WISE Accounts

Beyond the System of National Accounts ("Beyond-SNA") Towards a Framework for Sustainable and Inclusive Wellbeing

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Summary

Gross Domestic Product (GDP) dominates public discourse. It is often viewed as a measure of societal progress, despite the fact that many academics and institutions explicitly warn against this interpretation. As a result, many "Beyond-GDP" metrics have been proposed which claim to be a better measure of societal progress.

Beyond-GDP measurement systems provide either an index or a dashboard of indicators. However, these proposals are rarely embedded in a coherent accounting framework. This paper argues this is a mistake because the success of GDP is cannot be separated from the broader success of the System of National Accounts (SNA). The SNA, which accounts for economic stocks and flows, allow society to analyse the drivers of historical economic developments. The SNA data also serve as a basis for macro-economic models which help societies make decision about the future and potential policies. Rather than "Beyond-GDP" we need to go "Beyond-SNA".

Based on decades of literature and initiatives, this report informs a Beyond-SNA strategy. A comparable approach was followed by the System of Environmental and Economic Accounts (SEEA) which provides environmental data which is consistent to the SNA. The SEEA-SNA combination has facilitated many insights such as the "decoupling" of environmental pressures and GDP, "carbon footprints" and environment-economic models etc.

However, a Beyond-SNA strategy needs to be broader than environmental phenomena. The report provides the architecture for a new interdisciplinary accounting framework. It is not a full statistical manual, but rather a high-level description of the main features and sub-accounts. It is based on the existing frameworks (e.g. SNA and SEEA) as well scientific and grey literature. These "WISE accounts" are based on three concepts: Wellbeing (average current wellbeing), Inclusion (distribution of wellbeing) and Sustainability (future wellbeing). These dimensions are increasingly being used by international initiatives such as the UN High-Level Expert Group (HLEG) on Beyond-GDP. The interdisciplinary WISE accounting framework is unique in 3 ways:

1) It quantifies stocks/flows of the economic, social and environmental systems in multiple units (money, mass, people, time, etc)
2) It (e)valuates wellbeing, inclusion and sustainability using methods from various scientific schools of thought, thereby linking it to all the major Beyond-GDP indexes and dashboards.
3) It is a global framework rather than a national one (the SNA has a national perspective), although the WISE accounts do of course have country-level data

This report also shows that the conceptual WISE accounts are empirically feasible, by leveraging and integrating various existing databases. A concrete suggestion about the way forward is provided. Three considerations are given: 1) The implementation would require global and interdisciplinary statistical collaboration. 2) The WISE Accounts should be simultaneously developed with WISE "post-growth" policy models. 3) It would be fruitful to pilot the WISE accounts in a region or country (e.g. the European Union) with good statistical infrastructure and modelling capacity.

List of Abbreviations

BCE	Benefits and Costs Experienced
BLI	Better Life Initiative
CES	Conference of European Statisticians
DINA	Distribution of Income in National Accounts
DWNA	Distribution of Wealth in National Accounts
EC	European Commission
EGWM	Expert Group on Wellbeing Measurement
EU	European Union
EXIOBASE	EXIOBASE Multi-Regional Input–Output Database
FISW	Framework for Inclusive and Sustainable Wellbeing
FIGARO	Full International and Global Accounts for Research in Input–Output Analysis
GDP	Gross Domestic Product
GLORIA	Global Input–Output Database
GPI	Genuine Progress Indicator
GTAP	Global Trade Analysis Project
HDI	Human Development Index
HLEG	High-Level Expert Group
IAM	Integrated Assessment Models
ICIO	Inter-Country Input–Output Database
IMF	International Monetary Fund
IPBES	Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Serv.
IPCC	Intergovernmental Panel on Climate Change
IPCC-AR6	Intergovernmental Panel on Climate Change Sixth Assessment Report
IOT	Input–Output Table
ISEW	Index of Sustainable Economic Welfare
ISW	Inclusive and Sustainable Wellbeing
LA	Labour Accounts
MARIO	Macro-Economic Input–Output Database
NDP	Net Domestic Product
OECD	Organisation for Economic Co-operation and Development
PSUT	Physical Supply and Use Tables
PU	Public (Dissemination Level)
R&D	Research and Development
SAM	Social Accounting Matrix
SDGs	Sustainable Development Goals
SEEA	System of Environmental and Economic Accounting
SEEA-CF	System of Environmental and Economic Accounting Central Framework
SIW	Sustainable and Inclusive Wellbeing
SNA	System of National Accounts
SSF	Stiglitz–Sen–Fitoussi Report
SUT	Supply and Use Tables
TSA	Tourism Satellite Accounts
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNSC	United Nations Statistical Commission
UNSG	United Nations Secretary-General
VAT	Value Added Tax
WCED	World Commission on Environment and Development
WIOD	World Input–Output Database
WISE	Wellbeing, Inclusion and Sustainability
WTO	World Trade Organization

Contents

Chapter 1. Introduction

1.1 GDP and SNA: From Petty to the SNA2025

The earliest attempt to quantify the size of the economy is usually attributed to William Petty in the 17th century. His estimates of national income were used to assess England's economic capacity for taxation for war purposes (Bos, 2009, 2017; Coyle, 2014; Philipsen, 2015). Later contributions include François Quesnay's *Tableau Économique* (1758) which provided a more detailed overview of the interactions between economic sectors. This was a precursor to the work done by Leontief on Input-Output Analysis (Leontief, 1936) which became an integral part of national accounting guidelines after the second world war.

Up to the 20th century, measuring national income was pretty rare: it came up in a handful of countries especially in times of war, when the leadership, usually kings or queens, needed information about their ability to raise taxes. Usually, as soon as the crisis ended, interest in these data also diminished. As Figure 1 shows, at the beginning of the 20th century 9 countries had ever (in their entire history), calculated a national income estimate (Hoekstra, 2019). Figure 1 shows that this changed significantly in the century that followed. Currently, all ±200 countries calculate annual figures for Gross Domestic Product (GDP), often on a quarterly basis.

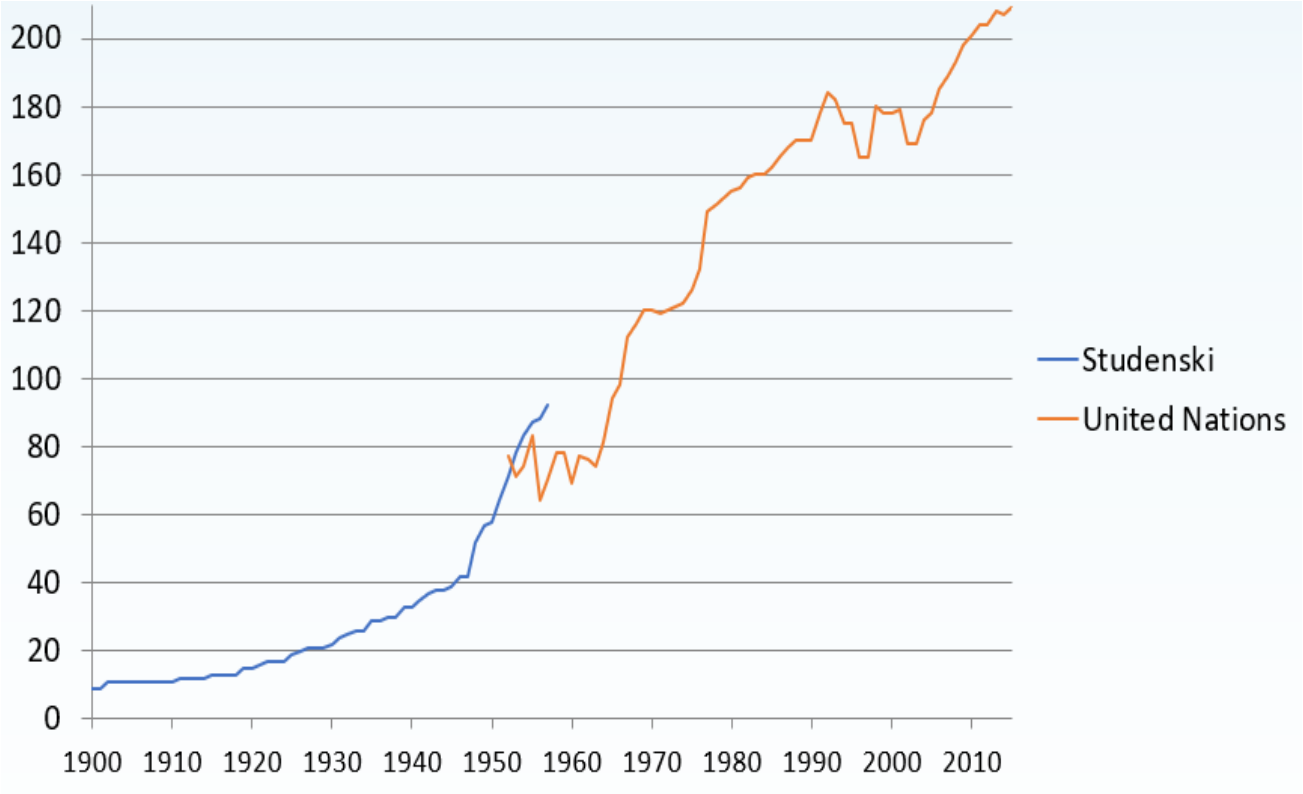

Figure 1. The number of countries calculating national income (Hoekstra, 2019)

National income estimation was given a boost when Simon Kuznets published the first US national income accounts in 1934 (Kuznets, 1934). These data were commissioned by the U.S. Congress to help understand the economic disruption

caused by the Great Depression. Around the same time, Colin Clark was collecting economic data which were the foundation for British national income estimates.

