

Paris, France

SNA/M3.23/4F

16 – 18 October 2023

Chapter 34: Measuring well-being

Version circulated for AEG review

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Draft – Version 2.2

A. Introduction

- 34.1 Improving and sustaining the well-being of people and communities is the key focus across the majority of policy areas of government. From a measurement perspective, well-being encompasses data about a number of elements, including health, education, income, employment, consumption and leisure, that collectively support assessment of the progress of people and communities and the extent to which the needs of current generations are satisfied.
- 34.2 The SNA sequence of economic accounts can provide a range of relevant data to support reporting on well-being, particularly at the economy-wide and institutional sector level. However, there are many aspects of well-being that are not highlighted or not encompassed within the sequence of economic accounts. As introduced in Chapter 2, the 2025 SNA provides a broadened and enhanced framing for the measurement of well-being in which macro-economic measures, such as GDP, are complemented by other measures, while still recognizing the relevance of accounting approaches in providing robust and comparable data to support policy development and assessment.
- 34.3 The broader and enhanced framing described in Chapter 2 recognizes two primary avenues through which the SNA can contribute to the discussion of well-being. The first avenue recognizes that, other than GDP, there is a very wide range of data and aggregate measures contained within the SNA's sequence of economic accounts that can be used to inform discussion of well-being. These include measures of household disposable income, consumption, saving and net worth. Further, it is possible to supplement the national level information presented in the sequence of economic accounts with data on the distribution of these economic measures of across groups of economic units. For example, measures of household income and wealth may be disaggregated by standard of living, type of household and other characteristics. This additional detail provides a richer body of data to support discussion of well-being.
- 34.4 The second avenue recognizes that a significant part of the development of frameworks and approaches to the measurement of well-being has involved extending and adapting the accounting rules and structures presented in the SNA to organize data on the environmental and social dimensions of well-being. Examples of these accounting-based approaches cover topics including unpaid household service work, health care expenditure, education and training, and environmental flows, including ecosystem services. The motivation for the development of these frameworks recognizes the potential of accounting-based approaches and the advantages of ensuring that data about the environmental and social dimensions can be readily connected to data from the SNA's sequence of economic accounts.
- 34.5 Building on this broader and enhanced framing, this chapter provides a description of the role of the SNA's sequence of economic accounts in the measurement of well-being. As introduced in Chapter 2, the well-being of present and future generations may, itself, be considered in a number of ways. Three aspects are of most relevance. First, the goods and services consumed by people as recorded in measures of household final consumption expenditure. Second, the goods and services consumed by people that are outside the scope of the SNA production boundary. These will include non-market goods and services sourced from the environment, unpaid household service work, as well as the connections and relationships people hold with each other and with the environment. Third, people's functioning and capabilities – i.e. the freedom and possibilities they have to satisfy their needs.
- 34.6 To measure these aspects of well-being, the distinction between objective and subjective measurement is relevant. Objective measures of well-being concern measures of various elements of people's lives such as income and consumption, health, knowledge and skills, safety and social connections. Subjective measures of well-being concern self-reported well-being, i.e. evaluations, both positive and negative, that people make about their lives and people's affective reactions to and reflections on their own experiences. This chapter focuses on the organization of data using accounting approaches to support objective measures of well-being. The development of subjective measures of well-being is certainly relevant more broadly but is outside the scope of this discussion.

- 34.7 The discussion of objective measures of well-being is presented across five sections. In Section B, the measurement of well-being in terms of income and wealth is considered commencing with an overview of the range of macro-economic measures of income, consumption and wealth available in the SNA sequence of accounts and introducing alternative measures of income and wealth that apply different concepts to those applied in the SNA.
- 34.8 Section C discusses the distribution of income, consumption and wealth across households. To support this discussion, an overview of the scope and definition of households and household groups is provided. Detail on these and other aspects of measuring the household sector are elaborated in Chapter 32 on Households.
- 34.9 In Section D, the measurement of well-being from the perspective of households as consumers and producers is considered, including the potential to extend the production boundary to incorporate flows that are not recorded in the sequence of accounts. From a consumption perspective, the discussion highlights the range of goods and services consumed by households that contribute to material well-being both within and beyond the SNA production boundary. Within the SNA production boundary, relevant goods and services include consumption of food, clothing, energy, water, transport, recreation, education and health, and measurement relates to both household final consumption expenditure and household actual consumption. Beyond the SNA production boundary, consumption includes the benefits arising from unpaid household service work and ecosystem services. From a production perspective, the discussion is framed in relation to the different forms of work that people undertake, including paid employment and unpaid household service work. By placing these various forms of work in a common context, a significant range of information can be organized including both labour input within the SNA production boundary and contributions of households beyond the production boundary. For example, connections can be made to households activities in volunteering, to issues concerning unemployment and quality of jobs, and most broadly to the wider measurement of time-use.
- 34.10 In Sections E and F, the discussion focuses on two specific aspects of well-being, namely health and education. The discussion of these aspects can be significantly supported by rich-accounting based data sets. Measuring well-being associated with education is considered through both accounting for human capital and accounting for expenditures on education and training. Measuring well-being associated with health focuses on accounting for health care systems. Note that excluded from consideration is the measurement of outcomes arising from consumption, for example, the measurement of health outcomes using metrics on the quality of life.
- 34.11 The topics discussed in this Chapter cover many, but by no means all, aspects relevant in the discussion of well-being. For example, there is no discussion of the measurement of health outcomes, trust and governance, civic engagement, crime, safety or accessibility, all of which will be relevant considerations. Nonetheless, the Chapter demonstrates the potential of accounting-based approach to support the organization of relevant data, to build linkages between macro and micro perspectives on well-being and to identify stronger connections between measurement in the economic and social dimensions of well-being.

B. Economy wide measures of well-being

- 34.12 This section considers the measurement of well-being in terms of income, consumption and wealth in line with the SNA definitions of these concepts. There is a focus on economy wide measures of income, consumption and wealth that can be derived from the sequence of economic accounts, and identifies a wide range of indicators other than the most common GDP per capita. The section also summarizes a number of alternative measures of income and wealth that apply different conceptual scopes.

1. Economy-wide measures of income, consumption and wealth

- 34.13 As recognized in the introduction to this chapter, while not designed for this purpose, the headline economic growth measure that is produced from the national accounts, GDP, is often used to represent societal progress or the economic well-being of the population. However, GDP is one of a number of economy-wide measures of economic performance that are contained in the sequence of economic accounts. This section describes a range of relevant measures and related issues.

- 34.14 GDP is a measure of the value added through production by resident economic units. While this encompasses a number of elements of income, in particular the returns to capital and labour used in the production process, it does not reflect a range of items commonly considered in the discussion of income such as interest, dividends, taxes, and social insurance contributions and benefits. The sequence of economic accounts has a place for all of these items and hence, depending on the income concept that is preferred different measures of income can be derived.
- 34.15 The sequence of economic accounts is connected using balancing items that “carry over” from one account to the next in the sequence. Balancing items are derived from aggregates within each account. For example, GDP is a balancing item from the production account derived by subtracting intermediate consumption from output. The sequence is described fully in Chapter 3. For the purposes of measuring income, the recommended balancing items and associated aggregates are primary income and (adjusted) disposable income. For the measurement of consumption, the recommended aggregates are final consumption expenditure and actual final consumption. For the measurement of wealth, and changes in wealth the relevant balancing items are net lending, net worth and net financial worth. The connection between income and wealth is reflected in measures of net saving. Definitions of these variables are provided in Chapter 3 and discussed in detail in chapters 7 – 14 on the sequence of economic accounts. Importantly, all of these measures are also established for individual institutional sectors, including corporations, general government and households. Table 34.1 provides a stylized summary of the economy-wide measures from the sequence of economic accounts.

