

SNA/M3.21/11.3

**17th Meeting of the Advisory Expert Group on National Accounts,
15, 16 and 19 November 2021, Remote Meeting**

Agenda item: 11.3

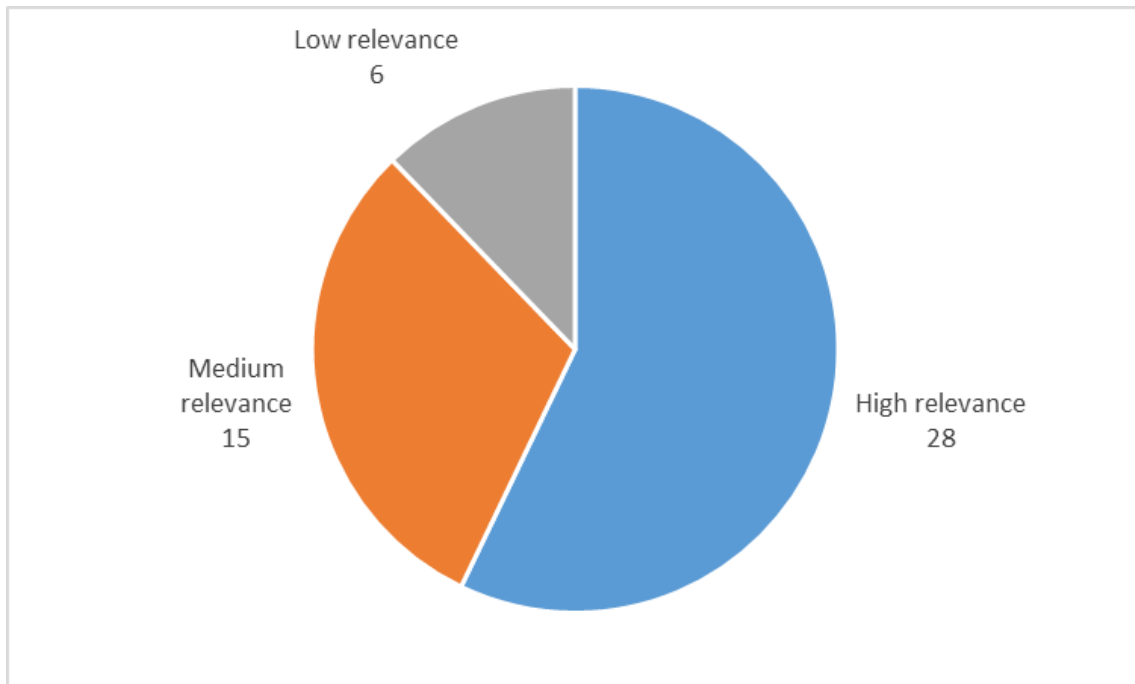
WS.4 Labour, Human Capital and Education

Responses to the Global Consultation of: WS.4 Labour, Human Capital and Education

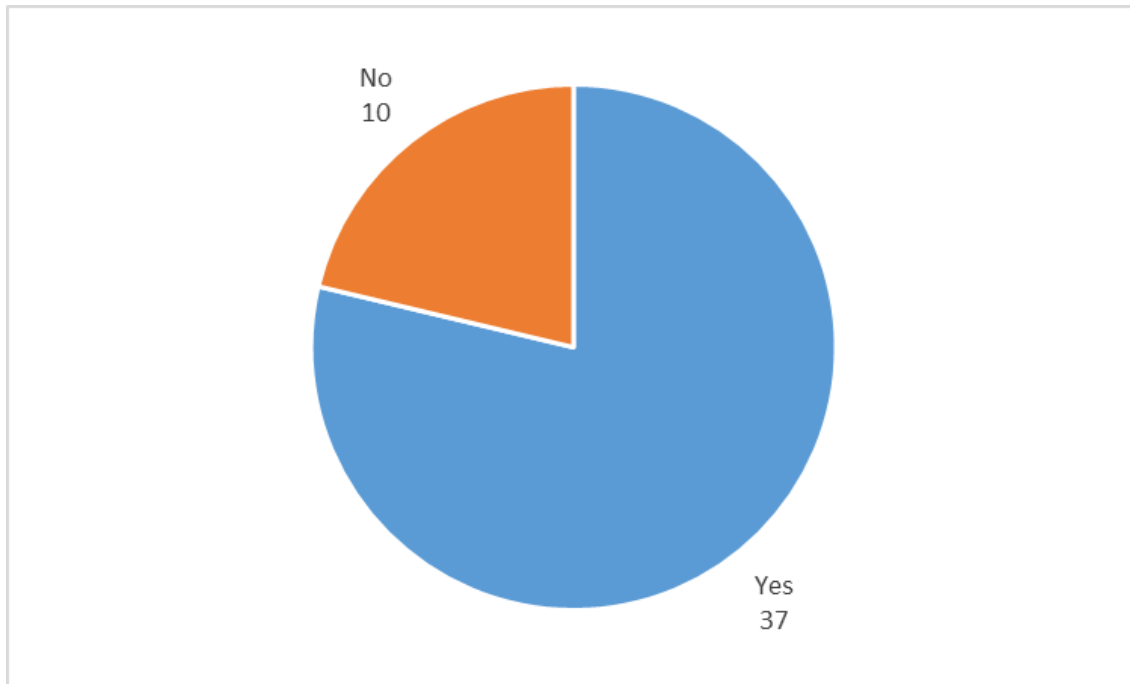
A total of 49 respondents contributed to this global consultation (after removing completely anonymous contributions and duplications). In some cases, multiple institutions from one country have responded to the questionnaire.

This document provides an overview of the written comments provided for each question.

2. Is this topic of relevance for your country?



3. Do you agree with the inclusion of labour accounts within the central framework of the SNA?

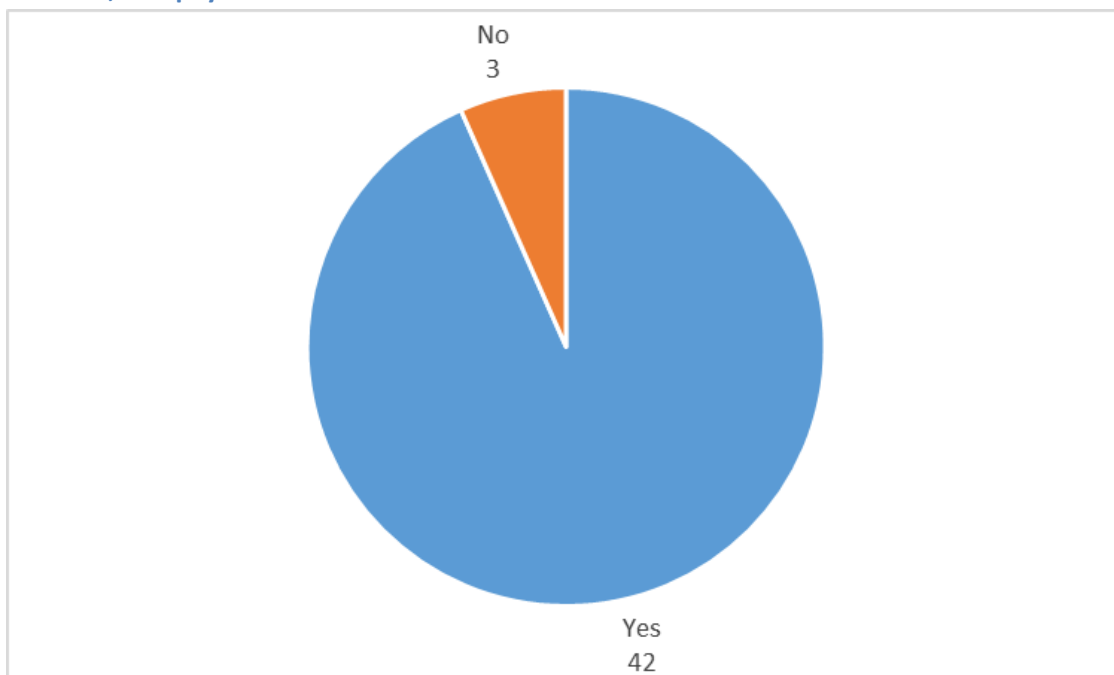


Comments provided supporting no:

- As stated in 6B.
- Preliminary remark: The implementation of labour accounts as described in the guidance note is as such not very relevant for our country. With the existing employment accounts – derived largely from the extensive statistics of our Employment Agency and of the social insurance institutions – we already have a somewhat more reliable accounting system in place than many other countries relying on employment information mainly from establishment and household surveys. In general, detailed yet coherent labour accounts might be of great value for the interested public. But this value vitally depends on the data quality provided. Taking the above preliminary remark into account, establishing a second system of labour accounts would be somehow like reinventing the wheel. The resulting data would likely be of lower quality as the differing definitions and scientific objects of the source statistics are inextricable at present and would prevent data consistency, i.e. in our view a crucial attribute of national accounts. These conclusions might reflect our country’s perspective to some extent but in Europe the well-established labour statistics compiled by Eurostat on the ground of the national labour force surveys should support our view. While the general importance of detailed and coherent labour and social statistics cannot be overemphasised, the guidance note falls short in justifying why labour accounts should become a part of the core SNA. What would elaborate labour accounts within the NA framework add to existing information on labour markets and demographic data? Nonetheless, we would appreciate suggestions to establish satellite accounts concerning labour markets.