During World War II, the British national accounts were further refined to support the war effort (Keynes, 1940). The work of John Maynard Keynes, Richard Stone, and James Meade would subsequently use these data to develop macroeconomic policy models. This meant that the data was not only used to understand the economic situation, but was also used for forward-looking macro-economic models or models to assess the empirical implications of macro-economic policy. Currently many (international) economic policy institutes, governmental agencies, or academic macro-economists apply these macro-models for policy advice. These models make it possible to identify trade-offs and win-win when designing economic policies.

The most important point about the history of national income, is that from William Petty to the early 1950s there was no harmonised methodology. The various frameworks for national income used different approaches. A global harmonisation process only started in 1953, when the United Nations released the first *System of National Accounts* (SNA), providing an international standard for economic data.[1]

The SNA of 1953 also accelerated the production of macro-economic statistics, first in European and North American countries and later other countries (Schmelzer, 2016). However, the SNA only became a global standard in 1993 because the centrally planned communist countries still had their own accounting system up until the fall communism in the late 1980s (The Material Product System). Only when the SNA 1993 was adopted was there a global standard for macro-economic statistics.

Since 1953, the SNA has undergone multiple revisions (1968, 1993, 2008, 2025) to reflect changes in economic structures, economic theories, and data. The most recent revision is the SNA was adopted by the UN Statistical Commission in March 2025. Each SNA edition sets the research agenda for future updates, based on academic or policy discussions. For example, the SNA 1968 was the first to include the input-output theories of Leontief – these industry and commodity level data had not been available in the SNA 1953. The SNA1993 introduced a full articulation of balance sheets while the SNA 2008 delved into digitalisation and globalisation.

The SNA 1993 was a pivotal edition, because it stimulated discussion about “satellite accounts” which dealt with policy domains related to the economy: the environment, labour or tourism. For example, in the early 1990s there was a lot of work on Social Accounting Matrix (SAM) which included inequalities based on demographic groups. The most successful example of such an account is the System of Environmental and Economic Accounts (SEEA) which was adopted by the UN Statistical Commission (UNSC) in 2014. This is an accounting framework which provides data on environmental extraction, emissions and the development of natural assets.

SEEA data is based on a similar conceptual foundation of the SNA which makes it possible to analyse the relationship between the environment and the economy. This includes analysis of “decoupling”, which is the phenomenon where environmental pressures decrease (or develop more slowly) than GDP. Linking SEEA data to input-

[1] Note that this process had actually already started before the war and that an earlier working group had already published an important report (UN, 1947). This report (and lead author Richard Stone) also drove the work of the OEEC (the predecessor of the OECD) which was tasked with the execution and evaluation of the Marshall Plan (Schmelzer, 2016).

output datasets (one of the accounts in the SNA) also makes it possible to calculate "carbon footprints" which show the global carbon embodied in the supply chain. SEEA data, combined with SNA information, is also an important data source for environmental-economic policy models that can investigate the trade-offs and win-wins of policy options. For example, many of the models used by the European Commission to investigate economic and environmental policies will use SEEA data.

1.2 Beyond-GDP: A Shortlist of WISE Metrics

There are many macro-economic indicators in the SNA (e.g. consumption, productivity, trade, value added of the agricultural sector) but the most influential indicator is the Gross Domestic Product (GDP). GDP is a measure of economic activity, but it is often misinterpreted as a measure of societal progress. High GDP per capita is seen as evidence of a successful country and growth of GDP is applauded. Various editions of the SNA have explicitly warned against this interpretation. For example, the SNA 2008 says: *"GDP is often taken as a measure of welfare, but the SNA makes no claim that this is so and indeed there are several conventions in the SNA that argue against the welfare interpretation of the accounts."* This echoes academic and policy publications which have warned against GDP as a measure of social progress (Costanza et al., 2014; Fioramonti, 2013; Hoekstra, 2019; van den Bergh, 2009).

One of the items of contention which has been debated for centuries is the production boundary. What is defined as economic "production", dictates what sectors in an economy are "adding value" and are included in the figures of economic growth (Mazzucato, 2018). For example, the physiocrats in the 18th century thought that only agriculture was contributing to the economy. Centuries later, Karl Marx and Adam Smith wanted to restrict economic measurement to material goods. Later, Marshall broadened the economic production boundary to include services. Stone, who has lead author on the SNA 1953 and SNA 1968 was responsible for introducing the Keynesian idea that government services are part of the production boundary.

This shows that the measurement of the economy has always been a reflection of the economic situation and evolving theories of. However, the UN-led SNA process has calcified the discussion of the production boundary. Although the SNA is updated once every 10 to 15 years, it is a very conservative process because it needs to be agreed upon by 200 countries with different political and statistical situations. In a sense, the SNA process is so successful that innovation and updating is slow.

Certain changes, such as the call by feminist economists to include unpaid household work (cleaning, food preparation) in the production boundary, have been discussed for decades (Waring, 1988). While the SNA 2025 does revisit this topic, it is only in a non-compulsory satellite account. There are a couple of countries that do publish work on household production as part of their Beyond-GDP work (e.g. the UK (Heys & Taylor, 2025) but it remains to be seen how many will follow suit.

Beyond the discussion about the production boundary, GDP is not a measure of social progress because it only quantifies some dimensions of material wellbeing (such as consumption). Other dimensions like health, education, or social relationships are not included, or are included in an inadequate way. However, GDP also does not provide any information about the future, nor does it quantify inequalities in society. We will return to these points later (for GDP criticisms see van den Bergh (2009)).

As Figure 2 shows, alternative measures of societal progress have been suggested for decades. The figure shows various international initiatives (e.g. 1972 Stockholm conference on the human environment, the Earth suits and the Rio follow-ups, the Better Life Initiative (BLI)) as well as seminal publications such as the Limits to Growth (Meadows et al., 1972), the Brundtland report (WCED, 1987), The Stiglitz-Sen-Fitoussi (SSF) report (Stiglitz et al., 2009) and the Intergovernmental Panel on Climate Change 6th Assessment report (IPCC-AR6). These events and publications stimulated the development many different Beyond-GDP measurement systems such as the Human Development Index (HDI), Genuine Progress Indicator (GPI), Sustainable Development Goals (SDGs) and Doughnut Economics.

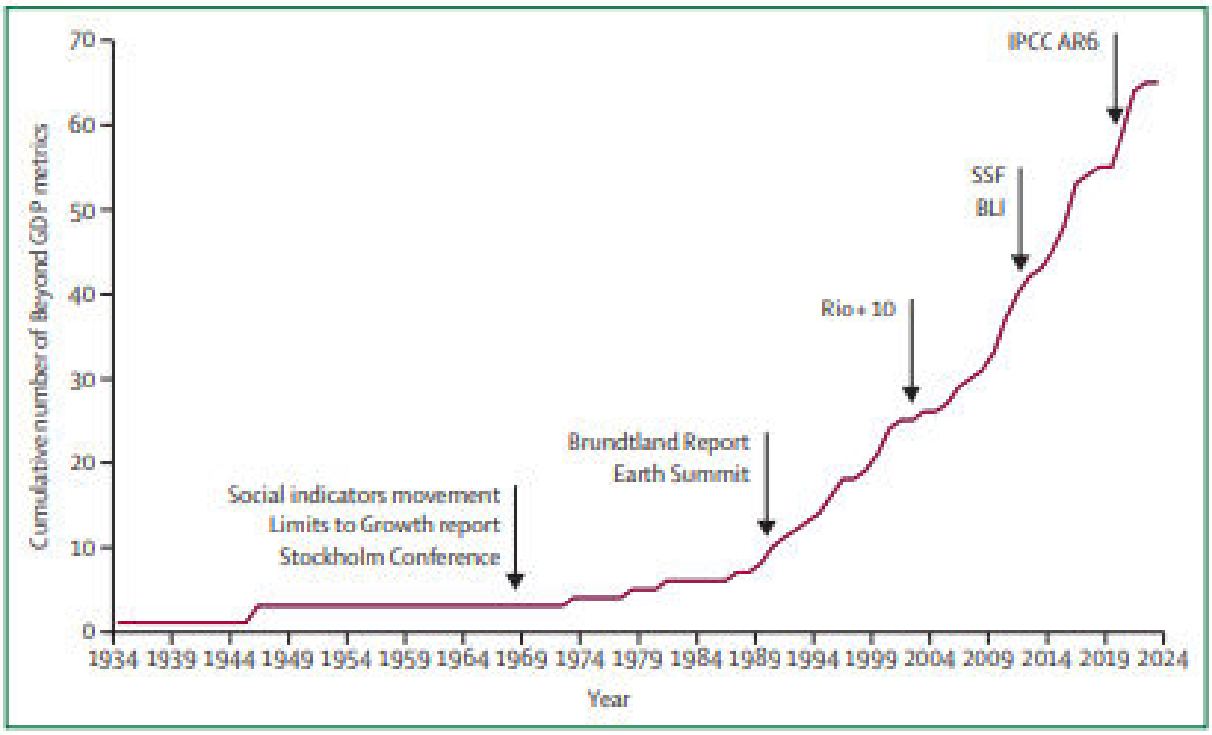

Figure 2. Cumulative number of Beyond-GDP metrics (Jansen et al., 2024)

While Figure 2 shows that there has been wide proliferation of Beyond-GDP metrics since 1970s there is a fundamental difference with the history of GDP (Figure 1). The SNA process, guided by the global international institutes, led to methodological convergence, which is something that is missing in the Beyond-GDP field.

The harmonised SNA data facilitated global implementation by statistical institutes in ±200 countries. The data they produced was used by ministries, academics, policy institutes and international organizations such as the UN, OECD, World Bank. and IMF. The institutionalization of these globally harmonised data and the macro-economic policy models which use the SNA information is a core feature of the post-war developments. This also impacted the societal narrative though the proliferation of various terms in society such as “economic growth”, “productivity” or “consumers”.

