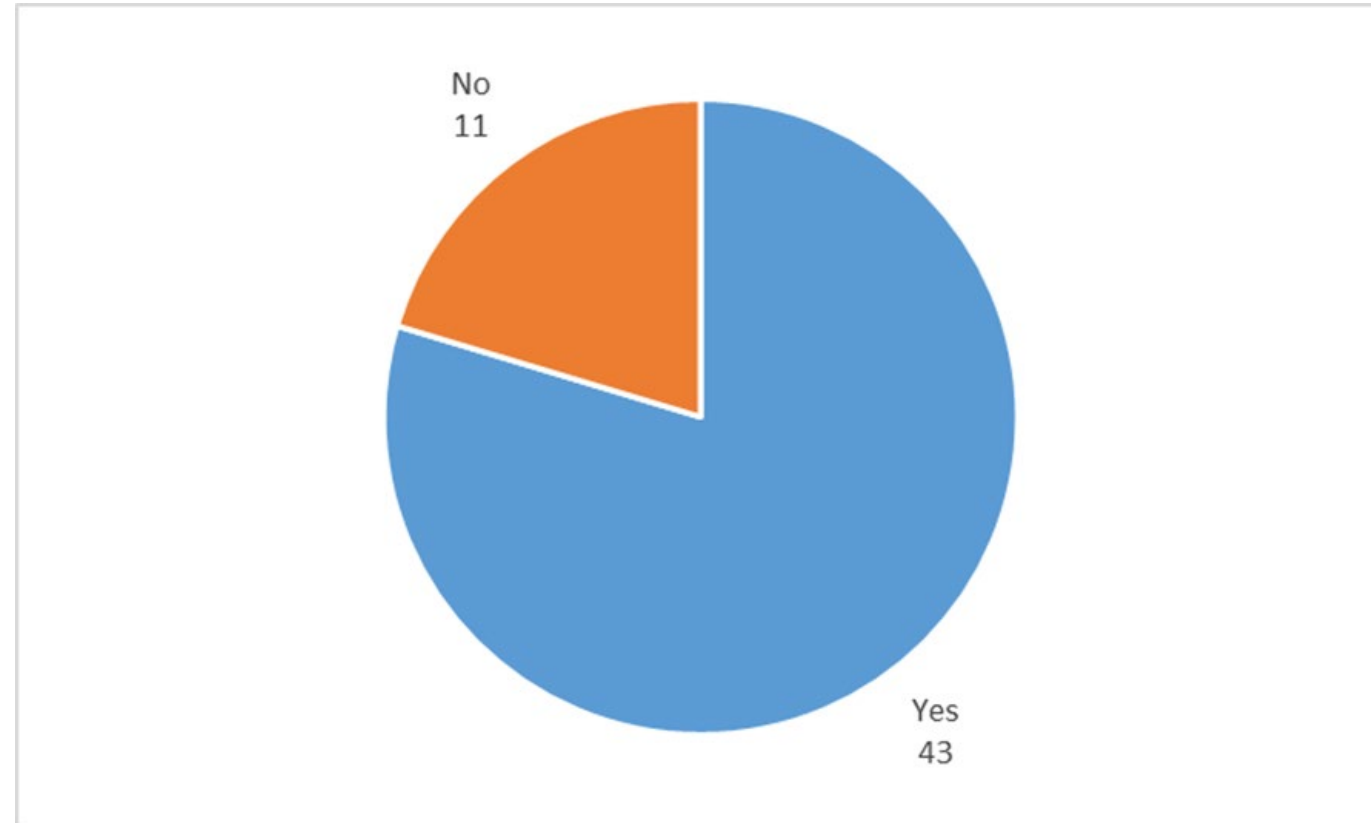




Do you agree to account for depletion as cost of production and to record regeneration as gross fixed capital formation?

No:

- Depletion merely involves extracting more than regeneration/production
- Identifying one part as GFCF and the other as depletion lacks coherence
- Such a treatment ignores the fundamental distinctions produced/non-produced and output/income
- It doesn't make sense to treat depletion as cost of production in split-asset approach, as it doesn't relate to government production
- Depletion should be recorded in an additional table instead of in the core
- We first need to develop methodology