- The inclusion of four additional quadrants into the central accounts system will lead to violation of the format for the national accounts presentation and emergence of additional qualitative and quantitative measurement units together with valuations in data set. It is advisable to compile the labor resources accounts as an independent satellite account which compliments the central accounts system of the SNA.
- In our view, estimates will be based on the variety of soft assumptions, further discussions of practical aspects are necessary.
- First, the estimates of human capital can be initiated by developing a satellite account on education and training after we sure that the data saved and accurate and representative and solve the problem which faced then agree with the inclusion within the central frame of SNA.
- We consider that labour accounts are relevant due to the importance of labour in the production process. However, in our case the lack of information makes the compilation of some components difficult. For this reason, we prefer to maintain its peripheral treatment in the SNA.
- It might cause some bias when compare among countries because each countries have different collecting method. So, we think that this account should be satellite account, not the inclusion of central framework of the SNA.
- Regarding the novelty of this approach and the time it takes to compile data of good quality we would prefer that this information during a development period is introduced and recorded in a satellite account.

4. Do you agree that labour accounts should be built around four quadrants: jobs, people, volumes, and payments?



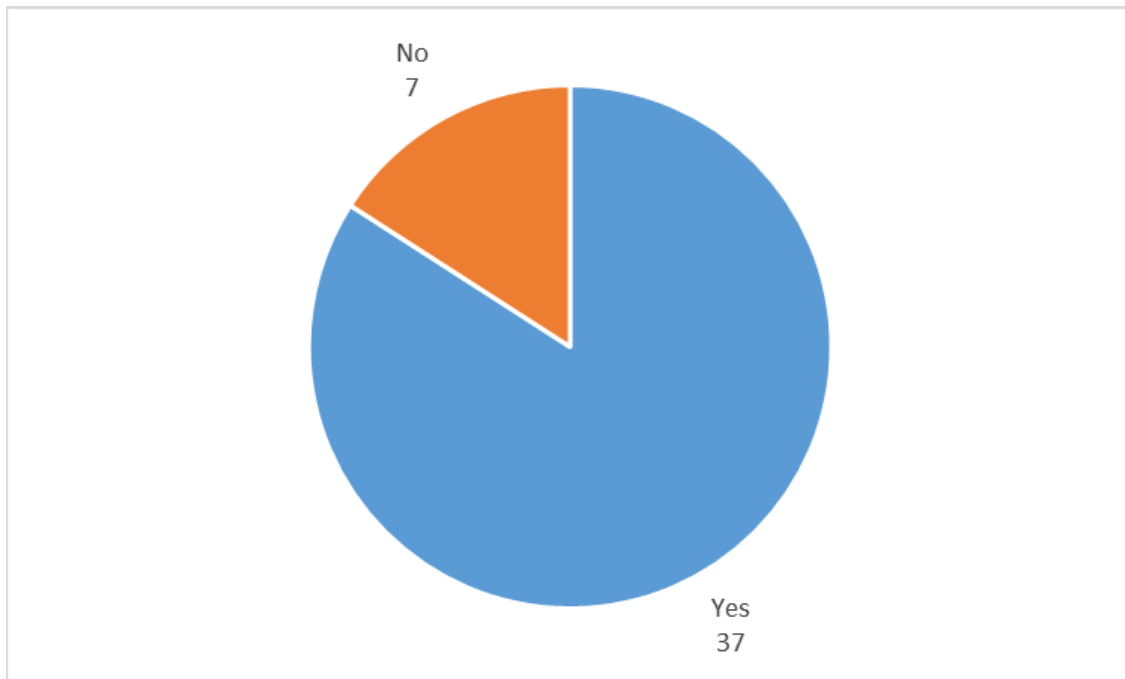
Specific comments in relation to ‘no’:

- People and volume excluded. We have no information on hours worked or people, we only have jobs.
- Jobs excluded. If outside the core SNA, the inclusion of jobs would be feasible. Apart from the substantial challenges for implementation, we doubt that “jobs” are within the production boundary and/or in line with the explanatory model of national accounting as they are neither commodities nor assets: People in “jobs” a.k.a. employees contribute to production, their wages and salaries are covered already as primary inputs. But what about e.g. job vacancies or part-/full-time employment etc.? While vacancies might give indication on the production potential of an economy, the share of unemployed in the labour force could give a better and clearer indication.

Additional quadrants suggested by three countries:

- The justification is that with jobs, people volumes and payments is very important especially in developed countries but in developing countries will still be a challenges heavily otherwise it may not be relevant.
- The work place also referred to as the environment should be included.
- We would suggest adding an optional qualitative quadrant regarding the working conditions, production factor intensity (Labour or Capital intensive) as well as skills, education and position.

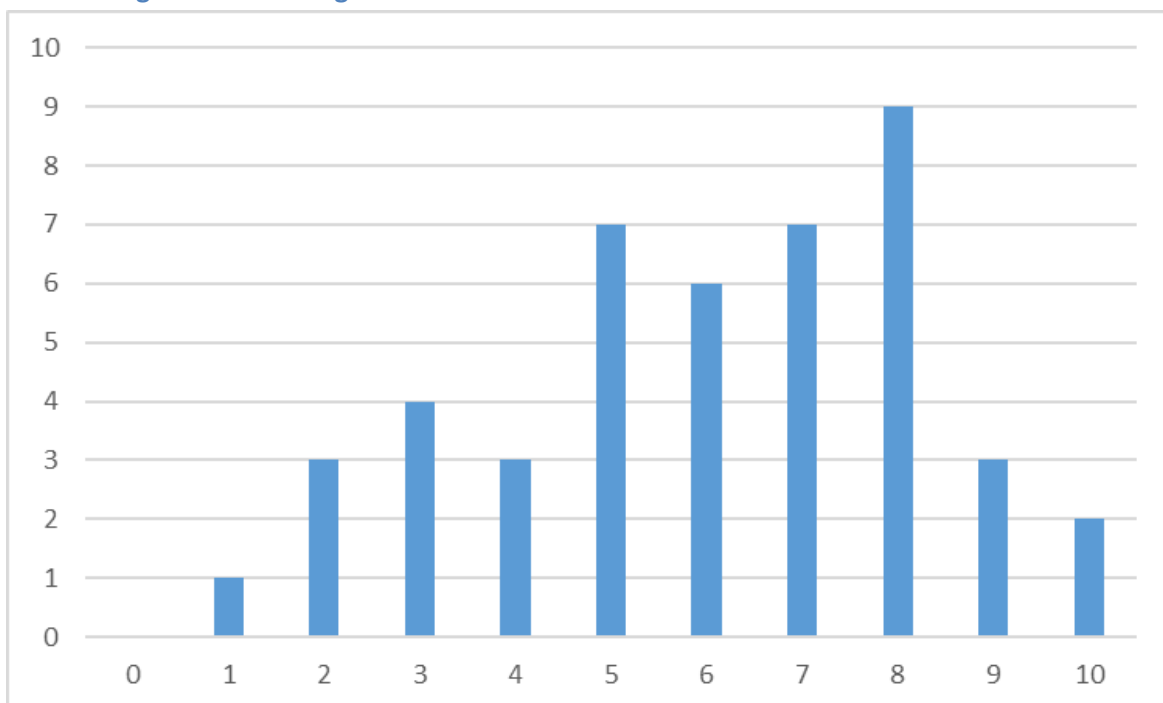
5. Do you agree that the people quadrant will include demographic breakdowns by: gender, age and educational attainment?



Comments supporting ‘no’:

- Data regarding the breakdown by gender, age and educational attainment are very difficult to collect.
- It is very relevant information, but it must be analyzed in more specific studies.
- We produce labour force data including detailed demographic breakdowns through LFS. In our opinion our aim with a labour accounts system should be a more general, macroeconomic outlook.
- We suggest adding breakdowns also by industry (employed persons), skills and region.
- Due to source data constraints, it is difficult to divide the quadrant data by demographic attributes, especially the breakdown of unemployed and non-labour force by educational attainment will be impossible. Also, as to the number of employed persons, it is likely to be extremely difficult due to the lack of data sources if required to cross the institutional sector classification and the attributes of workers.
- We do not believe that these additional breakdowns address any major issues or current stakeholder needs. If the needs do arise in the future, additional breakdowns such as these can be created as custom data breakdowns.