<<Insert Table 34.1: Economy wide measures from the sequence of economic accounts (see annex)>>

- 34.16 For many balancing items the preferred measurement should be in net terms, i.e. after deducting the cost of fixed capital and the cost of depletion of natural resources. Measures in net terms provide the most appropriate measure of income and wealth since they take into consideration the decline in the value of capital over an accounting period that will influence the capacity of an economy to generate income and sustain wealth into the future. A longer discussion on the use of gross and net measures is presented in [Chapter 19].
- 34.17 At an economy-wide level it is particularly evident that flows to and from the rest of the world need to be taken into account when measuring income and wealth. In measuring GDP, the connection to the rest of the world is reflected in the inclusion of exports and the deduction of imports. However, there are a number of other flows that should be adjusted for to find an appropriate measure of national disposable income. This will include flows of interest, flows of remittances and other transfers vis a vis the rest of the world.
- 34.18 For the measurement of trends over time, it will be relevant to take into consideration the effects of price change. Thus, there is a common focus on volume measures of GDP and real measures of national income (elaborated in Chapter 18). In addition, it is usual to express these measures in terms of the size of the population to which they relate, i.e. per capita. This can be particularly relevant in comparisons across countries. Comparisons across countries will also be aided in making adjustments for differences in purchasing power through the calculation and application of purchasing power parities (PPPs) (elaborated in Chapter 18).
- 34.19 Bringing all of these considerations together enables a number of different, yet SNA consistent, measures to be derived reflecting different adjustments for (a) the costs of capital, (b) the effects of price changes, (c) the differences in population and (d) the variations in purchasing power. Examples of the range of measures start from GDP and GDP per capita and include net domestic product, net national income, real net national income, and real net national disposable income per capita. In addition, many of measures of income and wealth described in this section are also compiled for institutional sectors within the sequence of economic accounts, including for non-financial and financial corporations, general government and households. These different aggregate and sectoral measures and the relationships between them are described in Chapter xx.
- 34.20 All of these calculations can be undertaken within the context of the sequence of economic accounts described in the SNA and the associated methods for making the adjustments just listed. Generally, however, the sequence of economic accounts is compiled only at national level. In many countries there will also be interest in understanding variation within a country, for example across states, provinces or regions. For this

purpose regional accounts can be compiled noting that generally these accounts will focus on measures of production and value added rather than providing a sequence of accounts at regional scale, although more and more countries have started to compile regional estimates for households covering a broader range of accounts and indicators. The compilation of regional accounts is discussed in Chapter xx. For the purposes of assessing well-being at regional level, it is likely that the focus will be on measures of gross value added on a per capita basis and ideally adjusted for price change at regional scale.

2. Alternative measures of income and wealth

- 34.21 The discussion of measures of income, consumption and wealth in this section has been based on application of the concepts, definitions and measurement boundaries of the SNA. For some purposes, other measurement boundaries and definitions may be applied, often involving adjustments to the SNA definition and scope rather than being unconnected. For example, an alternative income concept that could be envisaged is one that comes closer to what an individual household would normally consider as ‘income’, such as the income concept as used by the Canberra Group (UNECE, 2011). This income measure states that “household income consists of all receipts whether monetary or in kind (goods and services) that are received by the household or individual members of the household at annual or more frequent intervals but excludes windfall gains and other such irregular and typically one-time receipts”. This alternative income concept is equal to adjusted disposable income as defined in the SNA minus non-life insurance benefits and winnings from lotteries. Furthermore, the Canberra Group definition also excludes specific national accounts related items such as imputed social contributions, investment income disbursements and the adjustment for FISIM.
- 34.22 A broader income concept can also be envisaged, such as developed by Haig (1921) and Simons (1938), and by Hicks (1946), by defining income as the maximum amount that can be consumed in a given period while keeping real wealth unchanged. This means that, in addition to income as defined in the SNA, the measure of income would also include holding gains and losses related to the holding of non-financial and financial assets and liabilities. Such a concept could be reconstructed using data from the SNA’s accumulation accounts. In that case, revaluations could be added to income to arrive at the broader income definition. However, for this purpose, one may want to make a distinction between realized and unrealized holding gains.
- 34.23 A broader wealth concept for households could also be envisaged that includes social security pension entitlements as discussed in Chapter xx. These entitlements are not included within the asset boundary as defined in the SNA, but constitute an important resource for households when going into retirement and are captured in a supplementary table on social insurance pensions. While the government may have the ability to change the entitlements, by including these entitlements in household income analysis additional insights can be provided about the resources that households may have available for their retirement and about the impacts resulting from policy changes in relation to the aging society. Furthermore, explicitly accounting for the accrual of these entitlements will provide insight into the impact of re-distributional policies of government.

C. Accounting for the distribution income, consumption and wealth across households

- 34.24 Economy-wide measures are often useful for comparisons across countries but for the assessment of well-being within a country a more targeted approach should be applied. In the first instance, it is appropriate to focus directly on measures of income, consumption and wealth for the household sector as a whole and then to consider the distribution of income, consumption and wealth across different households.
- 34.25 Accounting for the distribution of household income, consumption and wealth supports the presentation of coherent and consistent data on these various (multi-dimensional) entry points to the measurement of well-being. The accounting process should facilitate data that are coherent with macroeconomic aggregates, consistent across accounts within the household sector and comparable over time and across countries. For this purpose, it requires that the compilation of distributional accounts take into consideration the joint relationships between income, consumption and wealth. This in turn supports the computation of multivariate

indicators (such as consumption-to-income, debt-to-income or wealth-to-income ratios) for the various breakdowns of the household sector.

- 34.26 The discussion of the distribution of income, consumption and wealth has been of increasing interest in many policy areas and there is substantive measurement experience and guidance available to support work in this area. To support the discussion of household distributions, this section summarizes key aspects of the definition and scope of households in the SNA and lists the different groupings of households that will be relevant in distributional measurement and analysis. The section then introduces the measurement of household income, consumption and wealth and summarizes key points in measuring the distribution of household income and wealth. A more detailed elaboration of households and household distributions is presented in Chapter 32 on Households.

1. The scope of households

- 34.27 To support consistent measurement and analysis, it is necessary to clearly define the set of households within the scope of measurement for distributional accounting and analysis. The definition, measurement scope and associated considerations concerning households is articulated in Chapter 6 and Chapter 32 and the same definition and treatments are applied in this chapter. The key aspects are summarized below.
- 34.28 Chapter 6 recognizes two main types of units that may qualify as institutional units, namely persons or groups of persons in the form of households, and legal or social entities. In the SNA, ***a household is a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.***
- 34.29 In distributional accounts, the individual members of multi-person households are not treated as separate institutional units, i.e. the unit of analysis is a household. This treatment recognizes that many assets are owned, or liabilities incurred, jointly by two or more members of the same household, while some or all of the income received by individual members of the same household may be pooled for the benefit of all members. Moreover, many expenditure decisions, especially those relating to the consumption of food, or housing, may be made collectively for the household as a whole. For these reasons, the household as a whole rather than the individual persons in it are treated as the institutional unit.
- 34.30 Households often coincide with families, but members of the same household do not necessarily have to belong to the same family so long as there is some sharing of resources and consumption. Households may be of any size and take a wide variety of different forms in different societies or cultures depending on tradition, religion, education, climate, geography, history and other socio-economic factors. The definition of a household that is adopted by survey statisticians familiar with the socio-economic conditions within a given country is likely to approximate closely to the concept of a household as defined in the SNA, although survey statisticians may add more precise, or operational, criteria within a particular country.
- 34.31 The residence of individual persons is determined by the location of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad for sufficient time such that they acquire a centre of economic interest abroad, they cease to be members of their original households.
- 34.32 As well as private households, there are units described as institutional households that comprise groups of persons residing in hospitals, retirement homes, convents, prisons, etc. for long periods of time. These people are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. On the other hand, people who enter hospitals, clinics, convalescent homes, religious retreats, or similar institutions for short periods, who attend residential schools, colleges or universities, or who serve short prison sentences should be treated as members of the private households to which they normally belong.
- 34.33 Conceptually, the measurement of material well-being of households for a country should encompass all resident households including institutional households. In practice, the collection of data on institutional households may be difficult but countries are still encouraged to develop estimates using household survey data, counterparty data or other methods to ensure as complete a picture as possible is developed of the

household sector.