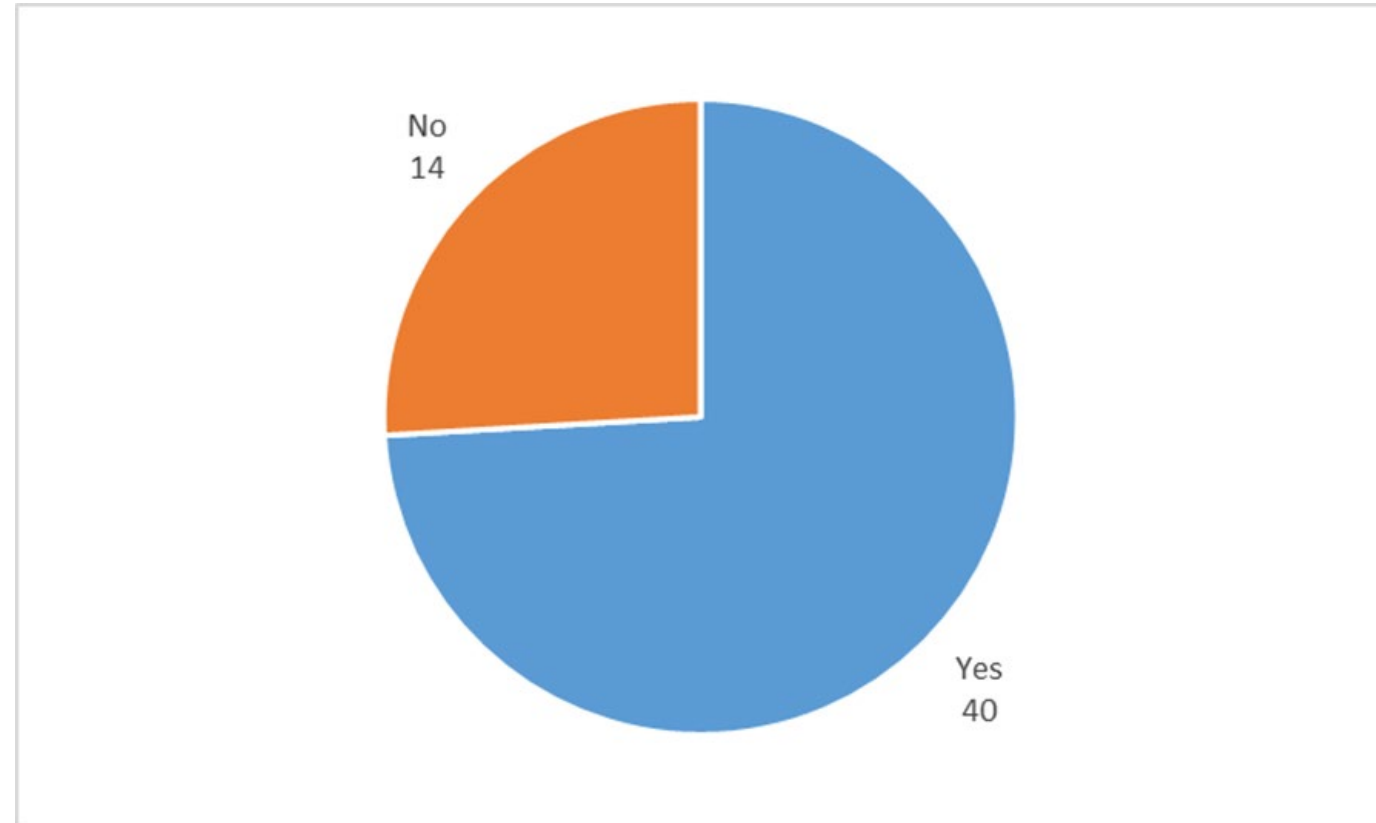




Do you agree to distinguish natural resources as a separate class of assets?

No:

- We need distinction between produced and non-produced assets; alternative would be to add memorandum item(s)
- We would like to await proposal of WS.12
- We oppose to the inclusion of some specific types of natural resources

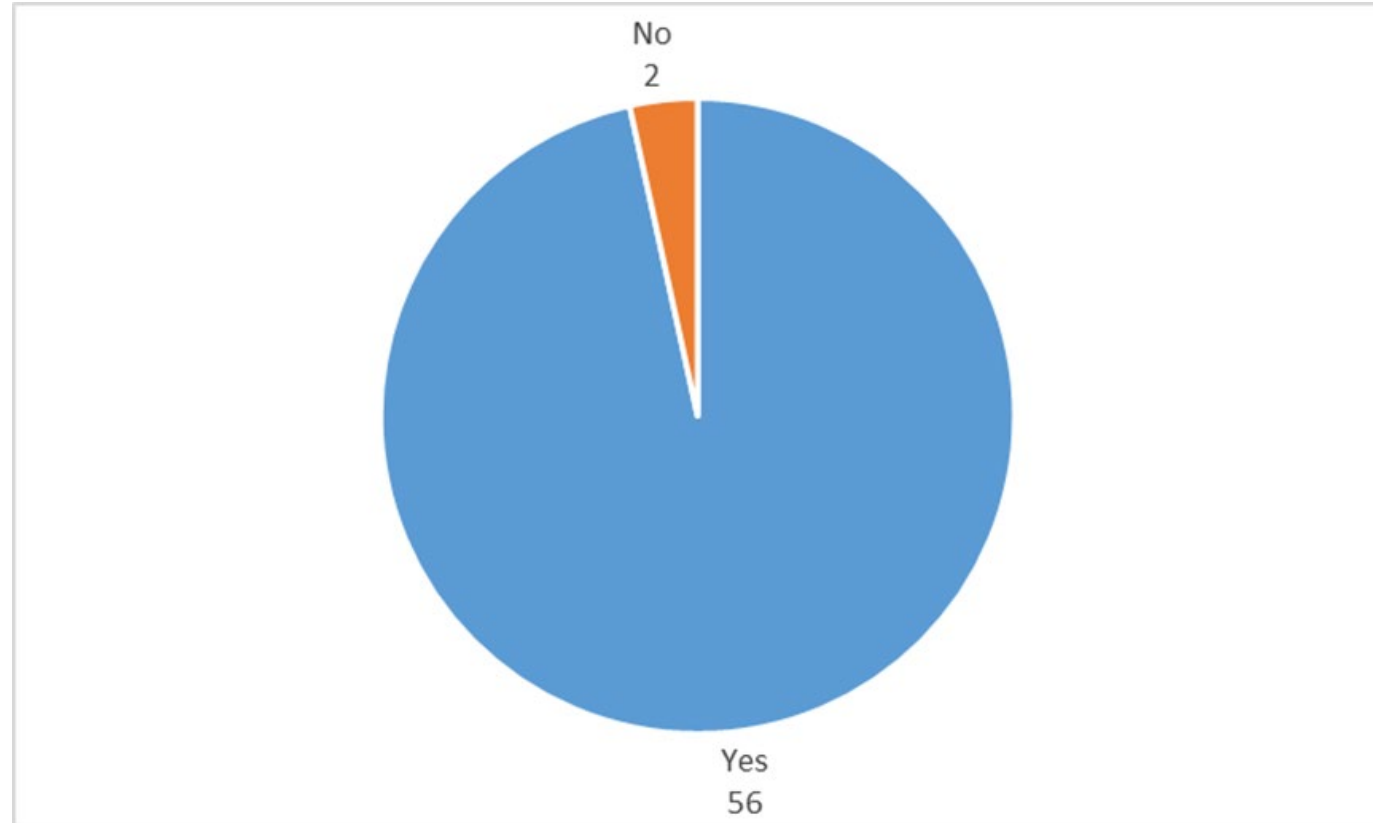




Do you agree to add more clarification on the recording of natural resources?