The history of Beyond-GDP metrics lacks a convergence dynamic which is similar to the SNA process. There are a wide variety of divergent methodologies and

terminologies used. Hundreds of alternatives have been created since the early 1970s, with a broad range of words and terms used to refer to "Beyond-GDP" (Hoekstra, 2019). This has hampered global institutionalisation and has hampered the spreading of new narratives. Recently some terminological convergence can be observed around the conceptual framework which can be seen as a synthesis of the Brundtland and Stiglitz reports (Stiglitz et al., 2009; WCED, 1987). Many current initiatives distinguish three dimensions:

- Wellbeing. The current quality of life (average)
- Inclusion. The distribution of wellbeing, within countries and between countries.
- Sustainability. The conditions that contribute to future wellbeing (and the planet).

These terms are sometimes referred to using different acronyms that change the order of the terms: WISE (Wellbeing, Inclusion and Sustainability), SIW (Sustainable and Inclusive Wellbeing) or ISW (Inclusive and Sustainable Wellbeing). This conceptual framing is increasingly being adopted by UN, OECD, European Commission). These initiatives will be introduced in more detail later. The WISE conceptualization helps to structure the current metrics. In a recent publication, Jansen et al. (2024) categorised around 70 of the current Beyond-GDP metrics in the "WISE triangle" as shows in Figure 3.

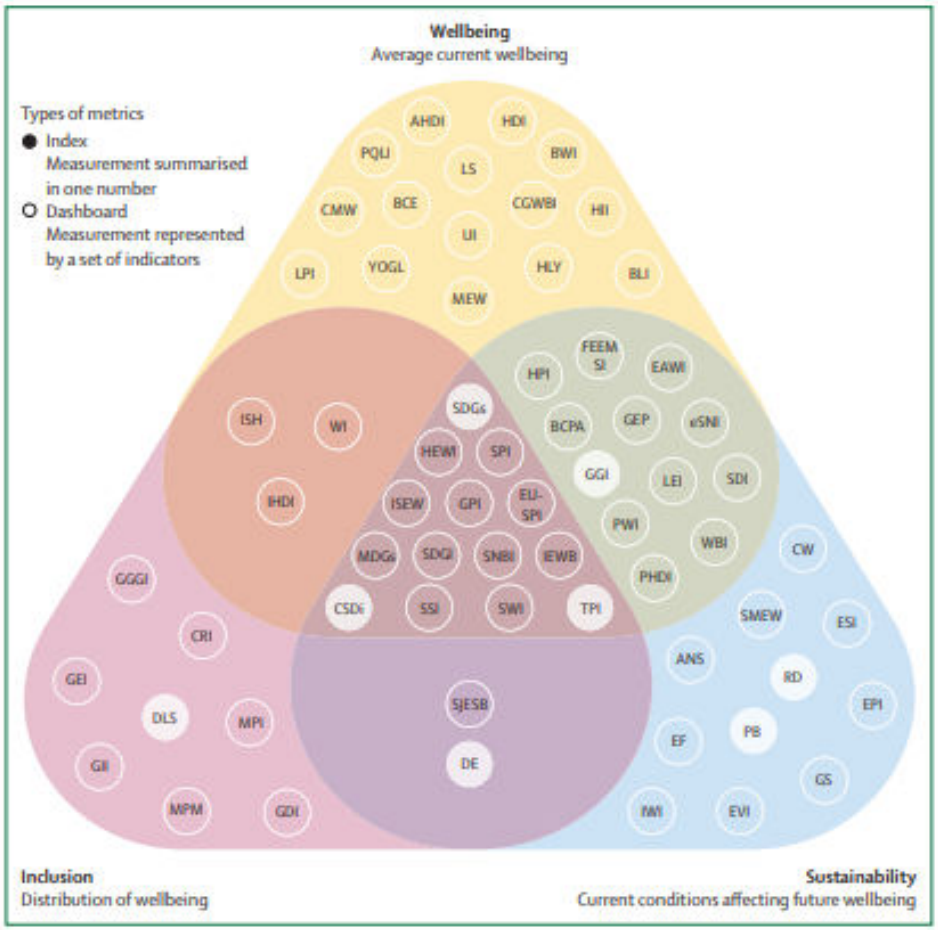

Figure 3. Metrics for Beyond-GDP classified as wellbeing, inclusion or sustainability

The WISE triangle shows that, despite the enormous methodological and terminological diversity, that the WISE categorisation highlights the commonalities between the measurement systems. The triangle has two types of metrics: 1) indexes, where a development is captured in a single number, and 2) dashboard where a multitude of indicators are used to track the multidimensional nature of developments. The acronyms for the various metrics can be found in Jansen et al. (2024) or https://beyond-gdp.world/wise-database/wise-metrics.

The metrics presented in the WISE Triangle adopt various scientific schools of thought. This can include mainstream economic theories like welfare economics, but also more heterodox social-science approaches such as Sen's capability approach, subjective wellbeing approaches or needs theories. Natural science approaches also inform the understanding of the dimension "sustainability".

For this report it is impossible, and also unnecessary, to create an accounting framework for all the metrics in the WISE triangle. Some are more important than others. This report therefore focuses on the following list of the most influential metrics. These have been chosen based on our knowledge of the field, the desire to include various schools of thought as well as the institutionalization (UN, EC, OECD, World Bank or other) of some of the approaches.

To choose the shortlist we have also adopted one the SSF recommendation which is that Wellbeing, Inclusion and Sustainability should not be aggregated into one index or one dashboard:

The assessment of sustainability is complementary to the question of current well-being or economic performance, and must be examined separately. This may sound trivial and yet it deserves emphasis, because some existing approaches fail to adopt this principle, leading to potentially confusing messages. For instance, confusion may arise when one tries to combine current well-being and sustainability into a single indicator. To take an analogy, when driving a car, a meter that added up in one single number the current speed of the vehicle and the remaining level of gasoline would not be of any help to the driver. Both pieces of information are critical and need to be displayed in distinct, clearly visible areas of the dashboard.

This means that the shortlist does not have prominent Beyond-GDP metrics such as the Index of Sustainable Economic Welfare (ISEW) or the Genuine Progress Indicator (GPI) because they aggregate current wellbeing and sustainability. For the shortlist we have chosen the lesser known "Benefits and Costs Experienced" which is also a welfare-theory approach but only measures current wellbeing.

In the case of dashboard approaches, the Stiglitz criteria means that you need one dashboard for wellbeing, one dashboard for inclusion and one dashboard for sustainability. The shortlisted dashboard frameworks adopt this philosophy. The only exception is the Sustainable Development Goals (SDGs) approach, which adopts one dashboard. Given the unique importance of the SDGs and the fact that one could potentially split the SDGs into three separate dashboards, we have chosen to include them. The shortlisted metrics systems that will be linked to the WISE accounts are shown in Table 1. It shows which of the dimensions of WISE it measures and the scientific school of thought. Note that many of the dashboards combine several schools of thought. Even the seminal 2009 Stiglitz report, which advocated dashboards, was a synthesis of various economic/social science disciplines.

Table 1. Shortlisted Indexes and Dashboards which can be connected to the WISE accounts

Index/ Dashboard	**WISE**	**School of thought**	**Description**
Index	Wellbeing	Welfare Economics	Since the early 1970s, economics have been using welfare economcis to create monetary aggregates that correct for "social and environmental externalities" which are not part of the macro-economic statistics. However, many of these add up current and future wellbeing. One which does not is the index for Benefits and Costs Experienced (BCE) (Van der Slycken & Bleys, 2024). There are also other approaches based on the welfare economic concept of utility. This includes the approaches by (Jones & Klenow, 2016) and (Fleurbaey & Blanchet, 2013) which look at wellbeing enhancing factors beyond material wellbeing such as leisure time, health and other factors.
		Subjective wellbeing (Life evaluation)	Life evaluation is one the approaches mentioned in the *OECD Guidelines on Measuring Subjective Wellbeing* (OECD, 2025). There is a long history of asking respondents to self-assess their lives on a Cantrill ladder or other scale. This metric forms the foundation of publications like the *World Happiness Report*.
		Subjective Wellbeing (Affect)	This is another approach in the OECD Guidelines which asks respondents to report their feelings during specific activities. A link between time use and wellbeing can therefore be made. Kahneman and Krueger used this to create the "U-index" (Kahneman et al., 2004). This index is rarely used in practice because time use surveys are expensive.
		Capability Approach	This is a theoretical framework proposed by Amartya (Sen, 1999). It proposes a separation of the actual lives that people lead (functionings) and the potential lives (capabilities). From this conceptual framework emerged the Human Development Index (HDI) which looks at health, education and income and is the foundation of the annual *Human Development Report*.
	Sustainability	Welfare Economics	Rather than looking at "externalities" using welfare theory, a second approach referred to as wealth accounting has become prominent. It emerged as a result of the Genuine Savings index (Pearce & Atkinson, 1993) which looked at environmental damage not as an externality, but as a reduction in natural capital. This has led to measurement of the total wealth (produced/financial capital, natural capital, human capital). The World Bank reports Comprehensive Wealth in the biannual *Changing Wealth of Nations* reports and UNEP report the Inclusive Wealth Index in the biannual *Inclusive Wealth Report*.