- 34.34 While the household constitutes the unit of analysis, households may differ in size and composition, and as a consequence they will have different needs. Thus, for some aspects in the measurement of well-being, such as in the analysis of data on income, consumption and wealth at the household level, it is recommended to focus on 'equivalized' results, using equivalence scales that take into account differences in size and composition of households, to arrive at comparable results across households, recalculating results according to the number of consumption units in each household. Further discussion of household equivalence is presented in Chapter 32 on Households.
- 34.35 More generally, there are many different types of households such that a focus on the well-being of all households "on average" might present a far more limited description of current and past trends in (material) well-being than data presented according to different typologies of households. A range of typologies may be considered with their use depending on the analytical question and the availability of data. Primary types of households are:
- Ranking households into relative current income or wealth groups, for example, quintiles, deciles, percentiles or more granular groups (e.g. top 0.1% of income).
 - Ranking on the basis of permanent income taking into account lifecycle (stage of life) effects and business cycle effects, into groups such as quintiles, deciles, etc.
 - Grouping households according to their main source (i.e. highest share) of income; e.g. according to wages and salaries, gross mixed income from household unincorporated enterprises, net property income receivable and net current transfers receivable (potentially further separating pension benefits receivable).
 - Grouping according to the number and age of members of the household. For example, the following eight household compositions could be used: single less than 65 years old; single 65 and older; single with children living at home; two adults less than 65 without children living at home; two adults at least one 65 or older without children living at home; two adults with less than 3 children living at home; two adults with at least 3 children living at home; and other.
 - Grouping according to the characteristics of a reference person within the household (e.g. according to age, gender, labour market status, educational attainment, disability status).
 - Grouping by geographic region and degree of urbanization (e.g. rural, remote, urban).
 - Grouping by housing status (e.g. rental, owner-occupied).
- 34.36 In presenting data according to these household types, it will be relevant to also record the relevant socio-demographic information about members of the households (e.g., their age, sex, income, employment status, educational attainment). This information will support a richer understanding of the household sector given that households will generally be composed of a variety of individuals with different characteristics. As a specific example, household types based on the characteristics of a reference person may not always be representative of the full population as it only focuses on the socio-demographic characteristics of those individuals considered to be the head of the household. Thus, when considering analysis by sex, the distributions will not reflect differences between men and women in general, but rather will reflect differences between households where a man is the head of the household and those where a woman is the head of the household.
- 34.37 Although distributional accounts use households as the unit of analysis, and while individuals are not distinct institutional units in the SNA, for a number of topics in the measurement of well-being, the collection and organization of data by type of individual is appropriate and necessary. For example, measurement of labour input and human capital will be associated with the skills, experience and earnings of individuals; the measurement of time use is undertaken by recording the activities of individuals, and in the assessment of health and education it is individuals who benefit in the first instance. Since the total number of individuals in the resident population must align with the total number of individuals within households, in aggregate there is no conceptual difference in scope whether individuals or households as the unit of analysis. The choice of unit of analysis should therefore be made on the basis of relevance and data availability.

2. Compiling distributional accounts for households

34.38 The compilation of household distributional results entails breaking down results for various accounts of the household sector as defined within the SNA, into more granular subsectors consisting of specific groups of households. Ideally, this should be done for the whole sequence of interconnected household sector accounts representing different types of economic activity occurring within a period of time, including balance sheets that record stocks of assets and liabilities held by the household sector at the start and end of that period. Table 34.2 provides a stylized summary of the potential range of measures using income quintiles to define the types of households. This focus for measurement will lead to a consistent and comprehensive description of different groups of households across the various accounts. It is envisaged that this information will be covered in accounts which provide a more granular breakdown of information on the household sector as captured in the SNA sequence of economic accounts.

<<Insert Table 34.2: Household measures from the sequence of economic accounts by type of household (see annex)>>

34.39 The sequence of accounts are connected through balancing items with the full sequence described in Chapter 3. To provide a focus for the measurement of well-being, the following balancing items from the accounts for the household sector should be the focus for distributional analysis.

- For analysing the distribution of household income, the relevant balancing items are ‘primary income’, ‘disposable income’ and ‘adjusted disposable income’.
- For analysing the distribution of household consumption, the relevant balancing items are ‘final consumption expenditure’ and ‘actual final consumption’.
- For analysing the distribution of wealth, the relevant balancing items are ‘net worth’ and ‘net financial worth’.

34.40 While the starting point is the household sector as defined in the SNA, with the household as the unit of observation, the focus is on ‘equivalized’ results, using equivalence scales to arrive at comparable results accounting for differences in household size and composition. Furthermore, institutional households should be treated distinctly from private households and their results presented as a separate category, as they behave differently and their (equivalized) results are not comparable with those of private households. It may in that case also be opted to compile distributional results for persons living in institutional households separately, and to present these in addition to those for private households.

34.41 As described above, there is a number of groupings of households that may be relevant for the assessment of well-being and hence of interest in distributional analysis. Depending on analytical interest and data availability all of the groupings proposed above may be considered. As a minimum, it is recommended that compilers provide breakdowns by standard of living based on (current) disposable income and based on wealth, showing income and wealth decile groups, a median and, if possible, results for the top 5% and the top 1%. Alternative breakdowns by main source of income, household type, housing status and by age of the reference person are also encouraged.

34.42 There is a range of challenges in the compilation of distributional accounts. These include the measurement of inter-household flows and stocks, determining the equivalence of households, the allocation to individual households of items for which household level (micro) data are lacking (e.g. measures of the non-observed economy, disbursements of investment income and FISIM); the challenge of linking data across different data sources using statistical matching techniques; breaking down changes in wealth into underlying flows and compiling price indices for different household groups. These and other measurement challenges are discussed further in Chapter 32.

34.43 The well-being of different household groups will also be affected by different levels of ownership of consumer durables. Although it is not recommended to remove the expenditure on consumer durables from

the final consumption measure in the SNA, for the purpose of compiling distributional results, it would be appropriate for countries to show estimates of consumer durables as a separate (of which) subcategory, particularly as they may significantly affect measures of household saving. The treatment and measurement of consumer durables is discussed in Chapter 10.

- 34.44 The focus of household distributions in this section has been on income, consumption and wealth. However, distributional analysis should not be confined to these variables and analysis of many of the topics discussed in the following sections, including unpaid household service work, health care, and education and training, will be substantially enhanced through the provision of household distribution for relevant variables.

D. Measures of household consumption and production

- 34.45 This section describes how the measurement of (material) well-being of households can be supported by measuring household consumption and production, including through the extension of measures of consumption and production beyond the SNA production boundary. The section commences with a discussion on household consumption since this is a common entry point to the discussion of household well-being, i.e. well-being is commonly considered in terms of the set of goods, services and other benefits enjoyed by people. The discussion of household consumption here recognizes that a focus only on those goods and services within the scope of the SNA production boundary is necessary but not sufficient.

- 34.46 From a household production perspective, the measurement of well-being requires bringing into view a broader range of activities that people undertake including unpaid household service work. To provide a statistical basis for the measurement of these activities the section uses the forms of work framework. By placing these forms of work in context, a significant range of information can be organized including both labour input within the SNA production boundary and contributions of households beyond the production boundary, for example in volunteering, and most broadly to the wider measurement of time-use. Connections can then also be made to data concerning unemployment and working conditions, thus supporting the integrated assessment of economic and social issues.

1. Sources of household consumption

- 34.47 Within the SNA production boundary, expenditures on relevant goods and services include consumption of food, clothing, energy, water, housing, transport, recreation, education and health. Expenditure on these items is included in the measure of **household final consumption expenditure**. In aggregate, and in per capita terms, data about the level of and changes in household final consumption expenditure, i.e. household consumption of goods and services within the SNA production boundary, will be of considerable relevance in the assessment of (material) well-being and in particular for comparisons across countries. The relevant considerations for the measurement of expenditure by type of good and service are detailed in Chapter 10.

- 34.48 The SNA production boundary explicitly includes the production of goods by households that are subsequently consumed by those same households, i.e. household output for own final use [Chapter 7.xx]. In the context of well-being within and across countries, the level of this consumption is of significant policy interest, in particular concerning subsistence production and consumption of food and fibre. Subsistence producers, which may include indigenous and First Nations peoples, constitute an important group in relation to own-use production of goods. They are defined as all those who produce and/or process for storage agricultural, fishing, hunting and gathering products that contribute to the livelihood of the household or family. Data on the number and types of households that undertake own-use production and consumption of goods may provide important insights into the distribution of income and consumption. Further, information on the quantity of production (e.g. tonnes) classified by type of economic activity (e.g. agriculture) and product (e.g. rice) will be relevant in both understanding the (material) well-being of households and supporting the derivation of good measures of the monetary value of this activity for inclusion in measures of economic activity for a country. Additional information on the nutritional value (e.g., kJ) of food consumed through subsistence production may also be of relevance in certain analysis.

- 34.49 Another, specific area of policy interest is the own-use production of energy by households particularly as it concerns the wider response to the challenge of mitigating the effects of climate change, but also in the

context of volatility in the cost of energy. Depending on the economic context, own-use production of energy may extend from the collection of firewood or other biological resources for combustion to the installation of infrastructure to capture energy from renewable sources, for example, solar panels and windmills.