6A. How do you regard the feasibility of compiling labour accounts according to the guidance in this note (0-10 from not feasible at all to highly feasible)? 6B. Please explain where you see main strengths and challenges.



Average: 6.00.

Main strengths:

- It is good and relevant to have this compiling based labour accounts.

- Paragraph 64, I noted that Labour Accounts sits within a broader set of 'work' activities, which clearly includes unpaid household activities as well as volunteer work. This is main strength in this document.
- Need to compile quarterly formal employment and unemployment rates.
- The main strength is that we have two household surveys: a) the first survey captures information on the labor market, which could be used to measure 3 of the 4 suggested quadrants (jobs, people, volume (hours), and payments); b) the second captures information on the labor force, income, and sociodemographic characteristics of the population, which can be used for 2 quadrants (people and income).
- The main strength is providing for a more complete presentation and enabling a comprehensive analysis of the labor resources in the economy.
- We can rely on the existing labour force surveys that are on a quarterly basis and develop labour accounts (see weaknesses below).
- Strengths: This document has provided overview of the labour accounts compilation at macro level.
- Almost all of the data required to compile a labour account will be from various administrative data. Following communication and protocols with other institutions the required data could be retrieved so this might be considered as a strength.
- Availability of household and business surveys of employment and statistics on formal employment.
- 1) Availability of information from administrative sources. 2) Accounts produced will be coherent through data confrontation with various sources.
- We have compiled labour accounts regularly since the 1980s.
- The possibility to receive information on hours worked in the current period, which could be used for other estimates and analysis.
- Our data coverage is reasonably strong in this area, although small aspects of detail might be missing. The ability to link household and business dimensions via our large longitudinal dataset should be very helpful to us (see some weaknesses below).
- Information sources are available from surveys and administrative records.
- We agree with the benefits of producing labour accounts as outlined in the guidance note. There are no additional challenges to add.
- The strength is that we have access to labor administrative registers, however, access to educations register is still pending.
- We have access to the vast majority of data needed. Exceptions will be found for data on hours sought which is of lower quality.
- Main strength is that this data has strong connections to measuring labor market outcomes and "well-being." This data underpins measures of labor quality, necessary to implement production account measure of labor input.

Main challenges:

- Currently, we are compiling an Employment Matrix which consist of Occupied persons (i.e. people), Full-Time Equivalent (i.e. jobs), and Average hours worked per week (i.e.

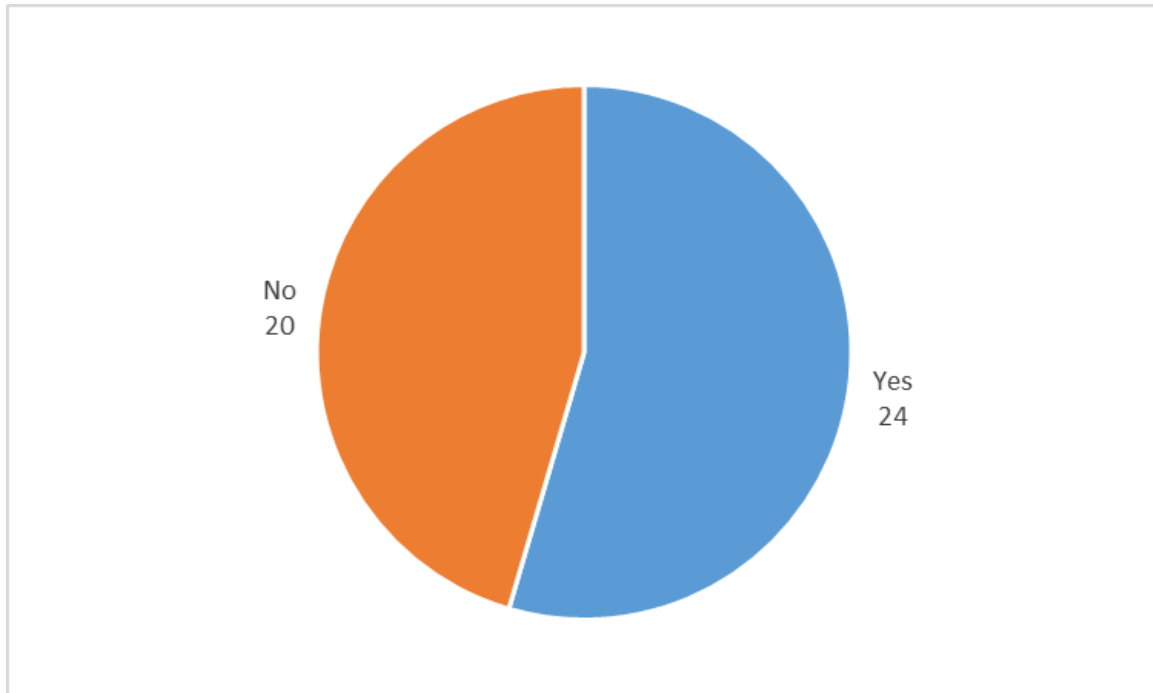
volume). We are also extending to remuneration matrix (i.e. payments). The main challenge is the source of data and clarification of concepts.

- Challenging is to find data for the private sector. The most problematic part is the free informal courses.
- Main challenge is classifications.
- Data collection today is not adequate for compiling labour accounts according to the guidance.
- It is difficult to obtain the number of secondary jobs, to quantify the underemployed persons and the related hours worked. Also, it is difficult to get the accurate statistics of the labour income from self-employment.
- The main challenge is how to achieve harmonization and coherence by combining various sources of information, in a way that allows us to obtain consistent statistics.
- The main challenge is the need to collect comparable information from various sources. In addition, this will require employees training and the development of a data collection and processing system to build the accounts.
- Not all data sources will be readily available. Resource constraints could also be a challenge.
- Monetary information is available, but not the indicators of working hours, volunteer work, unpaid training in companies, and entrepreneurship.
- According to the Guidance Note, the degree of detailed and in part new attributes would be very difficult to satisfy. Users of National Accounts expect high-grade data for a reason. Our employment accounts cover the people and volume quadrants at least to some extent. We are lacking the breakdown by gender, age and educational attainment as well as information on the hours sought. This information might be more readily available for countries basing employment information on establishment and household surveys – but possibly with resulting trade-offs concerning data quality.
- We can rely on the existing labour force surveys that are on a quarterly basis and develop labour accounts the only weakness will be in availing financing in collecting high frequency data on labour on both the supply and demand side.
- Perhaps not all variables will be attainable.
- Challenges: This document could be enhanced by adding the sub-topic of basic concept and definition of labour; data sources; brief note on method of compilation; and the linkages of diagram with further information on the disaggregation data.
- There might be challenges regarding the cleanliness of the administrative data available as input and some confidentiality issues when dealing with small sectors and it might not be possible to establish the labour accounts system with the utmost sector detail. In addition, source data on some of the key areas might be missing or inadequate.
- Give consistency to all of different sources, availability of statistics on informality, Availability of funding for surveys.
- 1) Significant coordination required in a decentralised NSO system to coordinate labour accounts into NA. 2) Accuracy of volume-based indices might be difficult to compute (e.g. overtime work might not be captured).
- Lack of reliable data sources.

- The challenges come from the side of data collection and matching the information from different sources.
- The lack of a precise definition of "jobs" makes it difficult to fill in quadrant 1 "jobs".
- The estimation of labour inputs in the non-observed economy.
- The lack of data.
- Our answer is intended to reflect the feasibility of producing the accounts, including demographic breakdowns, to an acceptable quality. Producing the accounts to our preferred level of quality may be significantly harder.
 - * Our data coverage is reasonably strong in this area, although small aspects of detail might be missing. The ability to link household and business dimensions via our large longitudinal dataset should be very helpful to us.
 - * The biggest weakness in coverage relates to working proprietors. We believe we are able to produce adequate estimates in this area, but would be reliant on some imputation which would limit quality.
 - * Another weakness is demographic detail in current surveys, both in terms of coverage and consistency of breakdowns. Whilst our longitudinal database should help us to cover the shortcomings, this too is likely to rely subjective assumptions which will limit quality.
 - * In general, achieving consistency between definitions used in labour market measures and national accounts is a fundamental issue which is not yet fully resolved. The inclusion of labour accounts in the SNA framework would likely aid in minimising those inconsistencies.
- Information sources are available from surveys and administrative records. The challenge is to integrate, harmonize and standardize the available sources and implement new detailed statistical investigations according to labor accounts, jobs, people, hours worked and payments.
- Difficulty is included in the definitions of value indicators.
- In the same vein as the answer to 5B, incorporating labour accounts into the core national accounts may require to compile the labour-related data based on the SNA classifications (institutional sector, industry), but it could be technically difficult to ensure such consistency in the system by combining the source stats on the side of employers and those on the side of employees.
- The main challenge is the compiling data from the in-house investment from private sector which still fragmented, as well as the current conceptual framework which still in obscure.
- Among the challenge is to have household surveys which domain estimation are urban and rural with national representation and capture the education level of the households' members.
- The main challenge lies in the work to reconcile different data sources since there exists consistency problems between them.
- Difficulties in obtaining the detailed information required to form a labor force account.
- Main challenge is that cross-classifying worker by industry, gender, age, education and other dimensions requires a large dataset with many observations every year. Choosing

which dimensions to include and exclude is often difficult and may involve contentious economic assumptions.