		Natural Science	A different way of looking towards future wellbeing is to record the natural limits of the planetary systems. Rather than looking at “natural capital” as an asset, it identifies the threats of natural systems exceeding their tipping points. The most prominent example is the planetary boundaries framework (Rockstrom et al., 2009). The latest results show that 7 out of 9 boundaries are currently being transgressed.
Dashboard	Wellbeing	Better Life Initiative (OECD)	This dashboard was launched in 2011 and builds on the Stiglitz report (which was published in 2009). It identifies 11 themes for current wellbeing. Note that initially it was a wellbeing dashboard only but has since been expanded to include sustainability and inequalities.
	Inclusion	Needs Approaches	Approaches such as (Doyal & Gough, 1984) and (Max-Neef, M., 1992; Max-Neef, M.A. et al., 1991) define dimensions for “human needs”. By measuring which percentage of a population do not meet these needs, measures of (lack of) inclusion can be created.
	Wellbeing, Inclusion and Sustainability	CES Framework	The Conference of European Statisticians (CES) Framework for Measuring Sustainable Development (UNECE et al., 2014). This was the result of a joint task force of the UN-ECE, OECD and Eurostat which was based on the Stiglitz report.
	Inclusion and Sustainability	Doughnut Economics	This is a popular approach advocated by Kate Raworth (Raworth, 2017). It is visualised by a Doughnut shape where the inner circles measures progress in inclusion (based on needs theory) and the outer part measures sustainability (based on planetary boundaries).
	Wellbeing, Inclusion and Sustainability	EC Interservice group	European Commission Interservice Group on Sustainable and Inclusive Wellbeing (EC/JRC). This Interservice group created a dashboard based on various schools of thought and is also developing an aggregate index (Benczur et al., 2025).
	Wellbeing, Inclusion and Sustainability	Sustainable Development Goals (SDGs).	The SDG dashboard has 17 targets and up to 200 indicators, but are not based on science. Instead, they were chosen in a UN process in 2015. They are the most cited and influential Beyond-GDP approach.

Chapter 5 will show how the WISE Accounts are linked to these indexes and dashboards. By making the WISE accounts applicable to various school of thought, it may also lead to new interdisciplinary views of measuring sustainable and inclusive wellbeing, which would help in convergence or new perspectives. This is necessary because, despite the fact that the above is a shortlist, there is still great divergence in approaches and some consolidation would be very welcome.

1.3 Beyond-SNA: A Research Agenda

Most Beyond-GDP research focuses on the creation of indexes and dashboards, but does not explicitly adopt an accounting perspective. However, this report argues that metrics should be embedded in an accounting framework: a Beyond-GDP and Beyond-SNA strategy need to go hand in hand. It rests on the idea that the success of GDP cannot be separated from the success of the SNA.

The SNA provides information about economic stocks and flows which go well beyond the aggregate headline index, GDP. The detailed information make it possible to analyse the driving forces behind economic growth, by relating the development to underlying factors such as productivity, consumption, trade and investments.

But policy makers in the post war period did not just want retrospective statistics that told them what happened in the past. Countless macro-economic models were created which were supposed to inform governments about the business-as-usual futures or the impact of policies on the economic prospects. While these models often show future GDP pathways, the empirical foundation is the totality of data in the SNA. In other words, it is impossible to separate the success of GDP from the SNA, and the use of the SNA in macro-economic models. The SNA is the methodological and analytical foundation for global policy success of macro-economics (Hoekstra, 2024).

This report therefore argue that the focus should not be exclusively on replacement of GDP. Simply replacing a metric, would not cater to all the uses described above. The global effort to move Beyond-GDP also necessitates moving beyond-SNA, towards a more integrated framework for inclusive and sustainable well-being. This accounting approach enables the analysis of trade-offs and synergies, and also would provide an empirical basis to model stock-flow balancing identities.

The most successful example of how a Beyond-SNA strategy might work, is the System of Environmental Economic Accounts. The UN discussion on an extended account which could link the economic data of the SNA to environmental extraction, emission and resources, started in the early 1990s. This culminated with the SEEA-Central Framework being adopted by the UN Statistical Commission in 2014 (UN et al., 2014).

While the SEEA has been a conceptual success, the implementation takes a long time. The UN points to some success stories, such as the fact that the SEEA has been implement in 100 countries and some of the accounts are legally binding in the EU. However, there are many different types of accounts (air emissions, material flows, ecosystems, forestry, energy, water accounts etc) and if we look at the adoption of each individual account the proliferation is more modest at national statistical institutes.

At the same time, non-official SEEA-like data has been created by academics and institutes. For example, academics have created accounts to track air emissions accounts (for example CO_2 emissions) This has greatly accelerated research that links environmental and economic developments. Examples include the analysis of decoupling which quantifies whether environmental pressures are reducing or developing more solely than economic growth. The SEEA has also made it possible to calculate environmental footprints which link the emissions to final consumers. For example, carbon footprint for households show the amount of Greenhouse gas emissions which are embodied in the entire supply chain providing the consumer products. This includes the emissions within the country where the consumer resides, but also other countries. Finally, SEEA data (both official and non-official) is now also playing a role in many macro-economic policy models that are also looking at environmental-economic relationships.

However, a full Beyond-SNA framework for sustainable and inclusive wellbeing is broader than the SEEA. There are a couple of authors that have suggested a Beyond-SNA framework (Eisner, 1988; Hoekstra, 2019; Jorgenson, 2009; Vanoli, 2005). There are also a couple of countries, such as the UK who are now routinely publishing statistics in this spirit (Heys & Taylor, 2025).

This report will present our Beyond-SNA strategy: the WISE accounts. The report does not provide a complete and definitive statistical framework. Rather it provides the architecture of the accounts and suggests an implementation strategy. There are four important international initiatives which could assist in boosting this Beyond-SNA research agenda:

- *High-Level Expert Group on Beyond-GDP*. The UNSG appointed a group of high-level experts to recommend a list of 10-20 globally applicable Beyond-GDP metrics. The report is scheduled for publication in early 2026 and will also be linked to frameworks such as the SNA and SEEA.
- *System of National Accounts 2025*. The SNA2025 revision was adopted in March 2025 by the UN Statistical Commission. These are the new guidelines that will dictate the production of GDP figures and other economic data for the next decade or so. There are couple of updates to the guidelines that are important from a Beyond-GDP/SNA perspective (See box 1 for details). Note that the SEEA is also in the process of being revised.
- *The Expert Group on Wellbeing Measurement (EGWM).* This group was formed by the UN Statistical Commission to create a Framework for Inclusive and Sustainable Wellbeing (FISW) – a standardised technical guidance document to synthesise current methods and lay out methods and measures which can be used by all countries.
- The *European Commission's Interservice Working Group on Sustainable and Inclusive Wellbeing* was given a mandate in the 2023 Strategic Foresight report (reaffirmed in 2025). Its aims are to create a dashboard and an index to assist policy in the EU (European Commission, 2025).

Box 1. Beyond-GDP/SNA elements of the SNA2025

- *Net Domestic Product* – GDP has always been criticised because it is a gross measure, which does not yet subtract depreciation or depletion of natural resources. From the early 1970s, "green GDP" measures advocated subtracting depreciation/depletion from GDP to create a net measure. The System for Environmental and Economic Accounts (SEEA) which emerged in the early 1990s created the theoretical underpinning to measure the depletion of natural capital. The SNA 2025 is the first edition which includes this indicator in the core SNA. Of course, whether these net metrics "replaces" GDP as the headline figure depends on the Statistical Offices calculating it (it is not easy to measure depreciation and depletion) and whether the users and media will use it.
- *Wellbeing and Sustainability*. The 2025 SNA features a chapter, very early on in the text (Chapter 2), dedicated to well-being and sustainability. In addition, chapters 34 and 35 offer further explores the contributions of the national accounts to these two topics. While, the chapters are not as prescriptive about what statistical offices should measure. Although the chapter lacks certain specifics, SNA chapters like this have been influential in agenda-setting. Just like the SNA 1993 bolstered the research agenda for the SEEA, the SNA 2025 could lead to a research agenda for sustainable and inclusive wellbeing. If anything, it helps in the convergence towards a common language – by adopting the terms wellbeing and sustainability
- *Distribution*. The SNA2025 includes sections that looks specifically at accounts that distributed in income, consumption, saving, wealth etc per decile.

1.4 The Foundations of WISE Accounts

This report is meant to accelerate the Beyond-SNA research agenda, informing the four initiatives mentioned above as well as the academic and policy debates. It is not meant to provide a fully formed accounting system. Rather it provides the architecture and philosophy behind the WISE accounts, three goals stand out:

1. Broadening the Beyond-GDP discussions **beyond metrics** to a broader **Beyond-SNA** strategy A novel accounting framework should serve as a foundation for the most prominent Beyond-GDP measurement systems, but also serve as the foundation of WISE policy models. While we will not explicitly cover this in the main body of this report, the last section will reflect on this role.
2. Ensuring that this research agenda is **interdisciplinary,** because it is understood that to fully grapple with wellbeing, inclusion and sustainability we need to go **beyond mainstream welfare economics**. The reason to stress this point is that some of the current institutionalised Beyond-GDP discussions are dominated by economic statisticians that are primarily trained in welfare economic approaches. For example, the chapters of the SNA2025 on wellbeing and sustainability are dominated by concepts such as externalities, wealth and capital. Other concepts such as planetary boundaries are not integrated into the text.
3. The accounting framework requires a global planetary lens that goes **beyond the national perspective**, because many economic, social and environmental dynamics are global in nature. This does not mean that no national data is included, but these data are provided with the context of global developments. Global economic developments (such as globalisation and trade), social dynamics (such as international migration) and global environmental problems (such as carbon cycles) can therefore be connected to each other.

Chapter 2. The SNA and Extended Accounts

2.1 Core SNA

The SNA is framework underlying GDP calculations, but the SNA is much more than that. Knowledge about the details of what is in the SNA is restricted to a small group of professional statisticians. The SNA is in fact a very elaborate and sophisticated system which includes a coherent set of stock-flow accounts. To understand how to go Beyond-SNA it is important to look at the current SNA structure because it provides insights on how to build a broader framework. There are 4 accounting levels:

- *Production Accounts*. This is part of the SNA, which examines everything that has to do with the production structure of the economy. It includes data on production per industry, consumption by household and government, production, imports, exports, and investment (formally known as gross capital formation). This is also the accounts that yield the GDP aggregate.
- *Income and Redistribution Accounts*. This portion of the accounts look at all the social transfers and other transactions that are not related to production/ consumption.
- *Capital and Financial Accounts*. These are the flows which contribute to increasing the stocks of machines, infrastructure (capital) or stocks, flows, cash (financial capital).
- *Asset Accounts.* This is the only account which also includes stocks. These accounts shows the starting value of the capital and financial assets in year *t*. By introducing the flows (additions and reductions in the stocks) the new stock levels in time *t+1* can also be recorded.