- 34.50 To support understanding the relationship between employment and own-use production of goods, it will also be beneficial to organize data on the number of people and their hours of work engaged in these activities. For example, there may be interest in indicators of the time spent collecting water and firewood.
- 34.51 For all components of household consumption measures of the relative shares of expenditure on different goods and services, for example, the share spent on food or energy, will also be of high interest, particularly in situations where relative price movements for different products are diverging. Consequently, measurement of consumption expenditure in volume terms will also be important for analysis. Relevant measurement advice concerning prices and volumes is described in Chapter 18.
- 34.52 In addition to the derivation of price and volume indexes, complementary tables presenting non-monetary data may be compiled for selected goods and services. For example, estimates of consumption may be made for various food products in terms of weight or nutritional content. The FAO food balance sheets provide an indication of what is possible in this direction. Similarly, estimates of energy consumption in joules and transport in kilometres may support richer analysis. Data on consumption in physical terms may also be linked or taken from physical supply and use tables compiled following the SEEA Central Framework. The more complete mapping of physical flows for selected products would directly support analysis of solid waste, recycling and reuse as part of understanding the circular economy.
- 34.53 The sequence of economic accounts treats household purchases of consumer durables such as cars and washing machines, as consumption expenditure. As recognized in Chapter 10, it is recommended that the expenditure on these items be separately identified and recorded as a supplementary item. Analysis of this expenditure relative to total expenditure may give important insights to (material) well-being, especially at the level of different household types.
- 34.54 The sequence of economic accounts complements the measures of household final consumption expenditure with measures of **household actual final consumption**. Measures of actual consumption are of particular relevance in international comparisons and allow for variation in the extent to which household consumption is paid for by government rather than households themselves. Important examples include government expenditure on health and education which are considered examples of individual consumption. In the sequence of economic accounts there are corresponding entries for social transfers in kind to ensure that the financial transactions balance appropriately. Chapter 10 explains these issues in detail.
- 34.55 The analysis of (material) well-being can also be supported by the organization of data on the collective consumption of government which, on the whole, corresponds to the supply of public goods. For example, data on levels of government expenditure on health care infrastructure, education and training facilities, public transport and roads, national parks and sporting facilities may provide important insight into the level of well-being of a community. Often, the interest will be in measures commonly associated with public infrastructure and the assessment of the trends in gross fixed capital formation on these items will be relevant.
- 34.56 To support measurement of well-being, the measurement of household consumption can be extended to include benefits obtained by households that are outside the SNA production boundary. Of high importance are the benefits arising from **unpaid household service work**. The measurement of this activity is described in detailed in section C.3 and no additional description of this area of measurement and its link to (material) well-being is provided here beyond reinforcing the relevance of measurement in both monetary and non-monetary terms. It is noted that while these activities are outside the SNA production boundary, they are within the general production boundary described in Chapter 7. The general production boundary is a broader concept than the SNA production boundary that includes all activity carried out under the control and responsibility of institutional units that use inputs of labour, capital, and goods and services to produce outputs of goods and services.
- 34.57 Outside the general production boundary but of significant relevance for well-being are **non-productive activities undertaken by individuals**. These activities include basic human activities such as eating, drinking, sleeping, leisure, exercising, etc. They are considered non-productive since it is not possible for one person to employ another person to perform the activity for them. Commonly, this is referred to as the “third party criterion”. While these activities may be non-productive in an economic sense, the benefits they

generate clearly contribute to well-being and in particular to health outcomes. From an accounting perspective there is no monetary value that is placed on the benefits arising from these activities. However, the organization of data on the time spent undertaking these activities, particularly sleeping, leisure and exercise, may be of particular interest. A complete accounting of time-use, as discussed in section C.4, is the appropriate approach for organizing the information relevant to discussion of these issues.

- 34.58 Also outside of the general production boundary, households benefit from a wide range of **ecosystem services**. Following the SEEA Ecosystem Accounting (SEEA EA), *ecosystem services are the contributions of ecosystems to the benefits that are used in economic and other human activity*. Examples of ecosystem services used by households include provisioning services embodied in crops, livestock and timber products that are ultimately consumed by households; cultural services such as recreation and amenity; and regulating services such as air filtration, water regulation and purification, flood mitigation, soil erosion control, noise attenuation and global climate regulation. Generally, the flows of provisioning and cultural services can be more readily observed in connection with the day-to-day activity of households. For regulating services the situation is different and most of these services reflect ongoing natural processes and ecological functions that households are largely unaware of. Indeed, in many cases they reflect a form of collective consumption following the definition in the SNA.
- 34.59 The organization of data on flows of ecosystem services, and other data related to ecosystems, for example on water quality and the condition of forests, can be undertaken using the accounting framework described in the SEEA EA. The SEEA EA supports recording in non-monetary and monetary terms recognizing the general challenges of valuation for non-market services. In different locations and under different economic structures, the dependence on and connection to ecosystems exhibited by households will vary. It will also vary by type of household. Thus, data about the flows of ecosystem services will be relevant in both understanding the full breadth of household consumption and in understanding the sustainability of that consumption in relation to the extent and condition of the underlying natural capital. This latter topic is discussed further in Chapter 35.
- 34.60 Beyond the ecosystem services recorded in the SEEA EA, it is recognized that the environment provides benefits related to the more general appreciation that people hold for ecosystems and species. In environmental economics, these benefits are commonly referred to as non-use values. While methods to measure non-use values are available, for example, choice experiments and contingent valuations, these valuations are considered inconsistent with the valuation concept of exchange values applied in the SNA and SEEA. SEEA EA Chapter 12 describes ways in which non-use values can be placed in context with accounting-based data to support discussion of multiple value perspectives.
- 34.61 Table 34.3 provides a summary structure for recording data on the sources of household consumption.

<<Insert Table 34.3: Sources of household consumption by type of household (see annex)>>

2. Forms of work

- 34.62 While a focus on household consumption and the range of benefits that people enjoy is a relevant entry point to the measurement of well-being, it is also the case that a focus on the activities that people undertake, both economic and non-economic, can provide important information on people's well-being. To provide a core framework for recording data on people's economic activities, defined as those activities within the general production boundary (Chapter 7), the appropriate standard is the international statistical standard definition of employment from the 19th ICLS [*Resolution concerning statistics of work, employment and labour underutilization*](#) adopted in 2013¹. This Resolution provides the standard definition of the concept of *work* and describes the *forms of work* framework in which employment work is the key reference concept. The Resolution establishes that the concept of *work* "comprises any activity performed by persons of any sex and age to produce goods or to provide services for use by others or for own use."
- 34.63 The Resolution identifies five forms of work which are distinguished by the intended destination of the

¹ https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf

production (for own final use; or for use by others, i.e., other economic units) and the nature of the transaction (i.e., monetary or non-monetary transactions, and transfers):

- a. *own-use production work* comprising production of goods and services for own final use;
 - b. *employment work* comprising work performed for others in exchange for pay or profit;
 - c. *unpaid trainee work comprising work* performed for others without pay to acquire workplace experience or skills;
 - d. *volunteer work* comprising non-compulsory work performed for others without pay; and
 - e. *other work activities*.²
- 34.64 From the perspective of the activities within the SNA production boundary, the most important form of work is employment with the most significant portion of this component relating to the contribution of employees. From the perspective of household well-being, a range of employment related statistics will be of high relevance including measures of compensation of employees, number of employees, and hours worked. Such data can be used to derive indicators such as mean and median earnings. These employment related data will also underpin accounting for human capital as described in Section E. The organization of these statistics in an accounting context is described in Chapter 16 on Labour accounts. In addition, it will be relevant for some analysis to organize these statistics by type of household following the groupings listed above and in terms of characteristics of individuals such as age and sex. Of particular note is the analysis of the distribution of income for which the distribution of compensation of employees will be a core element (see Chapter 32 on Households).
- 34.65 Chapter 16 on Labour accounts provides a richer description of the relationships between these five forms of work, the SNA production boundary, as applied in the sequence of economic accounts, and the general production boundary. The core message is that while employment as a form of work is important, there is also a wide range of other ways in which people contribute to activities within the general production boundary. Measurement of these non-employment contributions can provide important insights into household well-being.
- 34.66 In terms of non-employment contributions, of most significance in the measurement of well-being is the activity associated with unpaid household service work. In terms of the forms of work framing, unpaid household service work includes both services produced for own-final use and services produced for other economic units through volunteer work. The measurement of unpaid household services work is discussed in detail in the following section.
- 34.67 A related perspective on the forms of work listed above concerns the distinction between the formal and informal economy. The overarching concept of the informal economy is defined as constituting of all informal productive activities carried out by workers or economic units within the general production boundary. In the same vein, the measurement of the non-observed and illegal economy will be relevant in assessment of household well-being in some countries. Chapter 39 provides a description of accounting approaches to the measurement of the informal economy. The measurement considerations outlined in Chapter 39 can be linked to the discussion in this chapter on well-being recognizing that the key connecting concept is the definition of the SNA production boundary as well as that of the general production boundary.
- 34.68 Table 34.4 provides a summary structure for recording information on the activity of individuals across the different forms of work.