No:

- We prefer to keep the SNA succinct
- We do not agree with some of the proposed clarifications (see other questions)

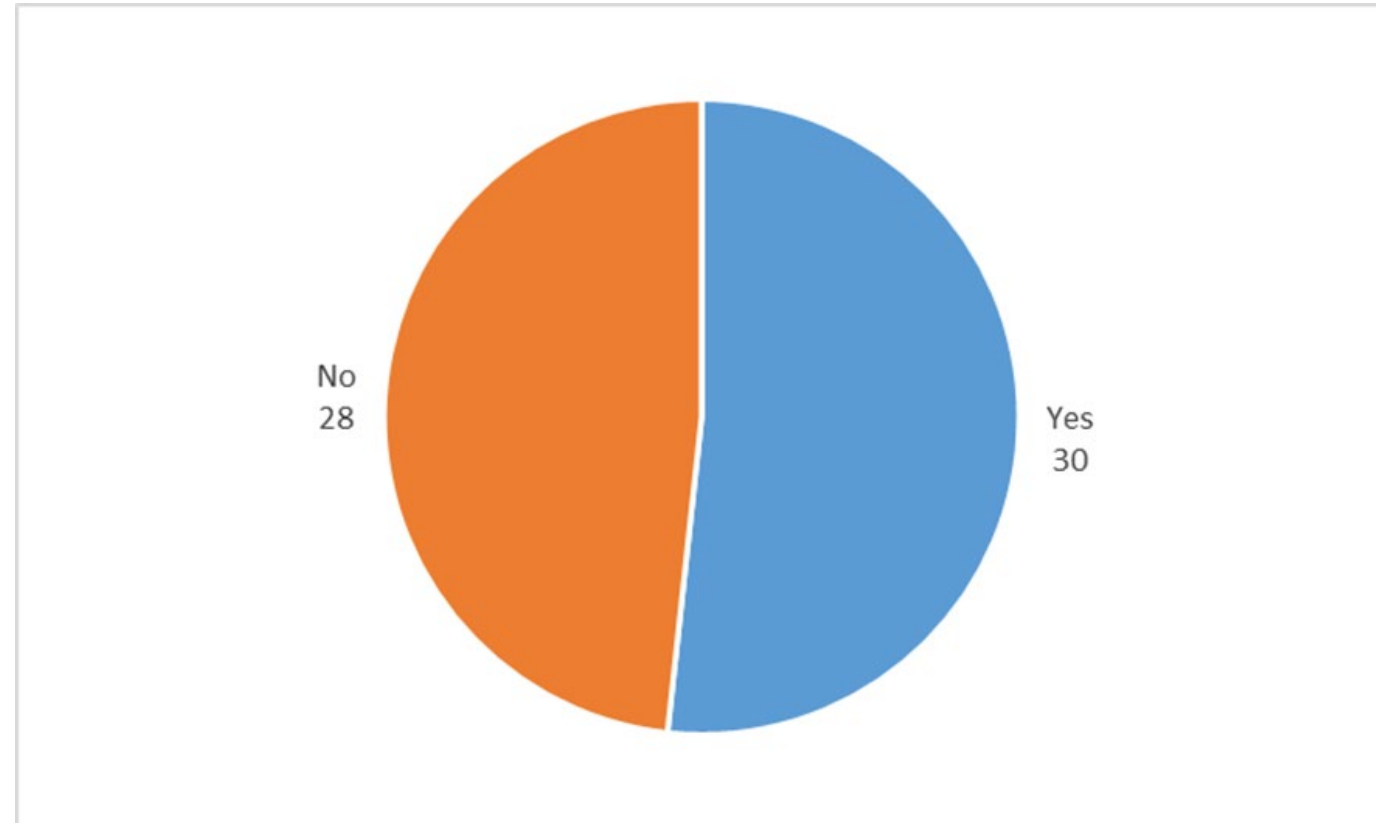




Do you already compile estimates of mineral and non-renewable energy resources?

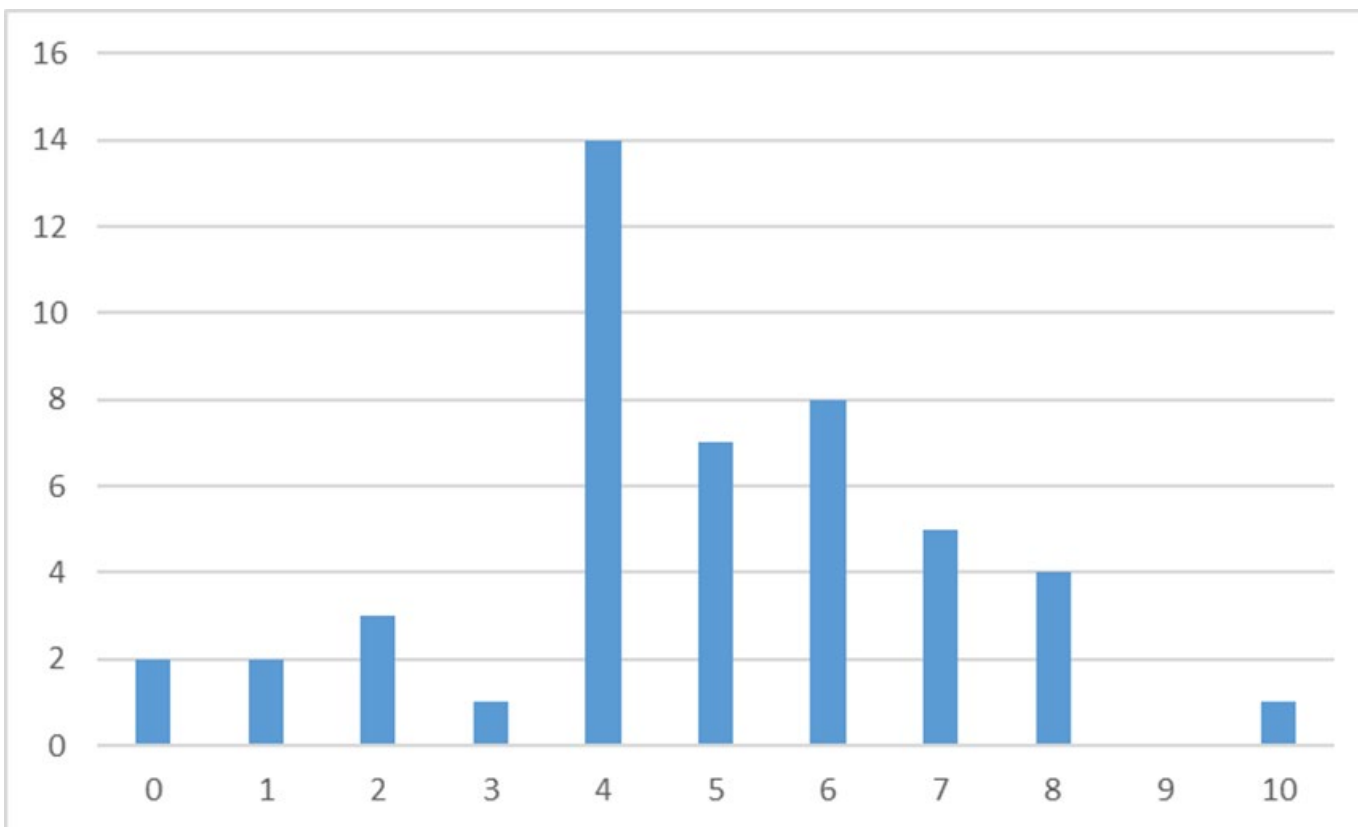
No:

- Not relevant for our country
- We only have data in physical terms
- Absence of relevant data
- Lack of resources
- Lack of coordination with other government organisations





How do you regard the feasibility of applying the guidance on valuation of mineral and energy resources?



Main issues:

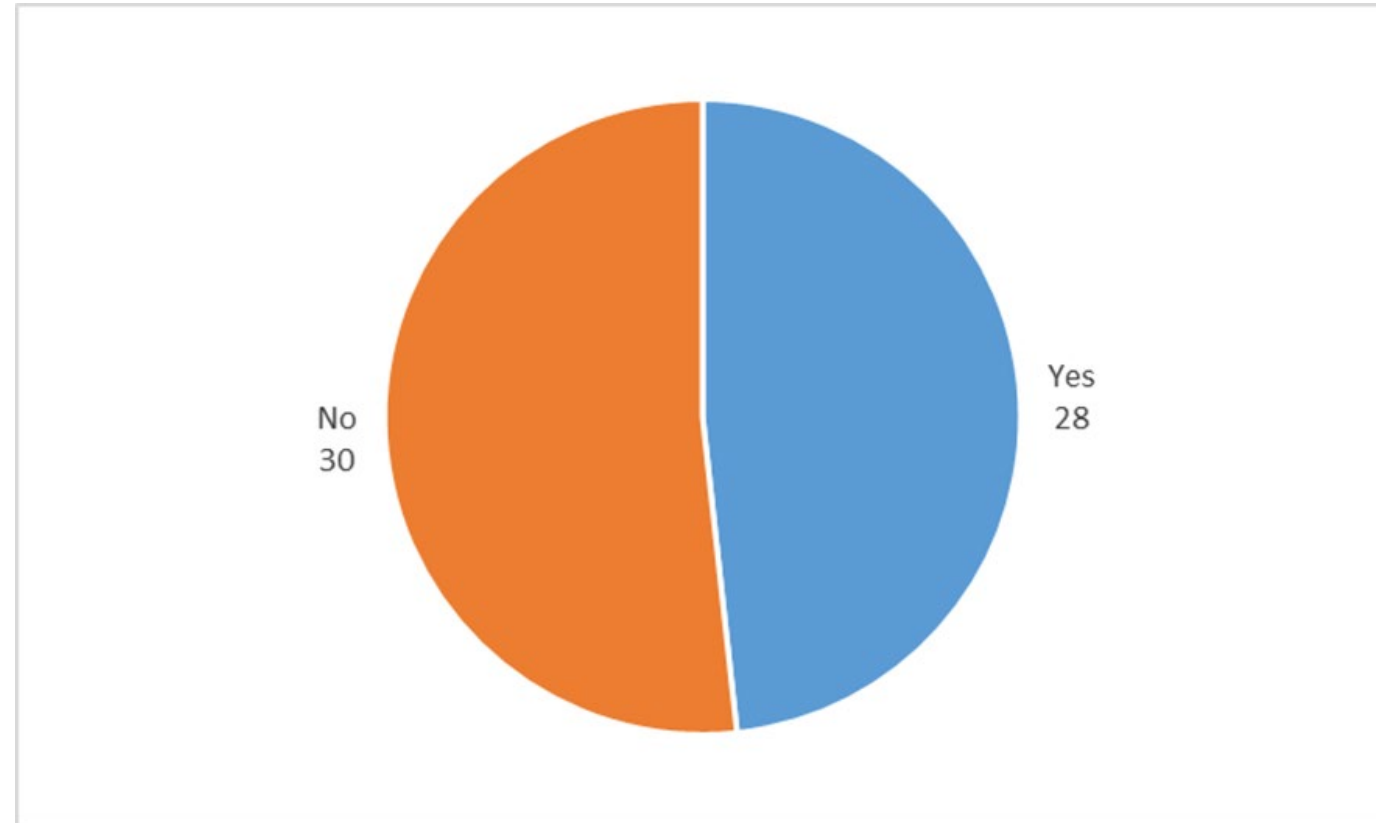
- Need for greater robustness in methodology
- Further explanation of delineation of mineral and energy resources
- Data availability
- Methods for estimating future prices and trends in resources
- Choosing discount rate for different type of resources
- Compilation at a disaggregated level is data and resource intensive
- Timeliness and accuracy of information



Would your institution be interested in participating in experimental estimates?