These various accounts are all consistent in the sense that if a data point is used in two accounts, the numbers will be the same. To illustrate, Table 2 shows a full sequence of the flows accounts (production, income and redistribution, and capital and financial accounts) for the Netherlands in 2022. They structure the economy into 4 “institutional sectors” (non-financial corporation, financial corporation, general government and households) and the rest of the world.

Table 2 is sometimes called the sequence of accounts because the final entry of an account is the starting value for the next account. For example, the production accounts close with value added (gross), which is the aggregate that opens in the next account (generation of income account). It is beyond the scope of this report to go through each item of these accounts (see (Lequiller & Blades, 2014) - the OECD explainer on *Understanding National Accounts*), but the table illustrates the consistency and sophistication of the SNA.

Out of the sequence of accounts, the production account is best known because it is where GDP is calculated. The production accounts are different to the sector accounts, in that they are organised according to economic activities, which are different to the economic sectors shown in Table 2. Economic activities are the actual production processes (like farming, manufacturing), classified by *what* is produced. *Institutional sectors* group *who* performs these activities (e.g., households, corporations, government) based on their main function and behaviour, helping analyse income flows and economic structure. Activities are *what* is done; sectors are the *actors* doing it, organized for analysis.

Table 2. Full sequence of Sector Accounts – The Netherlands 2022

		Non-financial corpo-rations	Financial corpo-Rations	General govern-Ment	Households including NPI's serving households	Not sectorized	Total economy	Rest of the world
	million euros							
	0. Imports and exports							
R	Imports of goods and services							795 208
U	Exports of goods and services							898 661
	1. Production account							
R	Output (basic prices)	1 390 118	85 874	169 402	275 481		1 920 875	
	Taxes on products (excl. VAT)					29 466	29 466	
	Value added type taxes (VAT)					69 928	69 928	
U	Intermediate consumption (excl. deductible VAT)	832 018	42 412	60 539	126 103		1 061 072	
	Subsidies on products					643	643	
	Value added (gross) [1)]	558 100	43 462	108 863	149 378	98 746	958 549	
	2.1 Income account (generation of income)							
R	Value added (gross) [1)]	558 100	43 462	108 863	149 378	98 746	958 549	
	Subsidies						20 765	
	Subsidies on products					648	648	
	Other subsidies on production	16 995	76	261	2 785		20 117	
U	Compensation of employees	330 361	20 670	79 288	21 359		451 678	2 138
	Taxes on production and imports						112 249	
	Taxes on products (excl. VAT)					29 466	29 466	
	Value added type taxes (VAT)					69 928	69 928	
	Other taxes on production	6 882	2 240	1 119	2 614		12 855	
	Consumption of fixed capital	85 055	5 925	28 717	39 394		159 091	
	Operating surplus / mixed income (net)	152 797	14 703	0	88 796		256 296	
	2.2 Income account (primary distribution)							
R	Operating surplus / mixed income (net)	152 797	14 703	0	88 796		256 296	
	Compensation of employees				439 828		439 828	13 988
	Taxes on production and imports			107 211			107 211	5 038
	Property income	137 940	284 723	14 793	64 382		501 838	299 857
U	Property income	221 199	254 774	5 598	14 000		495 571	306 124
	Subsidies			19 070			19 070	1 695
	Primary income/national income (net)	69 538	44 652	97 336	579 006		790 532	
	2.3 Income account (secondary distribution)							
R	Primary income/national income (net)	69 538	44 652	97 336	579 006		790 532	
	Current taxes on income and wealth	0	0	133 274	0		133 274	3 909
	Social contributions	13 335	74 260	125 551	460		213 606	497
	Social benefits (in cash)	0	0	0	155 686		155 686	3 405
	Other current transfers	6 762	20 821	174 989	30 675		233 247	16 341
U	Current taxes on income and wealth	35 839	6 012	4 464	83 482		129 797	7 386
	Social contributions	0	0	0	209 586		209 586	4 517
	Social benefits (in cash)	13 335	50 324	94 732	460		158 851	240
	Other current transfers	7 651	21 385	188 821	25 648		243 505	6 083
	Disposable income (net)	32 810	62 012	243 133	446 651		784 606	
	2.4 Income account (use of income)							
R	Disposable income (net)	32 810	62 012	243 133	446 651		784 606	
	Adjustment for the change in pension entitlements	0	0	0	24 202		24 202	– 266
U	Final consumption expenditure	0	0	240 500	411 073		651 573	
	Adjustment for the change in pension entitlements	0	23 936	0	0		23 936	
	Saving (net) / surplus on current transactions							
	of the rest of the world with the Netherlands	32 810	38 076	2 633	59 780		133 299	– 88 867
	3.1 Capital account (capital transfers)							
R	Saving (net) / surplus on current transactions							
	of the rest of the world with the Netherlands	32 810	38 076	2 633	59 780		133 299	– 88 867
	Capital transfers	2 881	95	9 109	7 721		19 806	1 809
U	Capital transfers	29	6	11 552	8 981		20 568	1 047
	Net saving and capital transfers	35 662	38 165	190	58 520		132 537	– 88 105
	3.2 Capital account (capital accumulation)							
R	Net saving and capital transfers	35 662	38 165	190	58 520		132 537	– 88 105
	Consumption of fixed capital	85 055	5 925	28 717	39 394		159 091	
U	Capital formation (gross)	99 076	5 738	32 474	66 235		203 523	
	Acquisitions less disposals of non-produced							
	non-financial assets	– 105 559	727	– 2 669	557		– 106 944	106 944
	Net lending / net borrowing	127 200	37 625	– 898	31 122		195 049	– 195 049
	4. Financial account							
A	Change in assets	157 023	238 971	34 008	60 439		490 441	436 524
P	Change in liabilities	30 919	201 346	34 876	31 707		298 848	628 117
	Changes in financial net worth	126 104	37 625	– 868	28 732		191 593	– 191 593
	Net lending / net borrowing	127 200	37 625	– 898	31 122		195 049	– 195 049
	Statistical discrepancy	– 1 096	0	30	– 2 390		– 3 456	3 456

Because of this focus on activities (which represent the technology used in the economy) the production accounts are often used for analytical purposes. A common representation are the supply-and-use tables (SUT) which are shown in Tables 3 and 4. These accounts are often transformed into input-output tables (IOT) which is the foundation for many macro-economic models (Leontief, 1936; Miller & Blair, 2009). We will not describe the ways in which the IOT is produced from the SUT (Miller & Blair, 2009).

The SUT/IOT disaggregate show monetary flows according to industries, commodities, value added and final demand categories. Table 3 shows the supply of commodities, identifying which industries produced them or whether they come from imports. An industry may provide multiple types of produce. For example, a farm may produce milk (dairy products) as well as recreational services (farm camping).

The use table shows which industries or final demand categories use the commodities. For example, the milk produced by the farmer may go to the food industry, restaurants, consumers or be exported. The recreational services would go the households that want to spend a weekend on a farm. The final demand categories include the consumption of households and government, investments (formally knowns as gross fixed capital formation) and exports. Each industry in the use table also requires labour inputs (which are compensated with wages and runs a profit (formally referred to as operating surplus). Together these are known as value-added.

Table 3. Supply table

	Industry	Imports	**Total Supply**
Commodity			
Total Supply			

Table 4. Use table

		Industry	Final demand				**Total Use**
			Household Consumption	Governments Consumption	Gross Fixed Capital Formation	Exports	
Commodity							
Value Added	Wage Compensation						
	Operating Surplus						
Total Use							

There are balancing identities which connect the two accounts. The row totals of the supply table, the total amount of commodity supplied, must equal the total use of commodities of the use table. Similarly, the column totals must equal each other: the total industry output must equal the total input (with the operating surplus serving as a balancing item). Note that for the sake of simplicity we have not discussed the conversion from basic prices to purchaser prices, left out taxes and subsidies and changes in inventories (UNStats, 2018). The official SUT/IOT are far more complex but these simplified representation are sufficient to illustrate the idea of balancing identities.

SUTs show economic flows, but the SNA also accounts for stocks. Think for example of the amount of gold bars that the central bank has. This does not have anything to do with the production activities of a country and yet it does contribute to the wealth (financial capital) of a country. An economy can build up assets or draw them down. For example, if a company invests in assets such as machines and buildings (as quantified in the use table as gross fixed capital formation) this increase the amount of "produced capital". Simialrly, if a company invests in Research and Development it increases its knowledge base and/or patents, which can also be seen as economic assets. Of course, machines, buildings and knowledge might also depreciate or the value of these assets may change over time (re-valuation).

Table 5 shows these asset accounts. This table shows the changes in stocks of capital and financial assets/liabilities from year *t* to year *t+1* in a stock-flow consistent way. Some of these flows lead to increases or decreases of economic assets (e.g investment/depreciation of machines, buildings, R&D) and financial assets (e.g. increases/decreases of gold, cash, stocks and bonds).[2]

Table 5. Asset Accounts

	Stock (t)	Gross Fixed Capital Formation	Depreciation	Re-valuation	**Stock (t+1)**
Capital Assets					
Financial Assets					
Total Wealth					

2.2 Extended Accounts

The idea of "satellite accounts" has a long history. These accounts, which are nowadays also referred to as "extended accounts", create data on policy domains (environmental, labour, tourism) that are consistent to economic data like GDP. In the early 1970s, Richard Stone, the lead author of the SNA1953 and SNA1968, started to work on socio-demographic accounts which used similar stock-flow were

[2] Formally some natural resources (land, metals, minerals and fossil fuels are also part of the asset accounts).

consistent to the SNA. These accounts has as their accounting unit the number of people. He created the conceptual frameworks for these accounts for the OECD and later UN, using the balancing identities which were similar to the SNA (Stone, 1971, 1975). Stone saw accounting as a universal tool which was not restricted to monetary units. He stressed this point in the first paragraph of his Nobel Lecture "The Accounts of Society" (Stone, 1984).