<<Insert Table 34.4: Forms of work by individual characteristics (see annex)>>

² These “other work activities” include such activities as unpaid community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service, which may be treated as a distinct form of work for measurement (such as compulsory work performed without pay for others) (ICLS Resolution, page 3).

3. Unpaid household service work

- 34.69 Chapter 7 recognizes that there are many activities undertaken by households that satisfy the general production boundary involving the use of labour and capital for the production of goods and services. However, the SNA production boundary applied in practice only includes those household activities that produce goods (as discussed above) and the activities of the production for own final use of housing services by owner-occupiers and the production of domestic and personal services by employing paid domestic staff. Chapter 7 [para xx-xx] provides a full explanation of this treatment. The exclusion of unpaid household service work from the SNA production boundary is seen as a significant limitation in using GDP as a measure of well-being since it omits a significant volume of production and consumption undertaken by households that relates directly to the health, education and general well-being of people. Given this limitation, accounting for unpaid household service work provides important insights into (material) well-being and a range of data may be organized following accounting principles.
- 34.70 In making the connection to well-being, unpaid household service work is thought of as an input that, together with market goods and services, is transformed into household goods and services (i.e. caring, cooking, cleaning, maintenance) that are consumed by household members and benefit individual well-being. This process operates through intermediate stages involving intra-household production, cooperation and distribution activities. The relationship between input (raw goods and services and unpaid work) and well-being is not direct and immediate, and the family plays an important role within this process.
- 34.71 The progression from the initial stage (market goods and services) to the final stage of this process (individual well-being) creates added value in society, so that individual and social well-being is greater than the value of the available goods purchased on the market. While methods can be applied to estimate the monetary value of unpaid household service work, it is also important to recognize that an analysis restricted to monetary values is unlikely to completely capture all the contributions to well-being of this unpaid work at the individual, household and social level. In particular, unpaid household service work activities not only affect significantly and contribute directly to the determination of personal capabilities and well-being outcomes, such as education and health, but unpaid household service work activities such as volunteering can also enhance people's opportunities to participate in social life. For that reason, a parallel physical time accounting method is also proposed as a better 'catch all' solution to measuring the household experience.
- 34.72 The UN Guidance for the Valuation of Unpaid Household Work (UNECE, 2017) defines unpaid household service work as 'those economic services produced in the household and outside the market, but which could be produced by a third person hired on the market without changing their utility to the members of the household'. The definition excludes activities people can only perform on their own behalf, such as sleeping, other forms of personal care, and leisure. These activities lie outside the general production boundary. In terms of the forms of work framing described above, unpaid household service work includes both services produced for own-final use and services produced for other economic units through volunteer work
- 34.73 Accounting for unpaid household service work is focused on measurement of various services. A short list of key groups of services is provided below. Importantly, all of these services have equivalent production activity that is undertaken in the economic activities which are included in the sequence of economic accounts. Thus, it is not only the measurement of the volume of services produced at home that is of interest but also changes in the share of these services which is either produced for own-final use or purchased from other economic units.
- Childcare for own household or family: Corresponds to activities classified under ICATUS major division 41: *Childcare and instruction*.
 - Adult care for own household or family: Correspond to activities classified under ICATUS major divisions 42 *Care for dependent adults* and 43 *Help to non-dependent adult household and family members*.
 - Nutrition for own household or family: Corresponds to ICATUS major division 31 *Food and meals management and preparation*
 - Transport for own household or family

- Household management for own household or family: This sub-category of unpaid household management services would include all activities classified under ICATUS 16 major divisions 32, 33, 35 and 36 which represent ‘*Cleaning and maintaining of own dwelling and surroundings*’, ‘*Do-it-yourself decoration, maintenance and repair*’, ‘*Household management for own final use*’ and ‘*Pet care*’ respectively.
 - Laundry and clothing for own household or family: Correspond to activities classified under ICATUS major division 34 *Care and maintenance of textiles and footwear*.
 - Shopping for own household or family: Correspond to all activities classified under ICATUS major division 37 *Shopping for own household and family members*
 - Information services³ for own household or family
 - Other unpaid household production not elsewhere classified for own household or family
 - Organisation-based volunteering
 - Direct volunteering
- 34.74 Key variables of interest for each of the services listed above include: time spent on these activities, monetary value of production and costs of goods and services used as inputs to production. An important connection in undertaking this accounting work is the capability to compare estimates of these variables with related entries in the SNA sequence of economic accounts. Thus, measurement of time spent on these activities should align with measurement of employment and other work on activities within the production boundary, the valuation of unpaid household service work should apply the same valuation concepts as applied for non-market production within the SNA production boundary (see Chapter xx) and the costs incurred should be the same as those recorded as household final consumption expenditure (e.g. purchases of food).
- 34.75 For a number of the services there are direct connections to other accounting-based approaches used for specific aspects of well-being. For example, in the case of accounting for education and training and health care (Sections E and F), the accounts described can be extended to incorporate the production of the same services through unpaid household service work alongside the production through activities within the SNA production boundary.
- 34.76 The development of accounts for unpaid household service work has been a long-standing field of national accounting. Since the publication of the 2008 SNA, two sets of updated international guidance, which are of particular importance for the measurement of unpaid household service work, have been published. Firstly, the Guide on Valuing Unpaid Household Work (UNECE, 2017), and secondly the Guidelines for Harmonizing Time-Use Surveys (UNECE, 2013). The first is of importance as it provides an important step toward a harmonised international platform setting out how unpaid household service work should be measured. The second is of importance as it sets out best practice for the production of time-use surveys, which are typically the primary data source for the production of accounts for unpaid household service work.
- 34.77 In addition, an important development has been the adoption of the International Classification of Activities for Time-Use Statistics (ICATUS) 2016. ICATUS 2016 is consistent with the SNA to allow the derivation of aggregates for supplementary tables and is comparable with other existing national and regional time-use classifications. It was also aligned with the resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th ICLS (2013).
- 34.78 In broad terms two approaches have been developed for the measurement of unpaid household service work: the input approach and the output approach. The input approach brings together data on time use, wage rates and other inputs, while the output approach uses data on observed transactions and market prices for similar services purchased on the market. Details on these approaches are provided in the UNECE Guide on Valuing Unpaid Household Service Work (2017).
- 34.79 In addition to measures in monetary terms the accounting framing can support the presentation of non-monetary data about unpaid household service work including time spent. Additional insights into well-being

³ This category is likely to be more challenging to capture effectively using the current forms of time-use classification frameworks and, therefore, those involved in the development of these frameworks should evaluate how to best incorporate this information in future updates.

are likely to be gained by disaggregating data by the socio-demographic characteristics of those people undertaking unpaid household service work, for example in terms of age (e.g. to support recording of the contribution of children to this work) and sex. In particular, it is highlighted that the production of unpaid household service work exhibits a distinctly gendered pattern in most countries due to prevailing social norms, with women undertaking the largest share of most unpaid domestic and care work. This in turn can significantly affect their overall well-being. Consequently, the compilation of accounts for unpaid household service work by sex is recommended.

- 34.80 To support a general understanding of the potential organization of data on unpaid household service work, two tables are presented, one in monetary terms and one using time as the unit of measurement. Two basic decisions need to be made in relation to the granularity of the information on unpaid household service work. The first decision concerns the details on the characteristics of the people involved: sex, age category and/or level of education. This decision also depends on the granularity of data on paid employment, which is discussed as part of the discussion on the compilation of labour accounts in Chapter 16. Here, it is proposed not to include this level of granularity in the standard table, to ensure that the compilation of the basic results is not too burdensome on producers of the statistics.
- 34.81 The second decision relates to the allocation of the unpaid household service work to industries, and the detail of the industrial breakdown. The connection to industries allows investigation of the balance of production between unpaid household service work and that recorded in the sequence of economic accounts and changes in that balance over time, for example in response to inflation. Here it is necessary to take into account the granularity of industries in the regular compilation of national accounts. The following high-level industry classes are considered most relevant. The related unpaid household service activities are given in brackets and apply to both services for own use and volunteering where similar activities are being carried out⁴:
- Wholesale and retail trade; repair of motor vehicles and motorcycles (Unpaid household shopping services)
 - Transportation and storage (Unpaid household transport services)
 - Accommodation and food service activities (Unpaid household nutrition services)
 - Information service activities (Unpaid household information services)
 - Administrative and support service activities (Unpaid household management services)
 - Education (Unpaid developmental childcare or adult care)⁵
 - Human health and social work activities (Unpaid household physical childcare or adult care)
 - Other service activities (Unpaid household laundry services)
 - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use⁶ (Unpaid household service work not elsewhere classified)
- 34.82 Table 34.5 presents a summary supply and use table for unpaid household service work. More detailed proposals and associated extensions are described in the SNA Guidance Note WS.3.