What would you need:

- Workshops
- Financial assistance
- Technical assistance
- Communication strategy
- Assistance on data collection and modelling

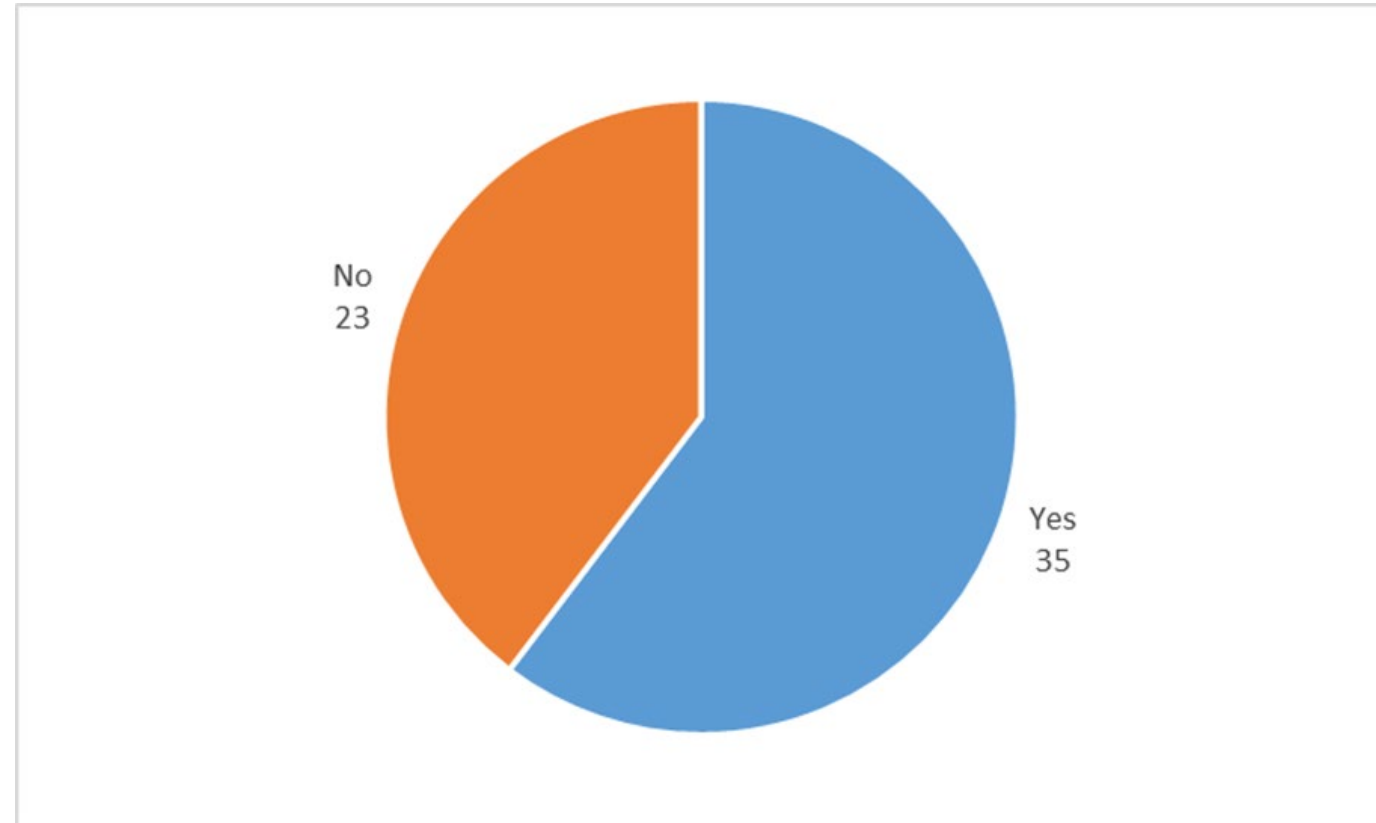




Do you already compile estimates of biological resources?

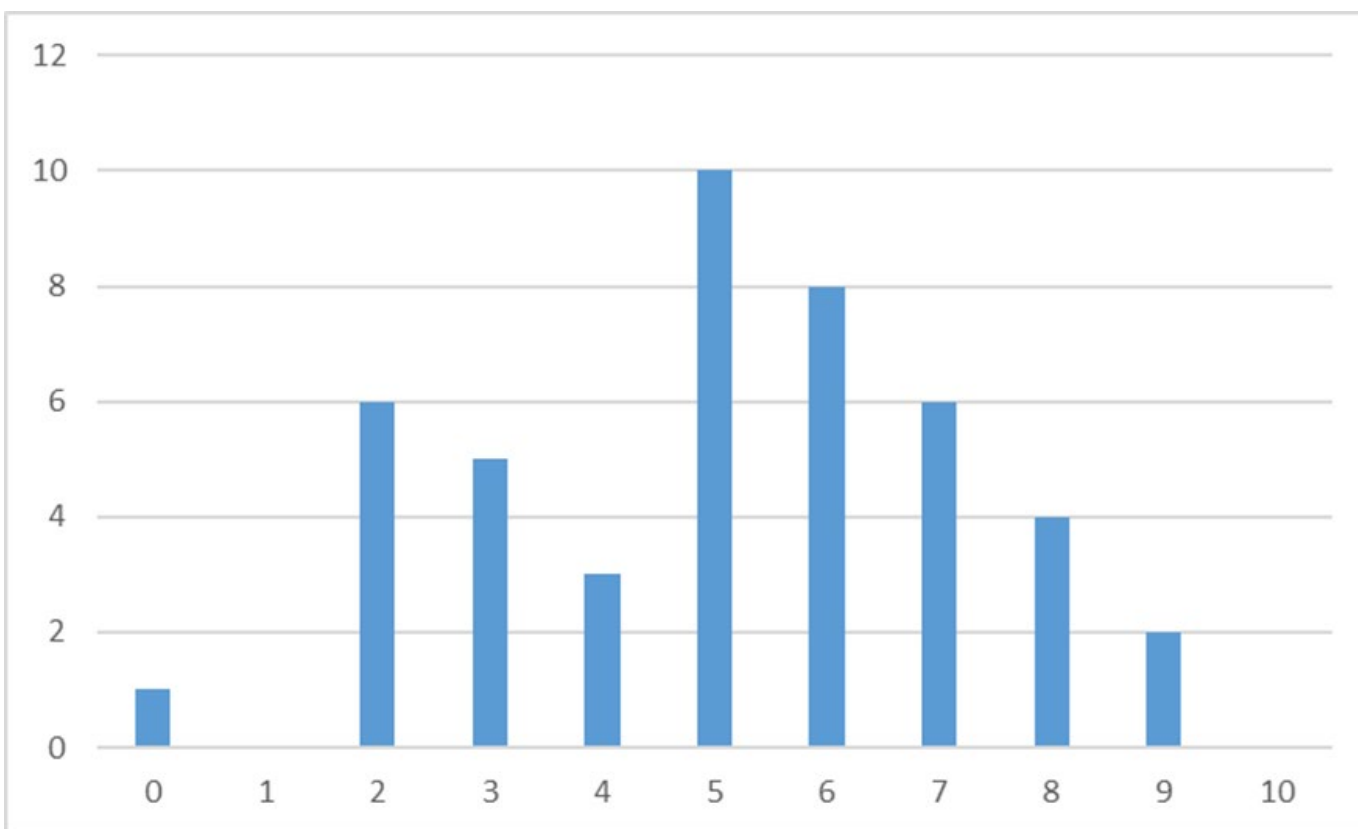
No:

- Not relevant for our country
- We only record it as production for now
- Absence of relevant data
- Lack of resources





How do you regard the feasibility of applying the guidance on biological resources?



Main issues:

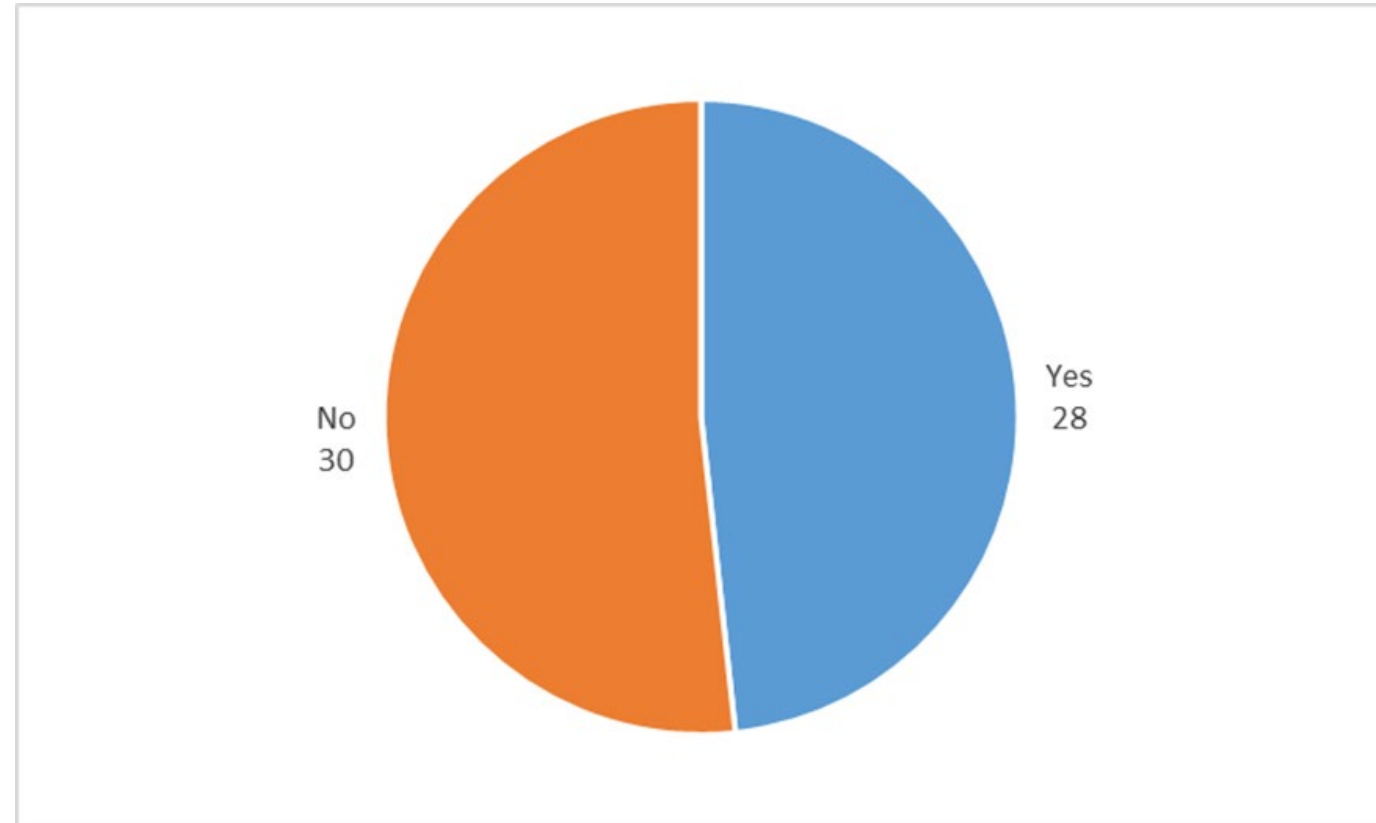
- Need for greater robustness in methodology
- Still need for clarification on some conceptual issues
- Data availability
- Reliance on a lot of assumptions
- Challenge to obtain data on migratory and on non-cultivated biological resources
- Compilation at a disaggregated level is data and resource intensive
- Estimation and valuation of work-in-progress is challenging
- Timeliness and accuracy of information



Would your institution be interested in participating in experimental estimates on biological resources?