> *"This morning I shall discuss how accounting can be useful in describing and understanding society. The three pillars on which an analysis of society ought to rest are studies of economic, socio-demographic and environmental phenomena. Naturally enough, accounting ideas are most developed in the economic context, and it is to this that I shall devote much of my time, but they are equally applicable in the other two fields. By organising our data in the form of accounts we can obtain a coherent picture of the stocks and flows, incomings and outgoings of whatever variables we are interested in, whether these be goods and services, human beings or natural resources, and thence proceed to analyse the system of which they form part."*

This multi-unit accounting philosophy was embraced in the SNA 1993 when it introduced the idea of "satellite accounts". These accounts which could be linked to the "core SNA accounts", the monetary parts (See previous section). However, satellite accounts started to introduce accounting in different units: the Tourism Satellite Accounts (TSA) includes data on the number of tourists ("Visitors") and the labour accounts for the number of jobs, people employed and hours worked.

Probably the most prominent "extended account" is the System of Environmental and Economic Accounts (SEEA). The SEEA was adopted by the UN Statistical Commission in 2014. It contains both economic accounts as well as accounts for based on balancing identities of mass, energy and land. Often the accounts are similar to the SNA. For the example, the SEEA has a Physical Supply and Use Tables (PSUT) which is similar to the monetary SUT in the SNA. The only difference is that is based on mass balances (the PSUT will be shown later in this report). This leads to differences between a monetary and physical tables: a PSUT includes different input and output categories that reflect the physical balances (extractions from nature, emissions to the air) and a PSUT does not have value added components such as wages and profits which are in the monetary SUT.

Inequality was also covered by the SNA1993 as part of the Social Accounting Matrix (SAM). It was an account which showed all the economic stocks and flows per sector, including a breakdown of these variables according to household categories). In the decades that followed, the salience of income and wealth inequalities increased and academics started to create more distributional data (Piketty, 2014). However, most data was based on micro-data (tax data) or surveys which sometimes use different concepts which are not consistent to national accounting conventions. Also, the totals might not match the totals in the national accounts. To align the micro data to national accounts, the Distribution of Income in National Accounts (DINA), or Distribution of Wealth in National Account (DWNA) have been developed (Alvaredo et al., 2017, 2017). The thinking and data collection which has occurred as a result of the SEEA/LA/SAM/DINA/DWNA and other satellite accounts have also inspired and fed the data strategy of the WISE accounts architecture and implementation strategy discussed in the next sections.

Chapter 3. WISE Accounts Architecture

There have been various authors that have tried to envisage a Beyond-SNA framework (Jorgenson, Vanoli, Eisner, Hoekstra). This report will build on these ideas as well as the literature linking extended/satellite accounts to the SNA. However, the foundational ideas of a planetary spatial scale and an interdisciplinarity approach were already discussed in Hoekstra (2019).

3.1. Global Scope

The SNA was developed in an era when international trade was dominated by the domestic economic components. In the mid-20th century, national economies were relatively self-sustaining compared to now. The SNA framework reflected this, focusing on measuring production, income, and expenditure within national borders. They recorded imports and exports in the national accounts, but did not further elaborate on the relationship with the global economy.

Nowadays, the global economic landscape has changed dramatically. The post-war period saw a steady increase in international trade, further accelerated by the liberalisation of markets in the 1980s and 1990s. The rise of global supply chains, the accession of China to the World Trade Organization (WTO) in 2001, and the integration of emerging economies into the global system fundamentally reshaped how value is created and distributed (Baldwin, 2006). Today, production is no longer confined within national borders because intermediate goods, services, and capital flow seamlessly across countries, making traditional national accounting frameworks reflective of a bygone age. There is a growing demand for global SUTs/IOTs to analyse economic developments. Many databases have been created (GTAP, WIOD, EXIOBASE, EORA, GLORIA, FIGARO, ICIO, MARIO) to cater to these analytical needs (Tukker & Dietzenbacher, 2013). These databases include transnational supply chains which are crucial to understand today's interconnected economy[3].

A similar rationale, to look at a global perspective, also hold for population. Migration, tourism, and work-residence relationships demonstrate that population dynamics have both global and national dimensions. People move across borders for employment, education, health care and better economic or political conditions, creating global dynamics that are inadequately captured by national statistics.

Environmental challenges also manifest themselves at multiple scales from global to local. Global issues such as climate change and biodiversity require a global perspective, while local problems like air pollution, water eutrophication, and land degradation are more region-specific. Traditional national accounting frameworks struggle to integrate these multi-scale dynamics, reinforcing the need for a more comprehensive and spatially nuanced approach.

New accounting frameworks must therefore go beyond national boundaries, starting from a global view, while at the same time still depicting national data or even subnational data.

[3] Note that the input-output macro-economic picture can differ from the micro-data analysis (Diem et al., 2022).

3.2 Interdisciplinary Accounting

Since the emergence of environmental and sustainability concerns in the late 1960s, ecological economists have been advocating a more systemic view our planet. Authors such as Boulding ("Spaceship earth"), Daly ("Steady State Economics") stressed that the economy was embedded in society, which in turn was a sub-system of the natural environment (Boulding, 1966; Daly, 1968, 1992). This thinking was especially powerful because it stressed the idea that the economy was not limitless, but rather was constrained by natural limits.[4] The Limits to Growth report (Meadows et al., 1972) and the Brundtland report (WCED, 1987) were both influenced by this type of thinking.

The scope of the WISE accounts should therefore encompass all systems: economic, social and environmental. It should looks at the stocks and flows of all these systems, rather than just focusing on the economy. That also implies an expansion of the accounting units to quantify dynamics. For example, demographers record the stocks and flows (births, deaths and migration) using the number of people as the accounting unit. Climate scientists record the mass of carbon in the geosphere, atmosphere and hydrosphere by recording the stock and flows between these natural systems. Figure 4 shows this multi-unit accounting structure which is consistent to Richard Stone's vision of accounting (see section 2.2).

3.3 Interdisciplinary (E)valuation

The multiunit stock-flow accounting framework provide information about the dynamics of the three systems.[5] However, measuring in the systems' stock and flows does not answer the question: are things going well? Are the changes in mass, people, money or other units indicative of progress or not?

Mainstream welfare economics has a long history which uses the concept of "utility" to indicate a contribution to human wellbeing (Pigou et al., 2013). This theory can be used to estimate a monetary *valuation* of things that are not traded in the market place, or the utility of consumption goods (which can be different to the market price). There are two types of welfare economic approaches that are relevant to Beyond-GDP. One is based on the idea of externalities, which indicate that beyond the economic systems there are non-market costs and benefits, in the social and environmental realms. The second method, wealth accounting, is based on the sustainability can be seen from the perspective of the assets which are left for future generations. These economic, financial, human and natural capital stocks are the source of wealth upon which future generations will generate their welfare.

However, the WISE accounts advocate broadening *welfare economic valuation* with *interdisciplinary evaluation*. This does not mean that welfare economics is not part of the evaluation toolkit. The WISE accounts are based on the idea that there is no epistemic reason that welfare economics is the only means to assess progress. Instead, the WISE accounts are based on the idea that there are various heterodox

[4] Thomas Malthus often credited as one of the first authors to warn that transgressing natural limits (in his case the capacity to feed a growing population) could have serious detrimental effects on humans (Malthus, 1798).

[5] Systems thinking also goes beyond just stocks and flows but also looking at how the resilient systems are to shocks (see chapter 9 of (OECD, 2018)).

economic approaches and insights from other (social and natural) sciences which also provide crucial perspectives.[6]

The global multiunit stock/flow accounting system is described in the next chapter. The role of interdisciplinary (e)valuation and how they are related to Beyond-GDP metrics is described the chapter after that. However, before moving to the WISE accounting structure, a brief note on temporal, spatial or other detail. For some system dynamics or policy issues, it is important to have information at a lower, or at a different, spatial or temporal level. In the WISE accounts discussed in the following chapters the accounts are depicted mostly at the country-global level and on an annual basis. It is hopefully clear that the WISE accounts can easily to conceptualised at disaggregated temporal or spatial scales.