7. Would your institution be interested in participating in an experimental estimate exercise?



Yes:

- This requires technical knowhow otherwise it will be difficult.
- Provision of a consultant to work with us on this matter and financial support to enhance data collection through surveys, administrative data collection and other sources.
- Data collection.
- We already have the Census survey, the household living standard survey and also the Economic census. The data collected could be the input to build Labour accounts. We however lack the methodology and the way to collect more information needed to create labour accounts. So we do hope to receive technical assistance about the calculation method and the way to collect data from the SNA. We will make an effort to cooperate with the SNA team to build labour accounts in our country.
- Capacity building.
- On how to derive labour accounts.
- Technical assistance for the determination of the estimators that do not have an adequate level of statistical precision to be used in this project.
- Consultation of good experts, exchange of experience with other countries.
- We would like advice to review and assess the available information.
- In building the accounts, but I am not in no position of taking such decisions.
- Our Bureau of Labour Statistics and the NSI have progressively been developing labour accounts involving all four quadrants by using available data sources comprised of

households and establishments. We are looking forward for technical assistance on the refinement of our estimation methodology, particularly on the calibration of various data sources and relevant approach for this compilation. We are also interested to be part of any working group in developing and enhancing this document.

- In the beginning to establish the key fields and identify equations we would need some expert assistance. Later on we would need study visits to find answers to the questions that emerge on the way.
- We would need assistance to review the available surveys and to implement the proposed methodology.
- We might need a technical assistance after the final decision of implementation the labour accounts into SNA.
- Participation in experimental estimates is possible after the development of a methodology for labour accounts (including terms and definitions). Participation in training workshops, as well as learning from other countries' experience.
- Coverage and estimate of labour input in the non-observed economy and including of these in the total measures.
- Know the experience of the countries that implemented the labor account. Training in the implementation of estimation procedures of the 4 quadrants of the labor accounts, and specifically of the one that refers to the hours of work contributed by the workers and the hours that the companies use.
- Methodological explanations and practical examples.
- Technical assistance to improve the existing data collection tools and to design new ones.
- At this stage it is too early to say whether we can participate in an experimental estimate exercise.

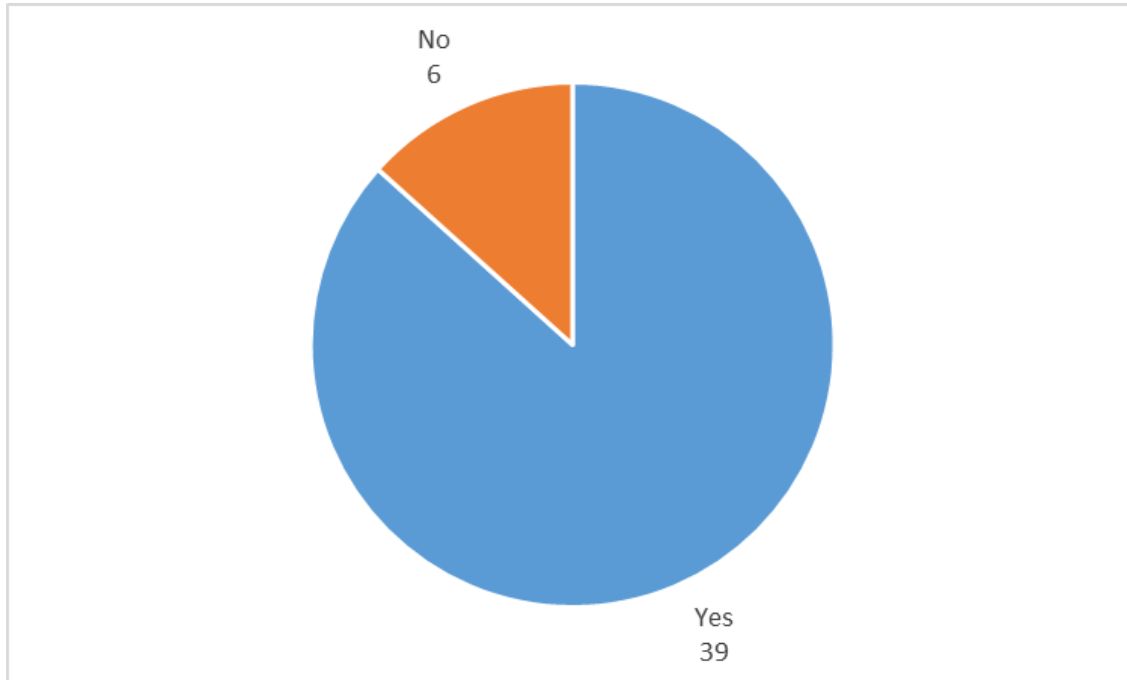
8. Do you have any other comments in relation to the guidance on labour accounts as described in the guidance note?

- I think institutions need to be enlightened on how this can be done.
- The Remuneration Matrix should be investigated properly because remuneration per capita is derived from the total remuneration divided by the population of workers. There are also notational problems because there is no such concept as Matrix Division and Matrix Multiplication is defined as row multiply by column. Although, the ideas are clear and understandable but the operations are not in agreement with the established literature on matrices. This thing about matrices in National Accounts GDP compilation will open a window on a review of matrices operations and may even utilize the concept of a Tensor in economic statistics.
- It is not necessary.
- We agree with the guidance.
- The guidance note is comprehensive.
- The further exploration and implementation of labour accounts is in principle being considered meaningful and positive. Our goal should nevertheless not be to go for “as

much as possible” without having high data quality in mind on the one hand. On the other hand, the SNA principles should be applicable not only for the statistically most advanced countries worldwide but also for the multiplicity of countries decayed in this respect. Thus labour accounts should be further developed outside core SNA, jobs and vacancies should remain in the realm of labour market statistics.

- You should next time consult decision makers and collect their point of view which might be different to ours technician.
- a. To include Forms of work and labour force statistics conceptual frameworks by International Labour Organization (ILO) in the beginning of the guidance note for better understanding the linkages between the SNA and Forms of work as well as the boundaries. b. To enhanced the guidance note by including brief concept on definition, data sources, methodology and limitation. c. To include experiences and best practices from National Statistical Offices (NSOs) that already developed the Labour Accounts.
- We would suggest adding an optional qualitative quadrant regarding the working conditions, production factor intensity (Labour or Capital intensive) as well as skills, education and position. We suggest adding breakdowns also by industry (employed persons), skills and region to the people quadrant.
- Given the increasing dominance of tax data as a source for our business and household statistics, it may suit us best to adopt tax definitions of, for example, paid employee, working-proprietor, and perhaps to break down types of labour income as per tax treatment. In this respect, we might find it necessary to depart somewhat from SNA/ILO distinctions, which do not align with economic reality in our country. Having a well-aligned Labour account situated within the National Accounts would assist considerably with maintenance and improvement of our productivity statistics.
- In response to question 4C regarding potential additional quadrants, we note that since publishing labour accounts, there has been no feedback from by stakeholders raising the need for additional quadrants. One area of potential is around the significant links to unpaid work and volunteering. This is a potential but not crucial area of expansions but can be achieved through the extension of existing quadrants rather than new ones.
- There’s always bias when compiling or interpreting qualitative data, so there should be a standard measurement in order to guide countries to have the same method of estimation and interpretation
- We have interpreted that people in the questionnaire is used synonymously with persons in figure one of the GN.
- Residency as an extra breakdown could be very valuable in the determination of border workers and flows (D.1) in the rest of the world accounts (S.2).

9. Do you agree with the inclusion of supplementary information on education and training (based on the Satellite Account for Education and Training) as an extension to the core SNA?