<<Insert Table 34.5: Summary Unpaid Household Service Work supply and use table (to be developed from SUT in GN WS.3)>>

⁴ Note that similar considerations need to be thought through regarding the breakdown of products represented in the rows of the use table.

⁵ If developmental care cannot be differentiated then all adult and childcare can be aligned to 'Human health and social work activities'.

⁶ Although this category is described as 'for own-use', if there is volunteering that can't be allocated to a particular type of unpaid household service work, then it may also need to be allocated to this category even though it would technically be better described as 'for use by others'. If deemed preferable, an alternative might be to create another activity category to allocate volunteering activity that is not defined elsewhere.

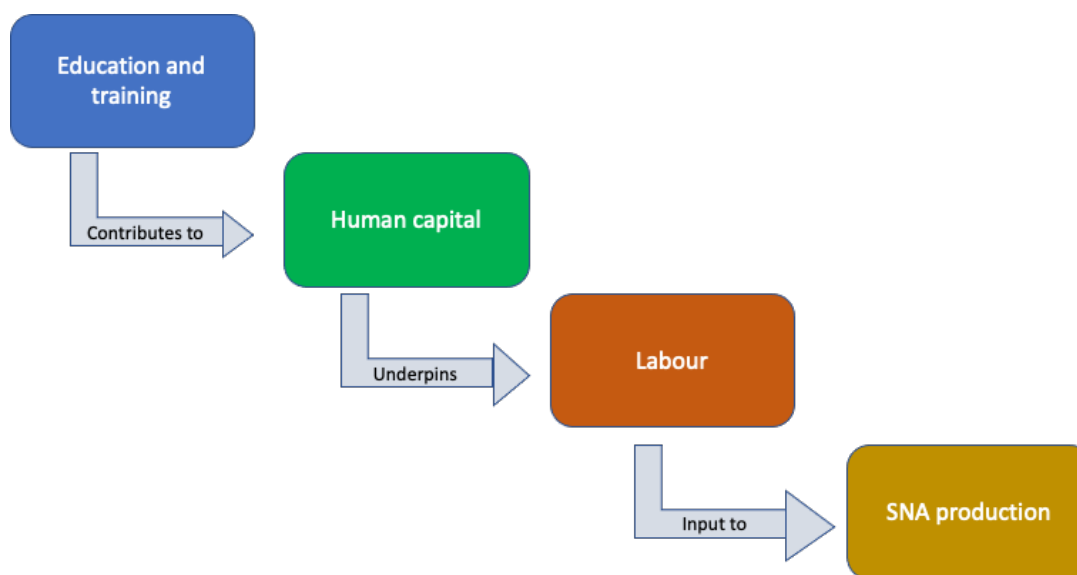
4. Other uses of time

- 34.83 A more complete time-based accounting can be undertaken to provide a more complete measure of how people's time is spent. Time based accounting is thus focused on how households allocate their time including across the various forms of work but also in activities outside of the general production boundary. Time based accounting is relevant because technical and organizational innovations shift economic activity, sometimes into, sometimes out of, the market nexus (e.g., by substituting streaming services for cinema, private cars for public transport or vice versa, domestic washing machines for laundries, on-line flight booking services for travel agents, etc.) in complex ways.
- 34.84 A properly designed, nationally representative time-use survey (TUS), comprehensively covers all the daily activities of the population. A core feature of time-based accounting is the capability to map the activities of daily life to economic activity defined following the general production boundary. In addition, activities of people beyond the general production boundary, in particular non-productive activities undertaken by individuals, can be recorded. These activities include basic human activities such as eating, drinking, sleeping, leisure, exercising, etc.
- 34.85 At the same time there are some challenging conceptual aspects to reconcile. For example, it can be difficult to differentiate the effects on well-being of unpaid household service work and leisure. Also, in some occupations at least, paid work has many of the affectively positive characteristics—challenge, sociability, enjoyment—often found in leisure pursuits. It is also noted that it may be difficult in some instances to differentiate the primary use of time where people are, in effect, multi-tasking, for example when working from home and caring for children.
- 34.86 While there are a number of challenges, there have been substantive improvements in the measurement of time use reflecting the increasing demand for statistics on unpaid household service work. UNSD is driving a coordinated program of work for improving guidance on time-use statistics that has included the development of ICATUS 2016, and ILO is developing methods to incorporate time-use measurement into labour force surveys.

E. Accounting for human capital, education and training

- 34.87 The idea of viewing human knowledge and abilities as an asset – as human capital - and to estimate its value is not new, but has gained prominence in recent years, especially in the context of sustainable development. Policymakers are calling for ways to understand and quantify human capital, in order to better understand what drives economic growth and the functioning of labour markets, to assess the long-term sustainability of a country's development path, and to measure the output and productivity performance of the educational sector. Devising a robust methodology for the monetary valuation of the stock of human capital is important since studies, such as the World Bank Changing Wealth of Nations, suggest that human capital is a significant component of an enhanced measure of national net worth in many economies.
- 34.88 As well, there is considerable relevance of measures of human capital from the perspective of understanding the distribution of income and wealth, documenting the effects of changes in the age composition of the population on economic activity, understanding the implication for the labour markets in light of ongoing changes in the economy through digitalization and globalization, and identifying the non-monetary benefits that may be obtained from individuals and societies more generally from higher levels of human capital. Finally, in addition to measuring the stock and changes in stock of human capital, it is also relevant to organize data on investments in human capital, in particular, activity and expenditure on education and training.
- 34.89 The core connections and dependencies between human capital, education, labour and production are depicted in the figure below.

Figure 34.1: Linking education, human capital, labour and production



34.90 This section describes the potential to connect data on labour, human capital and education. Labour accounts provide a conceptual framework through which labour market data from diverse sources can be confronted and integrated, with the aim of producing a coherent and consistent set of labour market statistics. Broadly, labour accounts consist of four quadrant tables: jobs, persons (both employees and self-employed), volume (i.e. hours worked) and payments. Chapter 16 provides a thorough overview of labour accounts and no further discussion is provided here. The following two sub-sections present approaches to accounting for human capital and accounting for education and training.

1. Accounting for human capital

34.91 A general definition of human capital is “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of person, social and economic well-being”.⁷ While this definition provides a clear foundation, it is also a broad definition that incorporates both economic and non-economic benefits arising from the use of human capital by individuals. From an economic perspective, the creation of human capital, or put differently, the acquisition of knowledge, skills, competencies and attributes, increases the productive potential of the individuals in an economy and is a source of future economic benefit to them. Critical inputs to the creation of human capital are education and training but the consumption of these inputs is not sufficient as creating human capital requires the assembly and processing of these inputs by the individuals consuming them with the result that each individual creates a unique set of capabilities.

34.92 From an SNA perspective, there has been a long-standing discussion on the potential to capitalize education and training expenditures within the sequence of economic accounts and establish human capital as an economic asset on the balance sheet. Thus, although human capital has not been included in the sequence of economic accounts, the discussion here is of high relevance in supporting the extension and broadening of the sequence of accounts. This section therefore provides a description of ways in which the sequence of economic accounts can be connected to additional data on human capital.

34.93 The framing of human capital just introduced reveals two approaches by which human capital may be valued in monetary terms. The first approach is a cost-based approach which sums the costs of generating human capital, principally expenditures on education and training. For this approach, the extended accounts for education and training described in the next section organize the relevant input data. The second approach is the lifetime labour earnings approach which estimates the value of human capital by calculating the net

⁷ OECD, 2001

present value of future earnings of individuals within an economy. Both of these approaches inherently have a focus on the economic benefits arising from human capital, i.e. the contribution of labour to production within the SNA production boundary. While not elaborated here, a broader focus is possible incorporating the contributions of human capital to unpaid household service work, including volunteering, and the non-economic individual and societal benefits of human capital, e.g. in terms of civic engagement and participation.

- 34.94 From a theoretical point of view, the net present value based approach is the most appropriate, as it adds all future (economic) benefits that can be allocated to the relevant asset, thus replicating a market-equivalent valuation. However, its measurement requires quite a number of assumptions on the future development of the (active) population and the future pattern of economic benefits. The total values can also be significantly affected by the discount rate that is applied. To complement estimates from the net present value approach, a cost-based approach can be applied using the perpetual inventory method (PIM). In this approach, the investment costs for creating human capital are summed to obtain an estimate of the value of the human capital. These costs do not only relate to formal education, but also training and courses provided by the employer; time spent on learning and studying at home; and other expenditures on, for example, school books and other training material. However, this method also requires several assumptions, for example on the distinction between expenditures with a more current nature and expenditures which add to the stock of human capital. Also various assumptions are needed to measure and to value the unpaid activities and additional assumptions are needed on the service lives and the depreciation pattern of human capital.
- 34.95 Table 34.6 provides a structure for presenting data on human capital and related variables.