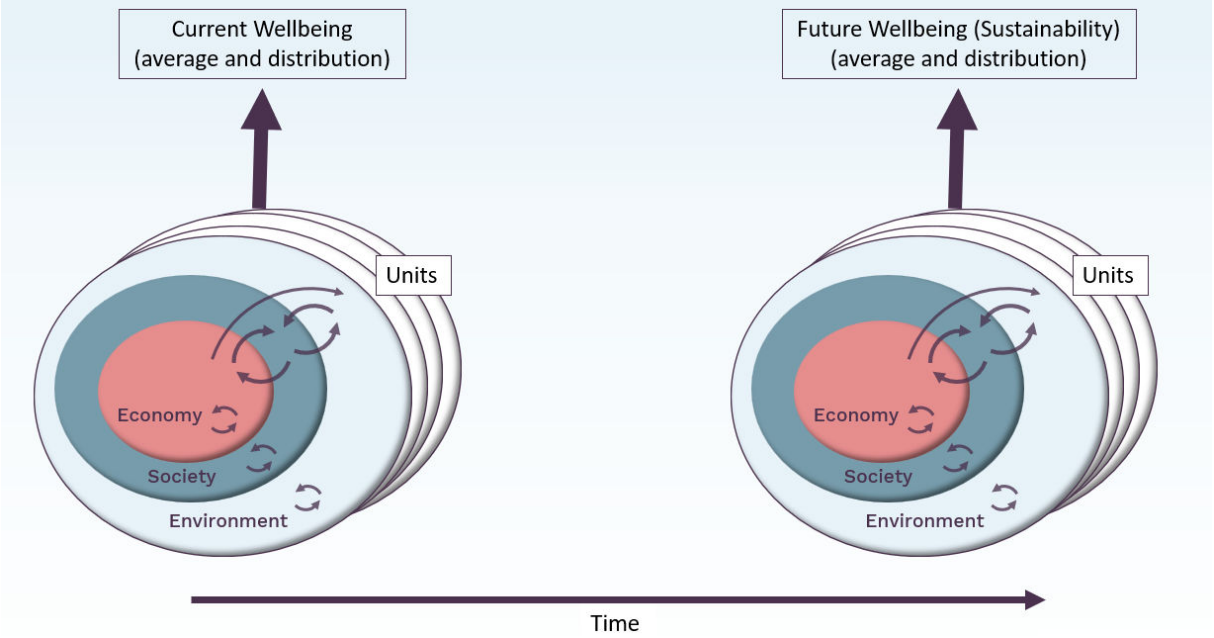

Figure 4. System dynamics and wellbeing, inclusion and sustainability

[6] This is consistent to the views expressed in IPBES (2020).

Chapter 4. WISE Accounts – System Accounts

This chapter discusses the architecture of the WISE accounting framework. The conceptual statistical classifications are discussed as well as the accounts for the 3 core measurement units: money, mass, people and human time. This list of units is not exhaustive but is sufficient to illustrate the WISE accounting architecture.

A core part of this chapter is to assess the data that would be needed to compile the WISE accounts. The chapter shows that for many parts of the WISE accounts the data already exists. The challenge of creating the WISE accounts is therefore a matter of bringing data together from various data sources, rather than creating statistics from scratch.

4.1 Classification

Accounting frameworks need to categorise the data into various classifications. This could be industries, educational levels, age, or other categories. The accounting systems also need to define which entities will be the basis of the observations ("statistical units"). Note that the term "units" is different to measurement "units" used in the previous chapter. Given that the WISE Accounts are a synthesis of various different accounting frameworks, it is obvious that it would use the classifications and statistical units from various other handbooks such as the Systems of National Accounts (for the monetary balances), the Principles and Recommendations for Population and Housing Censuses (for the people balances) and the System of Environmental and Economic Accounts (for the mass and energy balances).

The 2008 SNA distinguishes two primary statistical units: (i) the *establishment* for the description of the production process in the supply and use framework; and (ii) the *institutional units* for the description of income and finance in the institutional sector accounts. The statistical unit in demographic accounts is most often the person, as demographic data is fundamentally about populations, though other units like households or even territorial units (such as regions or countries) can also serve as units of analysis.

Statistical units for housing statistics typically include the private household, housing unit, person, and grid cell, with the choice of unit depending on the level of detail and the type of data being collected. A private household is a group living together, a housing unit is a dwelling, a person is an individual, and a grid cell provides highly detailed geographic data for analysis.

Beyond these statistical units there are also many other classifications that are used to describe variables that are linked to these statistical units. The WISE accounts should adopt the statistical units of the SNA and population and housing statistics guidebooks. In addition, below are a couple of categorisations which will be used in the subsequent chapters on WISE accounts:

- *Industries*. The establishment is aggregated into industries. In the UN system this is known as the International Standard Industrial Classification of All Economic Activities (ISIC). In the European setting this is known as the Nomenclature statistique des activités économiques dans la Communauté européenne (NACE).

- *Institutional Sectors*. The SNA defines five sectors: Non-financial corporations, Financial corporations, Governments, Households and the Rest of the world. Each of the these also has subdivisions.
- *Commodities*. The UN system is known as the Central Product Classification (CPC). In the European Statistical system, this is known as the Classification of Products per Activity (CPA). The commodities are also linked to classification for trade statistics classifications for goods (Harmonised System – HS) and services (International trade in services - ITS)
- *Capital and Financial Assets*. The SNA distinguishes a number of assets which produced (machinery, buildings, valuables etc), non-produced (land and intangible assets) financial assets (gold and shares).
- *Household type*. These are usually classified according to the build-up of the people living in the dwelling (family/non-family, two parents with children, multigenerational etc)
- *Housing type*. These include single-family detached houses, semi-detached houses sharing a common wall, terraced houses with one or two common walls, and multi-unit dwellings such as flats (apartments) and maisonettes. S
- *Age*. Individuals (one of the statistical units) can be categorised according to age.
- *Gender*. Another variable which is often used to categorise individuals.
- *Educational status/attainment*. The International Standard Classification of Education (ISCED) standardises educational levels from ISCED 0: Early childhood education to ISCED 8: Doctoral or equivalent level.
- *Employment status*. This is used by the ILO (Inactive, Unemployed, Employee, Self-Employed)
- *Health status*. There are various World Health Organization (WHO) classification types. There is a family of International Classifications (WHO-FIC), which includes the International Classification of Diseases (ICD) for diseases, the International Classification of Functioning, Disability and Health (ICF) for functioning, and the International Classification of Health Interventions (ICHI) for interventions
- *Time use activities*. Various international Time Use categories have been developed in the MTUS and HETUS initiatives.
- *Natural system* compartments. The natural system can be categorised into various compartments: Geosphere, Atmosphere, Biosphere, Hydrosphere
- *Materials/Substances*. The SEEA defines a list of materials and substances.

This is not an exhaustive list, but sufficient to organise the WISE accounts shown below. If the WISE accounts are implemented these classifications will need to further refined and might have to be adjusted or augmented.

4.2 Money

For the monetary balances, the WISE accounts are based on the core SNA structure. This does not mean that the production of asset boundaries of the SNA are adopted, rather the definition of the boundaries can be changed according to the policy question at hand. A number of extended accounts could be envisaged which

sometimes will be based on the other WISE accounts data (time use, educational attainment etc)[7].

One thing that is different from the standard national accounts, is that the monetary WISE accounts are measuring the global economy, and therefore not based on national supply and use tables. Tables 6 and 7 show what the WISE version of production accounts in the form of Global Monetary Supply and Use Tables (GMSUT).

The monetary income and redistribution accounts and the monetary asset accounts would be similar to the national tables (shown in table 2 and 5). However, some differences might be introduced, if policy relevant. For example, the asset accounts might also show characteristics such as the ownership (national or foreign).

Table 6. Global Monetary Supply Table

		Countries		
		Industries	Industries	**Total Supply**
Countries	Commodities			
Total Supply				

Table 7. Global Monetary Use Table

			Countries	**Final demand**				**Total Use**
				Countries				
			Industries	Household Consumption	Governments Consumption	Gross Fixed Capital Formation	Exports	
Countries	Commodities							
	Value added	Wage Compensation						
		Operating surplus						
Total Use								

[7] Some extended SNA accounts should be considered, many of which are described in the SNA 2025. This would include: specifying the difference between sales and actual consumption of goods and services, household production, depreciation and depletion of natural capital or the treatment of health and education as an investment rather than a cost. Nearly all of these extensions also imply a different production and asset boundary.

Data Strategy

A lot of the data for the monetary accounts exist and is already being collated.

1) *Production accounts (Monetary Supply and Use Tables).* The national monetary SUTs are collected in a couple of dozen countries. These national SUTS are used to create global monetary SUT databases (also known as multi-regional input-output (MRIO) databases). The first generation of MRIOs was academic (GTAP, WIOD, EXIOBASE, GLORIA) and now increasingly international institutes are producing them on a regular basis (FIGARO by Eurostat, ICIO from the OECD (Als known as the TiVA-Trade in Value Added database) and MARIO by the IMF). These institutes are now working together in the GIANT project to collaborate on global SUT data availability.[8]
2) *Income and redistribution accounts.* Data on economic inequality used to be rare, but many academics including Thomas Piketty (Piketty, 2014), have collated this data in the World Inequality Lab (WIL). For some of the data it is done at the global level and sometimes it is done for a selection of countries. However, it should be noted that a lot of this data is created through micro-data or surveys which are sometimes different to national accounting conventions. Methods have been created to make the micro-data consistent to national accounting totals (Alvaredo et al., 2017; Zwijnenburg, 2017; ZWIJNENBURG et al., 2016).[9] The income accounts also refer to the all the redistribution accounts which would also need to be created in a way that is consistent to national accounting totals.
3) *Monetary asset accounts*. These are rarely produced by national statistical offices although their adoption are increasing. This point is often overlooked – many countries are not capable of producing some parts of the SNA. The asset accounts are a notable example. There are however global datasets which try and estimate these figures. The World Bank's data from the *Changing Wealth of Nations report* (World Bank, 2021) and *the Inclusive Wealth Report* of UNEP (UNEP, 2018) are the only two publications which provide rough estimates for all countries. The World Bank and UNEP data is not as good as national statistical institutes might produce, and the data would therefore need to be consolidated with the more detailed source available to the NSIs. This would include more detailed information about the Gross Fixed Capital Formation data, including the types of assets and the sectors which are responsible for these investments.

4.3 Mass

The SEEA provides a mass balance accounting scheme: the physical supply and use tables (PSUT). The framework was based on decades long experience of doing economy-wide material flow analysis and physical input-output tables (Hoekstra & van den Bergh, 2006). The only change would be that the PSUT would have a global scope. The commodity and industry totals of the supply and use (tables 8 and 9) are

[8] The new FIGARO-NAM database would also be a useful resource: FIGARO-NAM: Multi-country National Accounting Matrices based on FIGARO – 2025 edition - Statistical working papers - Eurostat

[9] There is also a OECD-ECB-ESTAT working group on distributional accounts which is working on recommendations.

balanced in mass units. By combining the data from the monetary and physical units, it is possible to derive a price (per kg) which might be relevant for some commodities.