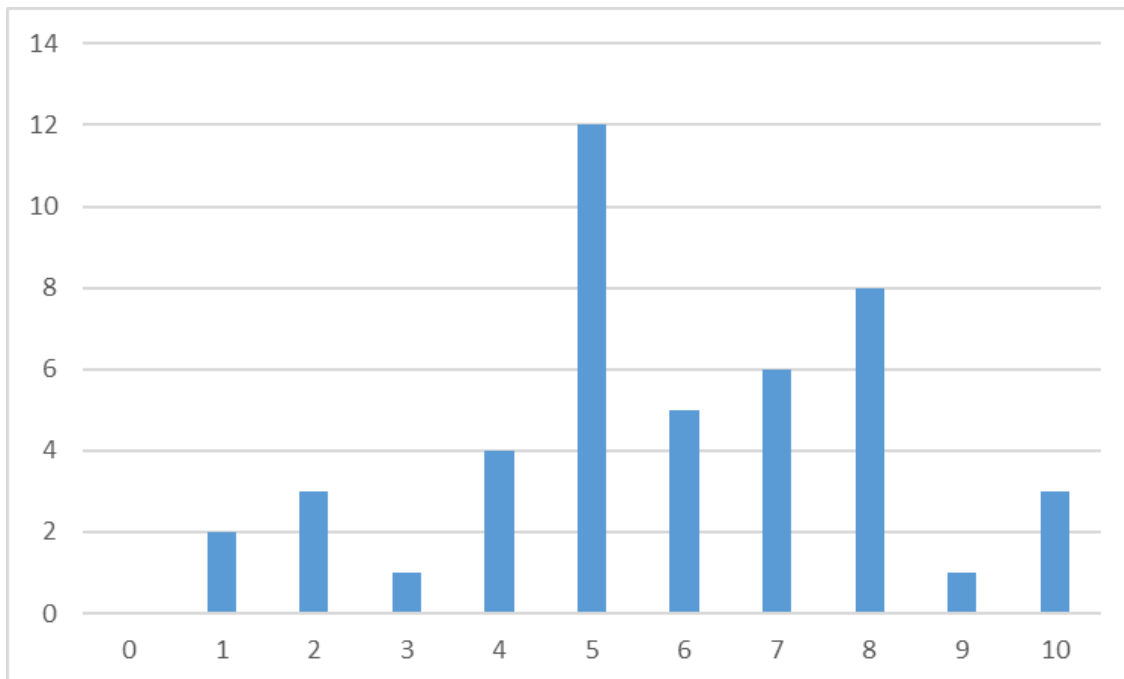
Comments supporting 'no':

- Data availability.
- For countries in which general government is the most important provider of education and training, a SAET will yield limited additional information. Areas that are not yet covered will also be problematic to be included in a SAET due to the lack of data (e.g. on in-house training) or definition and measurement issues (in the case of an inclusion of unpaid household services). Additional non-monetary data is already widely available e.g. in the context of the UOE data collection (which also includes data on education expenditure – even though not applying NA classifications). The UOE data collection on education expenditure provides internationally comparable data on expenditure on formal education by ISCED Level, expenditure type, financing agent etc. For the purpose of national reporting on education expenditure, we already apply a broader definition of education including non-formal educational programmes. The data is also compiled according to the international guidelines set out in the UOE Manual and Handbook. A clear and internationally harmonized definition or demarcation of non-formal education should be very difficult to reach. In addition, the sources of data on non- and informal education are expected to be very fragmented and fuzzy. The provided guidelines are not clear and specific enough in these respects yet.
- The inclusion of additional information on education and professional training into the central accounts system will result in violating the format for the national accounts presentation and the emergence of additional qualitative and quantitative measurement units together with valuations in data set. It is advisable to compile education and

professional training accounts as an independent satellite account which compliments the central accounts system of the SNA.

- Also in this case we prefer recording data in a satellite account during development.

10A. How do you regard the feasibility of compiling results on education and training according to the guidance in this note (0-10 from not feasible at all to highly feasible)?] 10B. Please explain where you see main strengths and challenges.



Average: 5.82.

Main strengths:

- The elaboration of the accounts in terms of matrices is powerful.
- In paragraph 42, main strength is "The government sector is the main player in education activities in all countries, therefore the main data sources are the government accounts (government finance statistics)".
- E&T is useful to policy makers with detailed data on expenditures of education, and financing of these expenditures.
- In our country, 80 percent of the students are enrolled in public schools, so the Public Educative Sector database can be considered as the main source of data by including sociodemographic information on teachers and student enrollment by educational level.
- The main strength is that it estimates the costs of human capital formation as a main factor of production.
- Monetary information is available.
- This document has provided overview of the SAET compilation at macro level.

- As a member of the Task Force on Satellite Accounts for Education and Training we participated in the development of the framework and compiled the SAET satellite account. Our 2019 Satellite Account for Education and Training will be completed in December.
- The education and training account provides a good basis for the compilation of human capital estimates in the future. One of the challenges is developing estimates for free online courses.
- Measuring formal education (up to and including tertiary education) looks to be easily achievable, including the provision of demographic breakdowns. Government agencies collect data from all education providers and maintain detailed datasets, some of which are already used in existing SNA systems. As with Labour statistics, we should also be able to make use of our Integrated Data Infrastructure in linking sources where needed. However there are large gaps in our coverage of further (adult) education and training, and the existing coverage (our business financial dataset) does not support demographic detail. Producing good quality estimates of this area would likely require significant work to extend the scope and depth of coverage.
- It allows estimating the total expenses in education and training, which makes it possible to approach the measurement of human capital with a cost approach.
- The compilation of education and training estimates as outlined in the guidance note is feasible however there would be difficulties related to the collection of the appropriate data.
- We have developed an Integrated System of Social Statistics (SIES) in which human capital indicators are included to measure future well-being as well as education indicators to measure current well-being.

Main challenges:

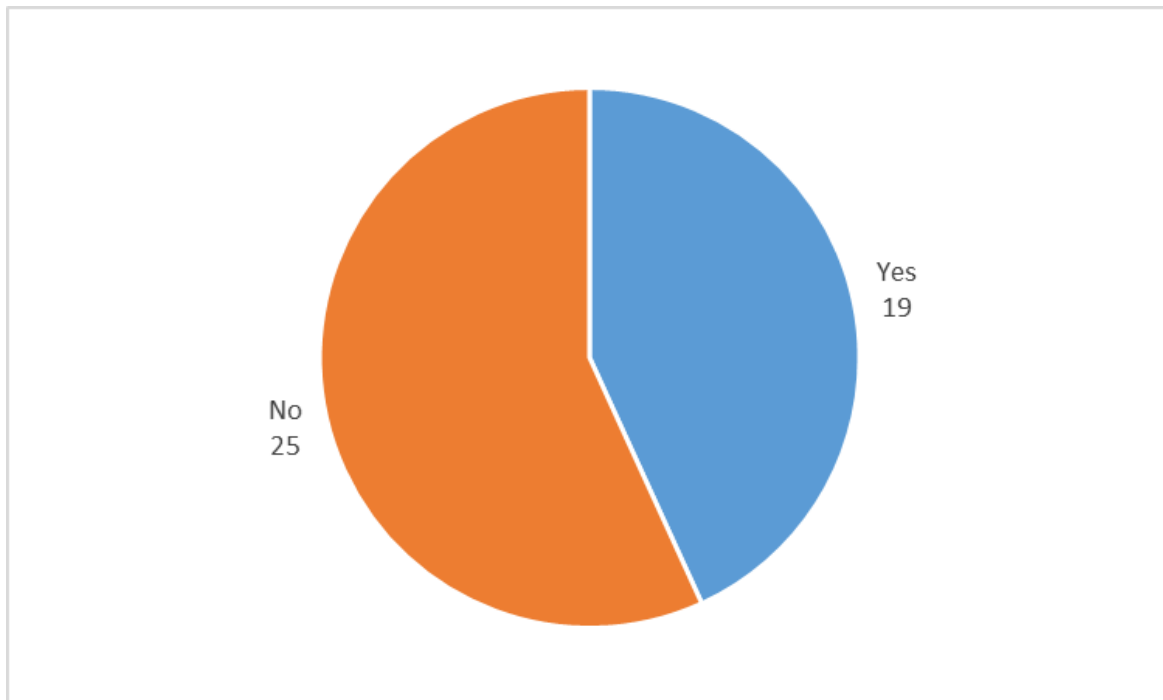
- The challenges will be how to get real information across.
- The elaboration of the accounts in terms of matrices is powerful but thorough understanding of the concept of matrices operations is yet to be mastered. Also, extension may be needed to the concept of a Tensor.
- Main challenges are data collection and data sharing from other agencies to the statistics authority.
- It's hard to get data resources to compile E&T.
- Two main challenges are considered: a) collecting data on training expenditures with the level of breakdown required to determine human capital costs and measure the impact of digital education.
- Training of specialists.
- The main challenge is to collect data with respect to on the job training (in-house training) at the employer's expense.
- Not all data sources will be readily available. Resource constraints could also be a challenge.