<<Insert Table 34.6: Summary Human capital table (see annex) >>

- 34.96 The UNECE Guide on Measuring Human Capital (2016) provides a thorough description of these two approaches and the discussion here summarizes the key aspects. Particular measurement challenges that are described are:
- The development of human capital takes place over a long period of time, indeed, potentially over a life time, which complicates the attribution of time of investment (and the contribution of individual years) and determination of asset lives (among other aspects).
 - The development of human capital will relate to the input of education and training provided by other economic units but will also be built through personal experiences and unpaid inputs of family and friends.
 - The use of human capital in production will be limited by the amount of time that a person provides labour input but the precise pattern of that use will vary over time and the way in which human capital can be considered to depreciate needs to be considered.
 - Depending on wider economic and social conditions, certain skills and knowledge may become obsolete from an economic perspective, for example through changes in technology.
 - There is a very large heterogeneity in individuals combinations of skills and experience and how these align to particular occupations and industries.
 - The quality of educational experiences and impacts on the development of human capital can vary and may not be directly related to the volume or cost of education, and it will also be linked to time spent studying at home.
 - There may be significant additional benefits (known as spillover effects) when knowledge and experience is shared among employees in a work place which in turn challenges the ability to use the sum of measures of human capital of individuals to reflect the aggregate contribution of human capital.
- 34.97 These challenges are real but also exist for many assets within scope of the SNA sequence of accounts. The primary issue for compilation is therefore the extent to which appropriate assumptions can be determined to

provide reasonable estimates of human capital to support discussion and analysis. In this context, it should be recognized that while the focus of discussion here is on the estimation of a monetary value of human capital, it will be essential to collect a substantial range of non-monetary data to support measurement and testing of assumptions. For example, data on years of education, number of people in different professions, levels of skills and experience, will all be relevant. In that regard, accounting for human capital provides a framework for the organization of an array of data building on the labour accounts (Chapter 16) and the extended accounts for education and training described below.

- 34.98 While there are challenges in the measurement of human capital and ongoing research is encouraged, these practical concerns are not the primary reason for exclusion of human capital from the SNA sequence of economic accounts. One long-standing conceptual concern is that while the conception of expenditure on education and training as analogous to gross fixed capital formation is clearly possible, the nature of the acquisition of the benefits of education and training is such that they are activities that cannot be undertaken by anyone else on behalf of the student and thus the acquisition of knowledge is not a process of production in and of itself, even though the instruction conveyed by education services is. The consequence is the human capital cannot be considered produced. The more recent investigation into knowledge products and the capitalization of intangibles such as marketing assets suggests that this concern about whether human capital can be produced merits further investigation.
- 34.99 Another conceptual concern has been the question of ownership rights and the extent to which human capital is capable of bringing economic benefits to its owner, as required to satisfy the definition of economic assets. This concern connects the question of ownership of human capital to the problematic idea that people are “owned”. However, an alternative framing is that human capital is embodied in individuals who in effect own their skills, knowledge and experience and utilize these capabilities to secure future economic benefits for themselves. Again, there is merit in further investigation.
- 34.100 Notwithstanding these specific conceptual concerns, it must also be recognized that establishing human capital as an asset within the sequence of accounts would have substantial ramifications on the structure of the accounts and the interpretation of traditional measures of consumption, income, investment and saving, especially for the household sector but also more broadly. This would include working through the appropriate accounting entries by which those paying for the development of human capital (e.g. governments, corporations) transfer the accumulation of benefits to the individuals whose human capital is being enhanced. The interpretation of compensation of employees would also need consideration since in a human capital framing this would represent a payment for services. While accounting solutions to these types of changes have been envisaged, a wider discussion of the potential changes to the sequence of accounts and the implications for key economic measures and their interpretation is required.
- 34.101 Finally, it is recognized that the measurement of human capital allows for connection to a range of other topics that are important for individual human capital accumulation. These include health, parental and family engagement, cultural and social engagement and wider work-related human capital accumulation beyond in-work training.
- 34.102 Health is a key principle of an individual’s human capital. This ranges from the lack of various diseases, illnesses and disabilities qualifying a higher level of physical and cognitive skills directly, as well as enabling further development into the future. Lack of good health can be seen as an impairment of an individual’s opportunity to develop, while also having a detrimental impact on an individual’s human capital today. It can also relate to supporting the longer use of an individual’s human capital, whether in the marketplace or in wider economic activity, as what may be seen as an increase of the life-length of the human capital asset.
- 34.103 Similarly, people’s family situation, and the cultural and social activities people engage in both as adults and children (e.g. attending museums, participating in social clubs, undertaking personal projects) are known to influence people’s cognitive, physical, social and emotional development. All of these are factors will influence the development of people’s human capital. However, there is still active research into determining how these factors influence the development of human capital (e.g. the relative role of parental income versus the opportunities such income provides). In addition, incorporating these issues within either an income-based or cost-based approach requires further discussion both in terms of valuation concepts and regarding data sources to support international comparability.
- 34.104 Lastly, beyond the wider social aspects feeding into human capital investment, it is known that there are other

mechanisms that influence a person's development in the workplace. In particular, support networks, mentorship opportunities, and the quality and quantity of feedback on a person's work allow them to improve their skills and knowledge, and hence their potential human capital. Additionally, there are aspects of the extent to which employees are encouraged and extended in their work, while also being supported, so that they are able to improve their marginal productivity. All these concepts are clearly important in the aggregate, but due to measurement issues, such as how to convert such opportunities above as intangible 'investment' when there is no market transaction, and what the imputed transaction may need to be, mean this is still an active research area.

- 34.105 Collectively, all of the topics noted in the paragraphs above describe a large research agenda. Thus, notwithstanding the significant progress on accounting for human capital that provides a strong foundation for measurement, there remain many areas in which additional investigation and testing should be undertaken to more fully harmonize the accounting required for the development and contribution of people's knowledge, skills and experience.

2. Accounting for education and training

- 34.106 There have been a number of projects undertaken to develop international guidelines on accounting for education and training. Examples include the UNESCO Methodology of National Education Accounts (NEA), the UNESCO-OECD-Eurostat (UOE) Manual for data collection on formal education and the OECD publication "Education at a Glance". The NEA framework and the UOE data collection on formal education support compilation of coherent and internationally comparable data. However, they both have elements that differ in several ways from SNA principles and measurement boundaries.
- 34.107 Most recently, in 2020, the UNECE Satellite Account for Education and Training (SAET): Compilation Guide has been released and is consistent with the SNA framework. This extended account uses the national accounts and the relevant data input and classification systems (e.g., education statistics, government finance statistics, COFOG and COICOP statistics, trade-in-services statistics) as a starting point with the supply and use tables acting as a framework for ensuring consistency. In addition, the extended account incorporates a detailed classification of education and training activities by purpose based on International Standard Classification of Education, 2011 (ISCED).
- 34.108 The scope of the extended accounts for education and training activities, as described in the SAET, cover all public and private expenditure for formal education and vocational training. The expenditure for education and training activities to be considered refers to the following items:
- Teaching, administrative and other activities in formal education and vocational training services;
 - Non-formal cultural, recreational, sport and vocational education and training activities (also including free courses and e-learning);
 - In-house training by employers;
 - Associated goods and services directly related to the delivery of education and training services;
 - Gross fixed capital formation in the education industry.
- 34.109 The extended accounts thus include the expenditures on education and training for all residents of a country, as required for the measurement of investment in human capital. In line with this intention, the accounts encompass expenditures related to domestically produced education and training, as well as imported services (i.e., resident students studying in other countries). Expenditures of non-resident students within a reference country contribute to the human capital of another country and should thus be recognized as exports.
- 34.110 The extended accounts on education and training present accounts using a supply and use framework as the starting point. Compiling data from both supply and use perspectives allows confrontation of the alternative data sources and improves the quality of the accounts. Four core tables can be distinguished (add reference):
- Education and training output, by provider and education and training purpose
 - Education and training expenditure, by purchaser and education and training purpose

- Financing, by sector and education and training purpose
- Cost structure, by education and training purpose

34.111 These four tables present monetary data in current prices focusing on the production aspects of the education system. They are intended to reconcile with relevant aggregate entries in the sequence of economic accounts given all of the expenditure incurred by the different agents within the field of education are part of their production costs and are linked to their activities as providers of educational goods/services. Depending on country circumstances, countries could envisage more detailed breakdowns. Table 34.7 provides a summary table showing key variables.