What would you need:

- Workshops
- Financial assistance
- Technical assistance
- Communication strategy
- Assistance on data collection and modelling

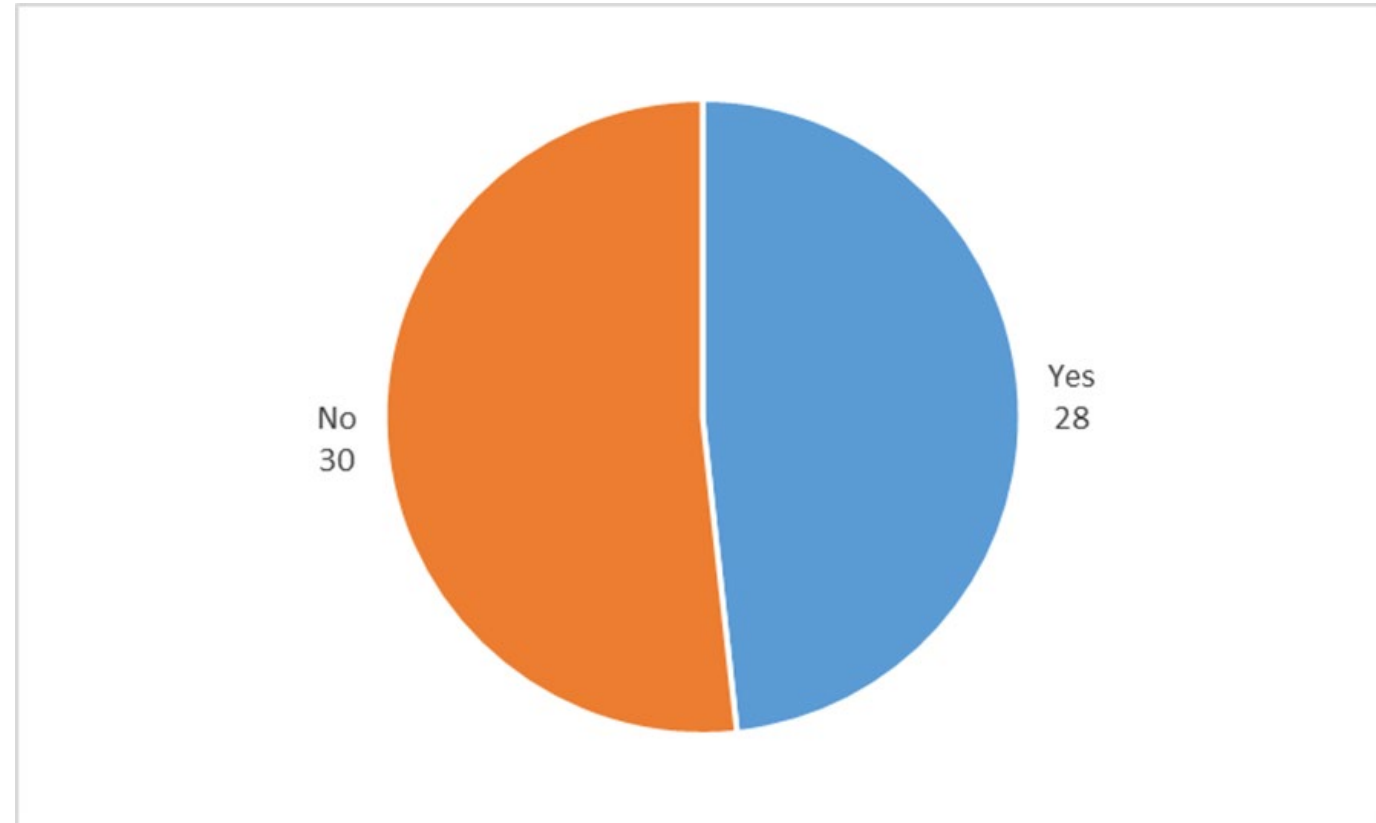




Would your institution be interested in participating in experimental estimates on renewable energy resources?

What would you need:

- Workshops
- Financial assistance
- Technical assistance
- Communication strategy
- Assistance on data collection and modelling





Focus on two fundamental issues



Fundamental issue #1 – Are renewable energy resources economic assets?

- **Issue:** Some respondents argue that renewable energy resources (RER) do not meet the requirements to be considered economic assets because:
 - 1a** - RER cannot be characterised in stock terms and cannot be stored
 - 1b** - RER cannot be privatised, so benefits cannot be captured
 - 1c** - RER are not scarce
- As well, several respondents mentioned possible double counting of RER asset values with land values
 - WS.11 acknowledges this possibility, so we do not consider it “fundamental” for the purposes here
 - Rather, we see it as a matter of measurement and implementation and discuss it below under “other” issues



Fundamental issue #1a – RER cannot be characterised in stock terms and cannot be stored

- **Response:**

- The UN mineral and energy resource classification system treats non-renewable and renewable resources in the same way
 - This classification is already used in the SEEA and (implicitly) SNA to define non-renewable energy assets and we propose using it to define renewable energy assets
- RES assets can be defined identically to oil, gas and coal: in terms of the energy content of commercially viable extraction operations
- Storability is not an essential attribute of assets (e.g., R&D, radio spectra)



Fundamental issue #1b – RER cannot be privatised

- **Response:**

- Governments have long captured benefits arising from hydro-electric resources
 - Province of Quebec, Canada, for example, captures about \$700 million in hydro royalties
- Governments can – and are – beginning to capture other RER benefits through royalties
 - UK Crown collecting significant royalties from off-shore wind
- Private entities also capture benefits from RES
 - Farmers/homeowners installing windmills/solar panels



Fundamental issue #c1 – RER are not scarce

- **Response:**

- Sun, wind, waves, river water, crustal heat may all be infinite, but sites to capture them are not
 - Both scarcity and differential rents should arise for RER in economic use
- Oil, gas and coal are also essentially infinite (e.g., world has 2800 years of coal reserves; reserve-to-production ratios are not declining)
 - But, again, both scarcity and differential rents arise in economic use



Fundamental issue #2 – Valuation based on net present value of rents is not valid in the SNA