- Monetary information is available, but not the indicators of working hours, volunteer work, unpaid training in companies, and entrepreneurship.
- Non-formal and informal education areas partly lack widely accepted definitions and data sources. If a SAET is limited to formal education, its additional value is limited.
- The challenge relies in having enough financing to collect demand and supply side labour education information.
- Improvements needed for measuring real education as we use an outdate methodology. We would need to align with OECD methodology for education and training which could involve in a considerable amount of work.
- This document should be read together with SAET Compilation Guide by United Nations Economic Commission for Europe (UNECE), 2020.
- Challenges: absence of statistics on formal and informal education, including those trained on their own, lack of resources to carry out the necessary surveys to have reliable and timely information, lack of methodology to measure free informal courses
- Challenges: Lack of data such as data on education and training output provided by digital platforms and non-education service providers and data on in-house training.
- 1. Currently, in our national accounts there is no sufficiently detailed classification of education with breakdowns by education level (only as the whole by section 85 P);
2. There is no relevant information about expenses for professional training of employees at work places (internal training), that is why the expansion of the SNA production boundaries on the basis of satellite account of education and professional training is possible only after obtaining the additional data sources.
- Lack of sufficient detail in data sources.
- The challenges come from the side of data collection and matching the information from different sources.
- The availability of data.
- There are large gaps in our coverage of further (adult) education and training, and the existing coverage (our business financial dataset) does not support demographic detail. Producing good quality estimates of this area would likely require significant work to extend the scope and depth of coverage.
- The challenge is to implement new surveys in the private sector and complement public sources with new administrative records to have detailed information on public and private expenditures as required by the education and training satellite account (CSEF).
- Availability of human and financial resources.
- Difficulty is included in the definitions of value indicators.
- Although it could be feasible to develop the data for school education, it might be extremely difficult to compile comprehensive extended accounts as challenging to do it entirely if it should include the training data for adults (e.g., Non-formal cultural, recreational, sport and vocational education and training activities, and in-house training) after school or continuing education due to the lack of data source.
- The compilation of education and training estimates as outlined in the guidance note is feasible however there would be difficulties related to the collection of the appropriate data. More specifically the collection of information related to in-house or own account

education and training would be difficult for both us to collect but also for businesses to report. These issues are not insurmountable, but there is also currently minimal user demand for these estimates.

- The statistics on education are available in the government account, although private's education data still not yet systematic. Other challenge is existing data doesn't provide the insight on the quality of education in our country.
- To establish mechanisms and tools for accessing to non-formal education information, in different modalities, including that carried out in companies. The measurement of skills would require developing complex and new surveys which should evaluating qualitative issues such as motivation, perception of insertion into the labor market and perception of future development. The main challenge is to price the skills in a common currency.
- Difficulties in dividing and evaluating early childhood education; difficulties in obtaining reliable data on the household sector; it is impossible to estimate the costs of on-the-job training (there are no sources of information).
- Measuring the output of the education sector is of utmost importance but implementing a theoretically appropriate measure with readily available data is difficult. Quality adjusting output is an important challenge. Measuring training, especially on the job training, may be just as important. We would follow developments on this with strong interest.
- Producing a SAET is not a minor exercise. We have an excellent data infrastructure of administrative and survey data. However, in constructing the SAET we will encounter the same problems as other countries (inconsistency between data sources, lack of sufficient detail, measuring and pricing in-house training, free courses, and e-learning). Prices can be particularly challenges, considering that in our country education is almost entirely provided by the public sector and is heavily subsidised. An additional challenge is that investing in a SAET implies investing in a Human Capital account, which is more difficult to produce. Should it prove too difficult (at present) to produce a Human Capital account, a SAET may still be useful but the integration of education and training in the national accounts will remain incomplete.

11. Would your institution be interested in participating in an experimental estimate exercise?



Yes:

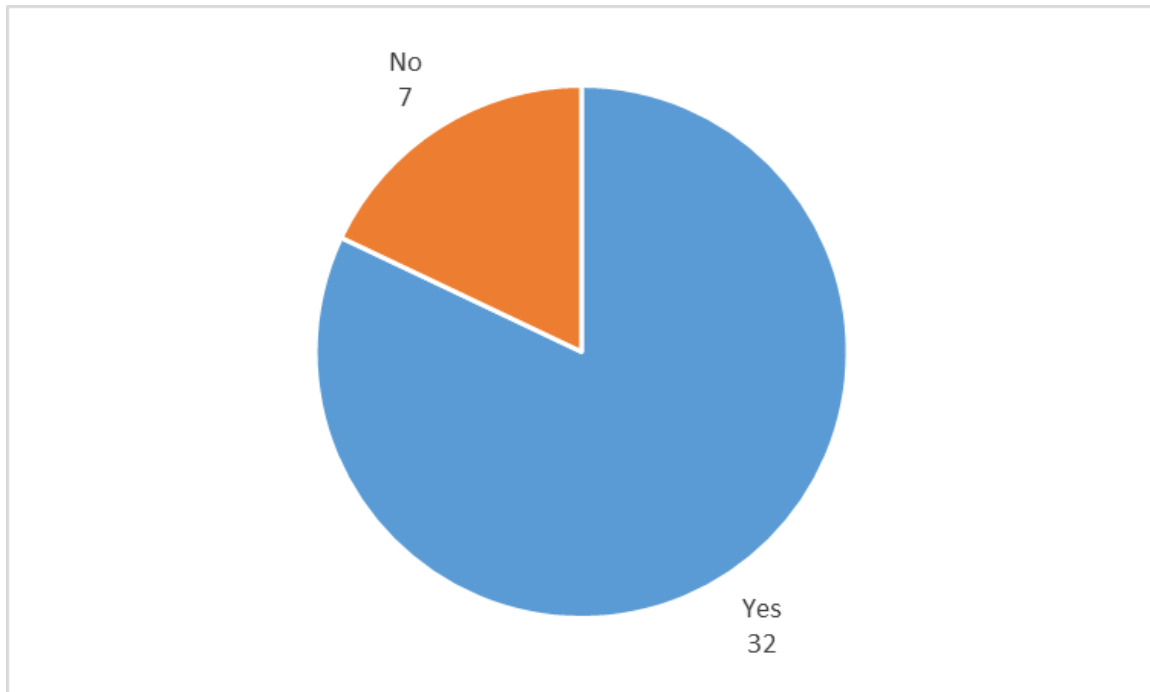
- Training on how to collect the data and resources.
- Financial support and working with a consultant and the SNA team.
- Data collection.
- We need the calculation method, the input data needed and how to collect data to build education account.
- Capacity building.
- Techniques for measuring education received through non-conventional means (informal learning on digital platforms), as well as assistance in determining constant price estimates for education and training.
- Training courses.
- We would like advice to review and assess the available information.
- Experts in building an integrated system of data collection analysis and publication.
- We are looking forward for any strategic engagement for capacity building and training particularly in the planning, data collection, methodology development and analysis of SAET statistics.
- We might need technical assistance after the final decision of creation Satellite Account for Education and Training into SNA.
- Technical assistance for the development of Satellite Account for Education and Training (SAET), identification the data sources and analysis of the received results.
- Learn about the experience of the countries that implemented the education and training satellite account. Training in the methods and procedures for estimating the tables necessary to measure the education and training of people.
- Methodological explanations and practical examples.

- Technical assistance to develop the measurement strategy.
- At this stage, it is too early to say whether we can participate in an experimental estimate exercise.

12. Do you have any other comments in relation to the guidance on education and training as described in the guidance note?

- More education need to be done.
- Training on the application of matrices for the elaboration of the accounts in SNA should be heightened.
- We agree with the guidance.
- We participated in the development of the guide “Satellite Account for Education and Training” 2020 and created a pilot account. In addition, I would like to draw your attention to the following problem: The subject matter is interpretation of the use of the services “On-the-job training at the expense of the employer”. Such services are not included in the 2008 SNA and the 2020 guide adopts the following interpretation:
 1. intermediate consumption for market producers such as corporations.
 2. final consumption for non-market producers such as government.
 A question arises, whether there is justification for different treatment of the use of “on-the-job training” services in public vs. private hospitals, for example.
- The guidance note is adequate.
- We agree that a SAET is an essential step towards producing a cost-based human capital account. However, we consider a SAET’s value in its own right rather limited (see above).
- Our experience is that there are data challenges for the construction of that account especially in employee training that will take into consideration the employee's time on training and other indirect costs. There are also challenges for measuring online training, many of which are outlined in the OECD manual.
- This document has provide sufficient and comprehensive guidelines on SAET compilation.
- We suggest adding additional subcategory about receiving education (for each level) from non-resident units (both on campus and online), and investigations of mechanism of matching the education and specialization.
- The notes do not provide clarity on how apprenticeships would fit into the structure of the account. We are inclined to treat these as distinct from less formal vocational / in-house training.
- The proposed SAET focuses on monetary data, suggesting that the main tables may be supplemented with non-monetary data. We believe that these non-monetary data (such as enrolled students, teachers or employed persons by educational attainment) should be an integral part of SAET reporting, also to more firmly link SAET to the Labour Accounts.