<<Insert Table 34.7: Summary Education and Training output and expenditure (to be developed) >>

34.112 Where possible, estimates of output, expenditure and costs should be presented in volume terms using appropriate methods and consistent with the advice on price and volume measurement in Chapter 18. While, the extended accounts for education and training largely respect the SNA production boundary for education and training, compilers are recommended to expand the production boundary to include the output from enterprise internal expenses on in-house training (own account training). The aim being to provide policy makers with additional data on the expenditures on education and training, and the financing of these expenditures.

34.113 The monetary data presented in the main tables should be supplemented with non-monetary data concerning: population, numbers of enrolled students (by ISCED level), number of adults in continuing vocational training and in lifelong learning (broken down by sex and age group), numbers of (and hours worked by) teachers/staff (by ISCED level) and number of employed persons in education and training by educational attainment. Combining monetary and non-monetary data sets supports the derivation of cross-sectional time series on expenditure per capita or per student which in turn provide important insights for policy measures. Examples of non-monetary tables are presented in SAET Section 3.6.

34.114 A final extension that may be considered concerns the provision of early childhood education which will commonly involve unpaid household service work and hence is outside the scope of the SNA production boundary. Estimates concerning this activity could be incorporated in the SAET framework recognizing the challenges involved in measuring and valuing unpaid household service work as described in Section C.

F. Accounting for health care

34.115 Since health is a fundamental element of people's well-being, it is important to have more detailed insights concerning the production and outputs of the health care systems in countries, the entities involved, and how this activity is being financed. The development and implementation of health accounts has been a long-standing activity for this purpose and it is recommended that to support integrated decision making, countries compile a series of extended accounts that present data on the functions, providers and financing of health care systems. The standard for accounting for health care is described in the *System of Health Accounts 2011 (SHA)*. The SHA is a well-developed framework for classifying health expenditures on these aspects of the health care system.

34.116 As introduced in Chapter 2 and noted elsewhere, the SNA has a focus on the measurement of outputs from economic activity rather than outcomes. As a result, the SNA does not organize data within the sequence of economic accounts that supports measurement of, for example, the quality of life of households. Further, as noted in Chapter 2, the measurement of well-being discussed here concerns objective rather than subjective measures. Nonetheless, given that the health of individuals and the population as a whole is of significance in the discussion of well-being, this section describes the compilation of health accounts that can be used to organize and present relevant information on the production and delivery of health services.

34.117 The extended account for health are organized around a tri-axial system, defining (i) consumption of health care goods and services by function, (ii) provision of health care services by industry, and (iii) financing of health care (i.e., sources of funding). The three dimensions have their own classifications. The three key

classifications in the extended accounts for health are the classification of health care functions (HC), the classification of health care providers (HP), and the classification of health care financing schemes (HF).

- 34.118 Classifying the consumption of goods and services according to health care functions is the starting point for compilation and defines the boundaries of the health accounts. What is consumed must be provided, meaning that setting up the system within a supply and use framework is a useful tool for ensuring consistency and completeness (as for the extended accounts for education and training. Finally, what is produced and consumed must be financed. Therefore, there is a clear link and consistency among the three axes.
- 34.119 Health care functions relate to “what is the purpose” or “the type of need a transaction or group of transactions aims to satisfy”. This is the most fundamental classification within the extended account for health and defines what is in and out of scope for “health care”. There will always be borderline cases between health care and social care especially concerning long-term care (LTC). The extended accounts for health distinguishes two elements of LTC: i) health: medical or nursing care including the management of symptoms involving medical, paramedical and nursing care services, such as relieving pains or other symptoms, administering medication, performing medical diagnosis and minor surgery, dressing wounds etc, as well as personal care services provided in response to limitations in self-care primarily due to disability and illness and ii) social: assistance services related to care that enables a person to live independently in a house or apartment, i.e. lower-level social care services to assist with instrumental activities of daily living. The extended accounts for health include LTC (health) within its scope of health expenditures but also recommend to measure, as a memorandum item the expenditures related to long-term care (social).
- 34.120 The extended accounts for health also provide a framework for the classification of health care goods and services, as described in Annex E of SHA 2011. The primary use of the product classification is to facilitate the boundary-setting and the selection of products for estimating health care expenditures. The product classification in the extended accounts is linked to the worldwide Central Product Classification (CPC) and the Classification of Products by Activity (CPA) of the European System of Accounts (ESA), and thus the supply and use framework in the national accounts.
- 34.121 Table 34.8 provides a summary of key measures and classes of health care output and expenditure.

<<Insert Table 34.8: Summary Health care output and expenditure (to be developed) >>

- 34.122 Household production of health care is included in the extended accounts, but is limited to those health services whose costs are partially or completely covered by dependency allowances. The associated transfers are treated as a quasi-salary and a corresponding “output value” is calculated. The wider literature supports the view that unpaid household care has a significant role in understanding health and social conditions and individuals’ well-being. It is therefore, recommended that all unpaid household production of health and social care, and not limited to what is already recorded in the SHA, is included in the extended accounts. This work should be undertaken in line with the discussion in Section C.3 on the measurement of unpaid household service work, noting the importance of distinguishing between health care and other care activities and also clarifying the role of supervisory care.
- 34.123 To support the reporting on and discussion of well-being, indicators for health and social care should be built from the expenditure flow data in the health care accounts. These indicators should cover individual final consumption expenditures of health and social care with various breakdowns defined mainly by health care function, provider, and financing scheme. “Final” consumption expenditure in the extended accounts also includes intermediate consumption related to occupational health care. Where possible, measures in volume terms should be derived consistent with best practice described in Chapter 18. Data can also be cross tabulated according to various combinations and indicators may be combined in various ways with other data (e.g. household type), to support a range of analyses of household well-being.
- 34.124 In monetary terms a core set of indicators should encompass health expenditures as a share of GDP, per capita health expenditures, expenditure by health care function, expenditure by age and gender of beneficiaries, and expenditure by income group of beneficiaries. In non-monetary terms indicators should include employment in health and social care with breakdowns by age, gender, employment status and other characteristics. Particular focus may be placed on employment data classified by occupation following the International

Standard Classification of Occupations (ISCO-08) noting the most relevant ISCO groups for health are sub-major group 22 (health professionals) and 32 (health associate professionals). Physical indicators of assets used in the production of health service could also be presented (e.g., number of hospital beds available).

ANNEX: Potential tables

Table 1. Economy wide measures from the sequence of economic accounts

		Sequence of economic accounts				
		Production account	Generation and use of income accounts	Capital account	Financial account	Balance sheets
		Key entries and Balancing items				
	Output		Remuneration of employees	Gross capital formation	Net acquisition of financial assets	Produced assets
	Intermediate consumption		Operating surplus / Mixed income	Consumption of fixed capital	Net acquisition of liabilities	Non-produced assets
	Value added/GDP		Property income	Net lending		Financial assets
			Disposable income			Liabilities
			Final consumption			
			Actual final consumption			
			Saving			
Total economy						
Institutional sector						
	Non-financial corporations					
	Financial corporations					
	General Government					
	Households					
	NPISH					

Table 34.2. Household measures from the sequence of economic accounts by household type

	Sequence of economic accounts				
	Production account	Generation and use of income accounts	Capital account	Financial account	Balance sheets
	Key entries and Balancing items				
	Output	Remuneration of employees	Gross capital formation	Net acquisition of financial assets	Produced assets
	Intermediate consumption	Operating surplus / Mixed income	Consumption of fixed capital	Net acquisition of liabilities	Non-produced assets
	Value added/GDP	Property income	Net lending		Financial assets
		Disposable income			Liabilities
		Final consumption			
		Actual final consumption			
		Saving			
Households					
Type of household					
	1st income quintile				
	2nd income quintile				
	3rd income quintile				
	4th income quintile				
	5th income quintile				

Table 34.3: Sources of household consumption by type of household

	Sources of household consumption			
	Household final consumption expenditure by COICOP	Household actual final consumption	Unpaid household service work	Ecosystem services
All Households				
Type of household				
	1st income quintile			
	2nd income quintile			
	3rd income quintile			
	4th income quintile			
	5th income quintile			

Table 34.4: Forms of work by individual characteristics

Table 34.6 Summary human capital table

		Employment	Hours worked	Remuneration	Human capital -	Human capital -
		by ISIC	by ISIC	of employees	Lifetime labour	Cost-based PIM
		Number people employed	Hours	by ISIC	by ISIC	by ISIC
				Monetary	Monetary	Monetary
Total						
By individual characteristic						
	Age					
	Sex					
	Education status					