- **Issue:** Although it is the current standard in both the SNA and the SEEA, some respondents argue that natural resource valuation using the net present value (NPV) of future rents is not valid because:
 - 2a** - SNA valuation should be based on observed market prices
 - 2b** - Resource rents should be measured only when governments collect royalties
 - 2c** - Future rents cannot be readily estimated
 - 2d** - NPV valuation is overly sensitive to the choice of discount rate



Fundamental issue #2a – SNA valuation should be based on observed market prices

- **Response:**

- We agree and note that most variables used in NPV are based on observed values drawn from the SNA or economic surveys:
 - Revenues from resource sales
 - Costs of labour and material used in extraction
 - Stocks of, rates of return to and depreciation of fixed assets used in extraction
- *Only the discount rate is exogenous – and even it can be informed by data from the SNA and/or surveys*
- We also note that current SNA valuation is not universally based on observed prices
 - FISIM
 - Rent on owner-occupied dwellings
 - Government services
 - In-kind consumption of agricultural products



Fundamental issue #2b – Resource rents should be measured only when governments collect royalties

- **Response:**

- Both theory and empirical evidence suggest that rents can arise whether governments capture them or not
 - Empirical evidence from many statistical offices shows that resource rents do arise from exploiting natural resources
 - Evidence from Statistics Canada suggests that Canadian governments capture less than 20% of resource rent
- Governments may choose to collect no royalties to encourage development of nascent industries like wind and solar power
 - This does not mean the underlying assets have no value



Fundamental issue #2c – Future rents cannot be readily estimated

- **Response:**

- Current SNA/SEEA guidance is to assume current rents continue unchanged into the future
 - This guidance can simply be continued and applied in new areas (e.g., valuation of RER assets)
- However, if projection of future rents is considered necessary, reputable models exist for doing so
 - The World Bank has experience with this for RER and NRE assets in several countries
- The challenges associated with projecting future rents are similar to other challenges already faced by national accountants
 - Estimating fixed asset stocks, for example, requires assumptions about rates of depreciation that also imply knowledge of the future
- Discounting limits the impact of errors in projecting rent



Fundamental issue #2d – NPV valuation is overly sensitive to the choice of discount rate

- **Response:**

- Governments typically have approved discount rates for use in planning exercises
 - These can be adopted by national accountants
- Economic theory also provides guidance on the issue, if no nationally approved rate is available
- Empirical and theoretical research has shown that a rate of around 4% is applicable in many countries
 - This is the rate recommended in existing SEEA guidance



Other issues for discussion



Double counting of RER asset values and land values

- WS.11 acknowledges that RER asset values can be captured in land values where renewable energy is produced on private land so long as property rights to the energy clearly vest in the landowner's hands
 - Such instances are likely limited to solar and wind energy production on private land such as farms, rooftops or vacant land
 - They would lead to double counting if RER assets were separately valued from land as per WS.11
 - To avoid this, WS.11 recommends an approach to separating RER values from land values similar to the approach used to separate the value of farm buildings from farmland
 - This recommendation requires validation and is recommended for country testing
- Similar considerations may be relevant for biological resources, such as the inclusion of resource rents from growing timber versus forest land



Treating the RER asset as the “right to extract the resource”

- Some respondents argue that the appropriate asset in the case of RER is not the resource itself but the permission to extract the resource, making it an asset of type AN222 (permits to use natural resources)
 - We acknowledge this as a possible alternative approach, though it has implications beyond the treatment of RER assets
 - If RER assets were treated this way, why would that treatment not apply to oil, coal, minerals, timber, etc.?
 - While a corporation may own an AN222 asset, it is nonsensical for a government to do so
 - So, to the extent that governments are owners of natural resource assets, AN222 is not a solution



Distinguishing three resource classes for mineral and non-renewable resource classes

- Some respondents argue that some classes do not have a current economic value, and do not meet the criteria for an asset in the SNA
 - It is acknowledged that some categories may not have an economic value, and therefore should not enter the monetary valuation
 - The various classes, in line with the relevant UN-classifications, are only introduced to arrive at estimates, which meet criteria regarding international comparability
 - Current practice shows that all countries use different subsets of relevant resources to compile estimates
 - *So, the recommendation for distinguishing three resource classes is not to be considered as a conceptual change*




Distinguishing between work-in-progress and underlying asset in the case of biological resources

- Some respondents argue that the current guidance of separating work-in-progress in trees from land is good enough; or that they don't consider timber/fish as non-financial assets, only harvested trees being relevant; or that the distinction is not deemed necessary or helpful
 - The current definition of work-in-progress, in paragraph 13.41, is phrased in such a way that it may include the resource rents captured by the underlying assets (e.g., forest land)
 - It is merely proposed to add clarifications restricting the potential of misrepresenting work-in-progress
 - *So, the proposed recommendations should be looked as providing clarifications on the accounting for biological resources*



Distinction between cultivated and non-cultivated biological resources

- Several points were raised, amongst others the following:
 - The cultivated boundary is clear to establish => Actual practice shows to be quite different, some countries considering, for example, all forests as cultivated, while other countries consider them all as non-cultivated
 - Concerns to include assets where there is no management and no monetary value => This issue does not affect the asset boundary, only the distinction between cultivated and non-cultivated assets
 - Not convinced of the merits, although we see that a clear-cut division between cultivated and non-cultivated is very difficult => Understand the point, but the current guidance also does not provide the necessary clarity
 - Property rights should be a necessary condition to recognise assets and output => Property rights are usually established, if only by government exercising collective ownership on behalf of society
 - A decision tree would be useful => Agreed



Accounting for depletion as a cost of production and recording regeneration as gross fixed capital formation

- Some respondents argue that identifying one part as GFCF and the other as depletion lacks coherence; it also ignores the fundamental distinction between the treatment of produced versus non-produced assets
 - There is indeed some validity in this argumentation
 - On the other hand, the distinction between produced and non-produced is very blurred in the case of biological resources
 - One could choose alternative options for recording regeneration and depletion, one of them being to treat regeneration as negative depletion
 - *May need further consideration*



THANK YOU!



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