13. Do you agree with developing experimental estimates of human capital, focusing on cost-based education measures and income-based monetary stock measures?



Comments supporting 'yes':

- Yes, it is good to know the human capital as the asset for education development.
- Human capital valuation is a necessity for a complete utilization of labour resources. Yet, it is a difficult work to estimate the value of individual persons' human capital development. One would begin to believe that the valuation of human capital development is a signal of the inevitable evolution of socialism from modern capitalism.
- It is challenging to choose a suitable price deflator for human capital investments; choosing an appropriate amortization rate for human capital; and reconciling methods of estimating the stock of human capital and investments.
- As human capital is recognized as an asset of any economic unit, its monetary valuation within the national accounts will allow having new indicators that will link the labor market with the economic aggregates; statistics of great relevance for the comprehensive study of the labor market, production, and the potential to generate real growth in household income. The formal inclusion of human capital in the national accounts strengthens the analysis of the distribution of earned income, by linking employee compensation to the demographic groups of interest formally and coherently.
- The development of experimental estimates based on different measurement methods will allow in the future to make an informed decision on the inclusion of human capital in the SNA.
- We agree because spending on education is a very important part for the development of countries.
- This stock provides a long term view of issues around education and human stock formation. It is important to have both the stocks and the flows. From a sustainability

point of view, the stock provides insight into how trends in the contribution of education differ or augment human capital and the economy.

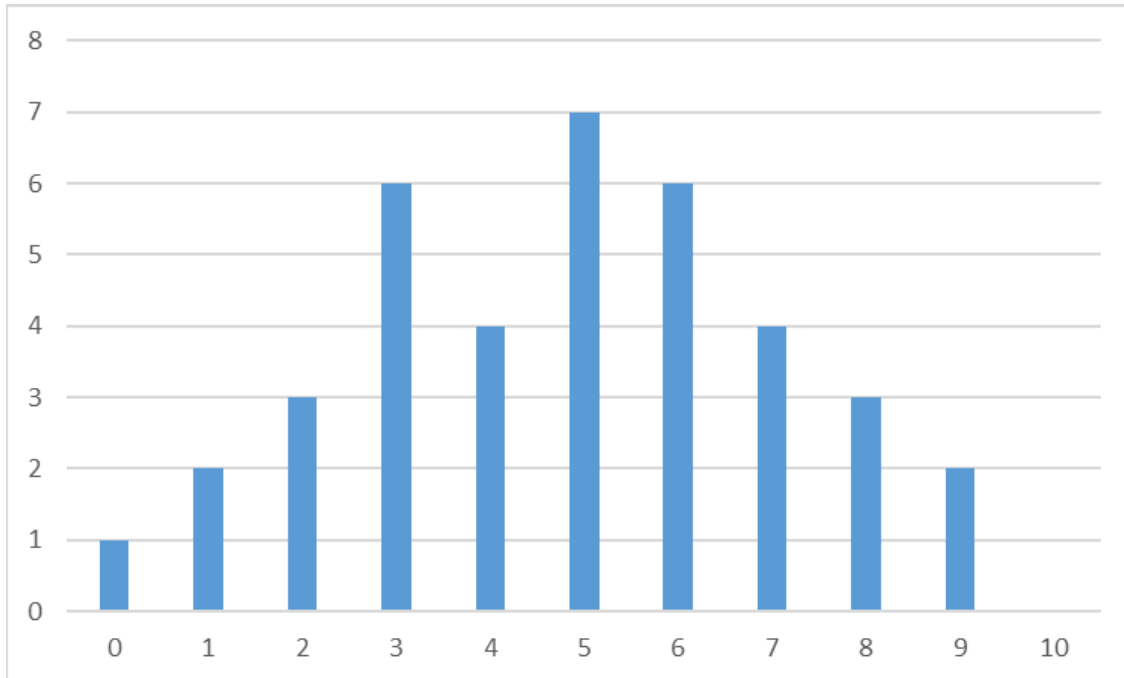
- Investment on human capital is increasing over the years and played an important roles in economic growth. Thus, measuring human capital is essential to evaluate the effectiveness and contribution to the economy.
- The development of human capital is fundamental for the sustainability of economic growth, then to have indicators that allow the design of policies is very important
- It will be useful as it provides insights on the output and productivity of education and training and there is a compilation guide on cost-based education and income-based monetary stock for NSOs to follow.
- This method is supported by the most comprehensive set of available data.
- In the development of experimental estimates of human capital, cost-based education measures are needed because the acquired knowledge, skills and qualifications increase the human productive capacity and leads to future economic benefits.
- As the capital stock, the human capital stock is a relevant information to estimate the potential growth of the economy.
- For now, we support this as a research output, due to the amount of modelling required and sensitivity to methods / assumptions adopted. At a wider government level there is interest in expanding the economic policy view to include less tangible forms of capital, including human capital.
- It is important to have a human capital account that includes attributes such as: knowledge, skills, experiences and competencies through an integrated flow and inventory accounting system for economic and social policy purposes.
- We agree that the development of estimates of human capital on an experimental basis is the preferable option. We also agree that the cost-based and income-based measures are the most appropriate.
- It's good to have a standard exemplary for measurement; however, the result from both cost-based and income-based measurement might not imply the quality of human capital.
- Developing experimental estimates of human capital would allow us to improve the knowledge and explanation of the total factor productivity of our economy. On the other hand, it would also allow us to know its impact on households, the risks associated to the depreciation of this capital (ageing, obsolescence and loss of skills) and to obtain a powerful instrument for public policies.
- The information might be useful for researchers and other advanced users.
- We think that the cost-based education measures and the income-based monetary stock measures are the best options for estimating the monetary aspect of human capital.
- The value of human capital likely exceeds the value of physical and intellectual property capital so it is important to have these measure to understand the evolution of wealth and inequality. Human capital measures are important for assessing the output of the education and training sector.

Comments supporting 'no':

- Data availability

- The index measures of Human Capital have not been agreed yet. The results from “the cost-based approach” and “the lifetime income approach” are often not consistent with each other.
- I think focus should be on the core and essential extended accounts.
- We were not sure the previous question actually meant that stock measures of human capital should be calculated both using the cost-based and the income-based approach. This is what we assumed giving our answer below. (If, on the other hand, different measures should be calculated using different approaches, this would enhance our skepticism.) Given the two alternative approaches, we prefer the cost-based approach. Even with the cost-based approach it will be tough to monetarily value and compare the outcome of differently structured and financed education systems. The lifetime income approach, however, requires a multitude of assumptions ranging from the development of income structures to services lives of different types of knowledge or skills and to discounting of (expected) future income. Disregarding these issues, it would be interesting to compare the outcomes of these two approaches and to see whether they differ systematically and how the gap between the human capital estimates depends on specific assumptions.
- We think human capital belongs more to the area of research than to (experimental) national accounting. The relationship between human capital and wellbeing is also not clear to us.
- In our view, estimates will be based on the variety of soft assumptions, further discussions of practical aspects are necessary.
- The estimation of human capital needs to develop some data source, the education and training data for the cost- approach, the number of employment and salary data by attribute for the lifetime income approach, and the very long-term retroactive data assumed the lifespan of the labor force. It will be beyond the department's capacity in charge of SNA as it is very costly for the research and development. There is a problem with estimating the data of education and training for adults in the first place.

14A. How do you regard the feasibility of compiling results on human capital, focusing on cost-based education measures and income-based monetary stock measures (0-10 from not feasible at all to highly feasible)?] 14B. Please explain where you see main strengths and challenges.



Average: 4.82.

Main strengths:

- We have experience in generating distributional indicators from household surveys, conceptually aligned to the terms of the national accounts, including sociodemographic elements (people by educational level and age), which will surely contribute to this new project.
- This document has provided overview of the Human Capital compilation at macro level.
- Several international projects have shown that compiling human capital is feasible, but we have concerns about the high impact of the choice of assumptions on the results.
- It is important to implement a human capital account.
- We produced estimates on human capital focused on a lifetime earnings approach a long time ago. The production of estimates may be feasible intermittently using census data.
- Research has demonstrated feasibility but has also demonstrated how dependent the measures are on particular assumptions.

Main challenges:

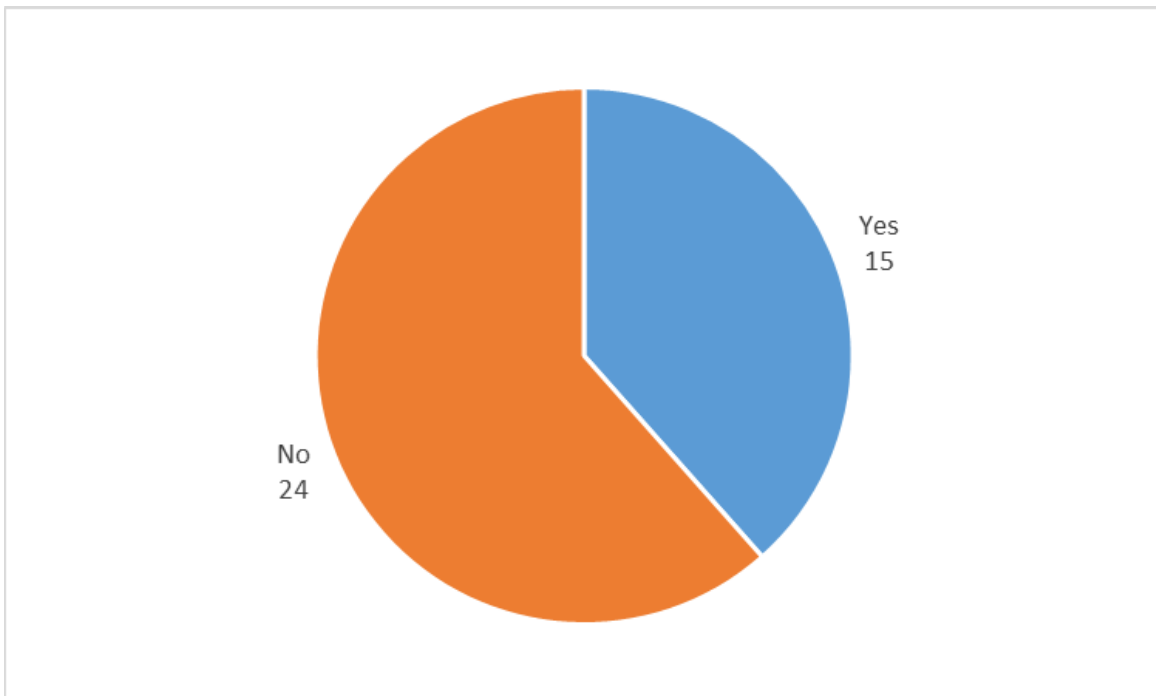
- Traditional capitalist system does not recognize the dominant role of labour in the production process. This historic fact is the main challenge facing the valuation of human capital development.

- Data availability is the main challenge. Staff training will also be required.
- Not feasible at all.
- As above(13B).
- The main challenges are to develop a methodology that allows linking education, human capital and determining the factors that contribute to the formation of the human capital stock. A second challenge is obtaining indicators with a lifetime income focus (calculating the net present value of future income).
- A study of methodology and experience of other countries will be required, as well as the research for data sources, their collection and analysis. In addition, employees training and the development of a data collection and processing system for valuation of human capital will be required.
- Not all data sources will be readily available. Resource constraints could also be a challenge. The quality of the results will also vary quite substantially making international comparison difficult.
- It is difficult to determine, in practice, what part of education and training becomes knowledge and skill development.
- See above. It is probably feasible to estimate even income-based human capital stocks, but their results will heavily depend on the choice of assumptions and therefore clearly deviates from the methods usually applied by NSIs.
- This involves measuring intangibles which can be difficult. Sufficient detail may not be available to do the cost based approach. Additional research is needed to examine the difference of various measures and resolve many other measurement issues.
- This document should be read together with Guide on Measuring Human Capital for Europe (UNECE), 2020.
- Cost-based education measures and income-based monetary stock measures are likely to yield vastly different estimates on human capital stock and investment, making it difficult to reconcile the different approaches and may potentially affect the international comparability of results.
- We have concerns about the high impact of the choice of assumptions on the results.
- There a lot of factors that could affect the human capital, and cannot be statistically measured.
- The challenges come from the side of data collection and matching the information from different sources.
- The biggest challenge would be to develop an estimate of the human capital stock. Advantages: provision of information on human capital (more complete accounting of the production factors in national accounts).
- The availability of data and mythological option that can impact on the results.
- Having the standard methodology, the availability of data for its implementation, human and financial resources.
- Difficulty is included in the definitions of value indicators.
- The subjective estimation might not relevant to real economic situation; for instance, person who have studied in medical field decided to change job and participated in

volunteer work but the cost of education is already collected in cost-based education measurement.

- 1. To improve the quality of the information required to put in place the cost-based approach, 2. To measure the flows of knowledge and skills that increase the human capital, 3. To measure the multidimensional and sustainability aspects of human capital.
- The calculation of a human capital stock is from a statistical point of view doubtful. The method relies on assumptions of future income. The quality adjusted labour input can be estimated with equally good weights by using the current income for each category of labour. Estimating education based on costs is a good alternative to other estimates of human capital.
- Research has demonstrated feasibility but has also demonstrated how dependent the measures are on particular assumptions.
- We have some experience in applying the income-based method. We were involved in an OECD project to examine the feasibility of the lifetime income approach (Liu, G. (2011), "Measuring the Stock of Human Capital for Comparative Analysis: An Application of the Lifetime Income Approach to Selected Countries", OECD Statistics Working Papers, No. 2011/06, OECD Publishing, Paris, <https://doi.org/10.1787/5kg3h0jnn9r5-en>). This study was limited in scope in that it only took into account the costs of formal education, not training or other aspects such as health. This study has taught us that, even though a lot of microdata are available, producing a human capital account will require a considerable investment. A clear choice should be made for either the cost-based method or the income-based method.

15. Would your institution be interested in participating in an experimental estimate exercise?



Yes:

- Training workshops, expert consultations, studying the experience of other countries.
- At this stage it is too early to say whether we can participate in an experimental estimate exercise.

16. Do you have any other comments in relation to the guidance on human capital as described in the guidance note?

- Well, it is a great effort by the United Nations and the SNA team in particular to give a genuine consideration to the valuation of Human Capital and its development.
- We agree with the guidance
- A note on the Income Method: It is based on an estimate of the future income of workers in certain occupations. However, forecasting these revenues is highly unreliable. In addition, in recent years, we have seen an accelerated process of old professions being rendered obsolete and the emerging of new professions. All of the foregoing reduces the reliability of assessing human capital based on the income method.
- Because of ongoing technological change and demographic shifts, increasing the standard of living (Real GDP per Capita) will increasingly depend on improving the way people work and their skills. Nonetheless much work is required in order for us to get to a good measure of human capital.
- This document has provide sufficient and comprehensive guidelines on Human Capital compilation. However, it would be great to include practical experience from NSOs based on the availability of NSOs data.
- We have already suggested in the section of labour account about adding an optional qualitative quadrant regarding the working conditions, production factor intensity (Labour or Capital intensive) as well as skills, education and position. We also suggest adding breakdowns also by industry (employed persons), skills and region to the people quadrant which also relevant for human capital.
- We view the exclusion of migration from the proposed approach as a significant weakness, especially in our country's context. We experience large inflows and outflows of human capital via migration. And changes to the rate of accumulation of human capital may be primarily driven by changes in rates and types of migration (which fluctuate significantly over time) rather than education expenditure (which tends to remain stable). We note there are likely to be significant challenges in reconciling the values derived from cost-based measures of education with those derived from income based monetary stock, which may limit the usefulness of human capital estimates in e.g. a productivity setting.
- Set a measurement standard for qualitative data, this will make a comparison between countries in this type of data much easier
- It would be interesting to incorporate some guidance on how to measure other subjective and multidimensional aspects of the human capital

- Conceptually it is wrong to measure the value of human capital from the income perspective. Such a measure assumes that the contribution to output for each employee is represented by the wage both between employees and between employees and the capital factor. In the real world the correspondence between marginal productivity and wages is much weaker. Furthermore, there is no subtraction of maintenance costs for human capital. For human capital to be equally productive the next day both nutrition and recovery is needed. Some part of living costs therefore need to be subtracted from wages before calculating the stock. The omission creates an asymmetry in relation to machinery since repair and maintenance costs are excluded from operating surplus.
- This note focuses on labour, education and human capital, but ignores the issue of health (which is implicitly contained in human capital). It would have been useful to present the topic of health and in particular the expenditure on the different components of health and how health should be implemented in the measurement of human capital.
- Human capital as a capital asset is a difficult variable to include in productivity estimates. Although there are advantages, human capital does not provide a good picture of productivity in relation to the pay/price index of labour. This is partly due to the concept of occupancy rates, to sensitivity to parameters, to the choice of approach, and so on. Relevance to productivity should not be the only reason for the production of a Human Capital account.