Table 8. Global Physical Supply Table

		Countries		
		Industries	Industries	**Total Supply**
Countries	Commodities			
	Emissions			
Total Supply				

Table 9. Global Physical Use Table

		Countries	**Final demand**				
			Countries				
		Industries	Household Consumption	Governments Consumption	Gross Fixed Capital Formation	Exports	**Total Use**
Countries	Commodities						
	Extraction						
Total Use							

The physical assets accounts (Table 10) are also part of the SEEA framework. These accounts provide an opening stock of natural resources (in mass units[10]) and then extraction (depletion) and discoveries lead to decreases or increases respectively. It should be noted that the boundary of a "stock" of natural resources is not obvious. The total amount of iron in the earth is perhaps a quantity that could potentially be measured, but it is not really a useful boundary because it is not feasible to mine all of this iron, from an economic or technically perspective. A UN Framework Classification of Resources (UNECE) has been adopted to classify assets according to their economic and technical (mining) potential.

[10] In the SEEA there are actually monetary and mass units.

Table 10. Physical Asset Accounts

		Stock (t)	Extraction	Discoveries	**Stock (t+1)**
	Natural Resources				
Countries	**Total assets**				

While the SEEA provides a lot of information about the national stocks and flows materials, the accounts do not record the physical flows within the natural system. This is remedied in the WISE accounts. This addition is also important because it enable the WISE accounts to be linked to important sustainability concepts like the planetary boundaries (Rockstrom et al., 2009). The planetary boundaries are specific natural systems which are crucial to ecological stability and therefore human life. The latest research shows that seven out of 9 planetary boundaries are being exceeded (see figure 5). Of the nine natural limits, 6 are related to mass (climate change, freshwater change, biochemical flows, ocean acidification, atmospheric aerosol loading and stratospheric ozone depletion).

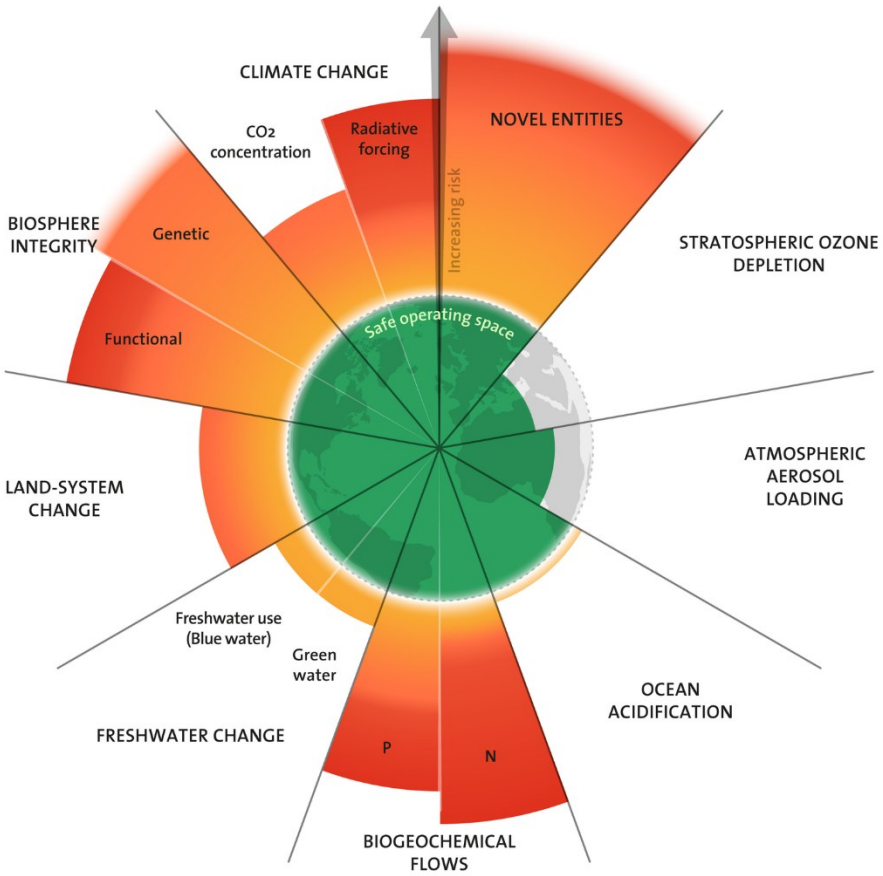

Figure 5. The planetary boundaries framework (Sakschewski et al., 2025)

In the WISE accounts, an accounting perspective is adopted for these natural cycles. For example, Figure 6 shows the carbon fluxes from 1750 to now with all the stocks and flows (sometimes with error ranges). These flows and stocks can easily be linked to the economic and natural systems (as is shown in (Hoekstra, 2019)). Since these flows are also measured in mass terms they can be linked to the emission figures in the PSUTs. The mass balance identities are therefore a good foundation to link the economic and natural cycles of material flows in a consistent accounting sense.

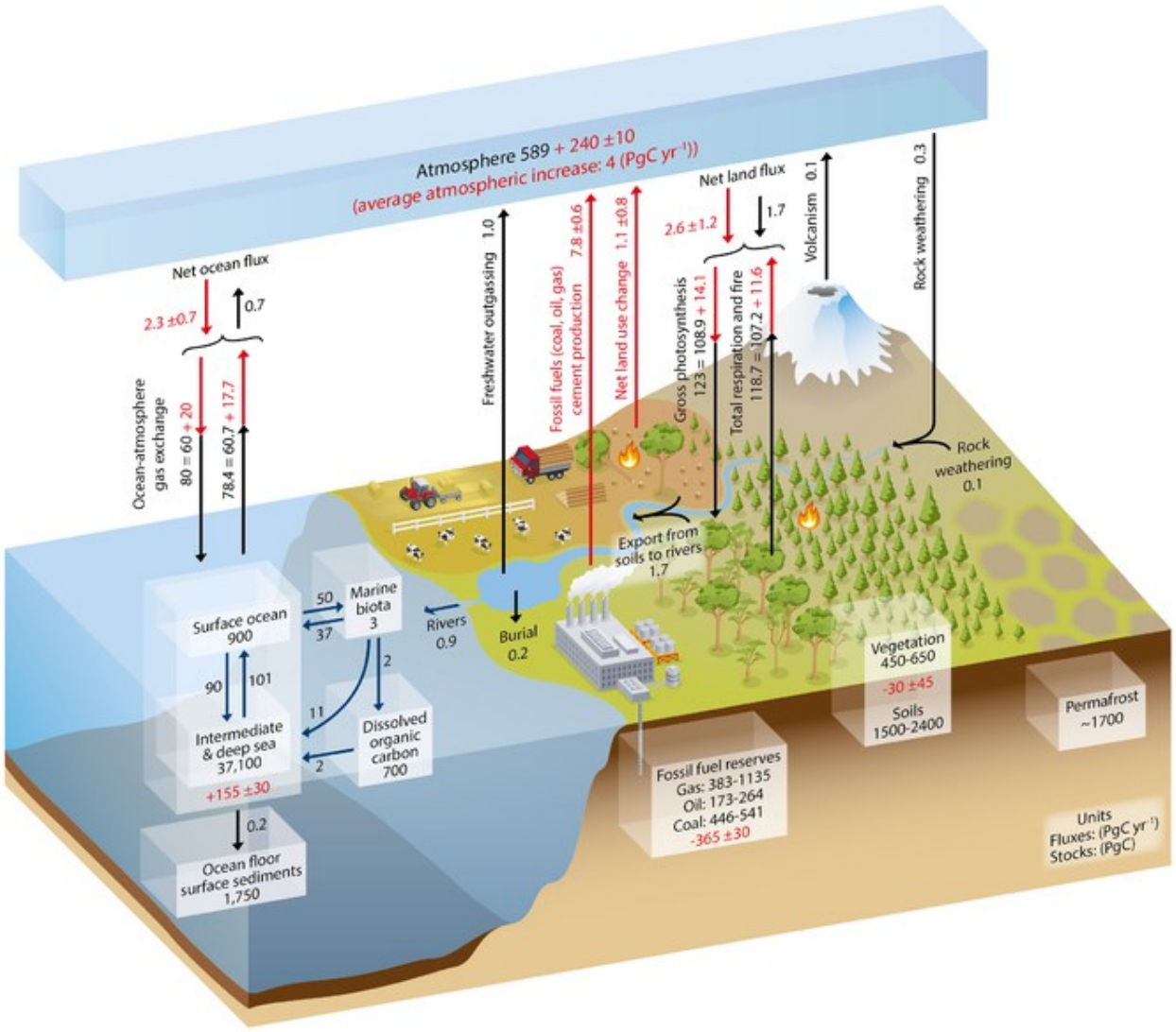

Figure 6. The carbon flux according to IPCC (from Hoekstra, 2019)

Data Strategy

Physical accounts are less prevalent than the monetary accounts shows in the previous section. Nevertheless, there are many initiatives and databases to build on:

- *Production Accounts (Physical Supply and Use Tables)*. These are rare but have been created for individual countries (for an overview see (Hoekstra & van den Bergh, 2006)). On the global scale only the EXIOBASE database has released

a global PSUT for the year 2011 (Merciai & Schmidt, 2018). To create these PSUT, it is possible to make use of many databases on physical extraction, emissions, trade and waste.[11]

- *Physical asset.* These data are abundant for some natural resources. Especially if they are valuable resources, geological or other information is usually available but could be so valuable that they are provided by commercial data providers. For example, the wealth accounts produced by the World Bank uses commercial data for some fossil fuels and other resources. However, a lot of publicly available information is also available, including the databases of the US Geological Services or the International Resource Panel.
- *Natural Cycles*. These cycles are included in integrated assessment models or other models that have a fully functional representation of the environmental system. These models would have estimates of the total emission from the economy. However, these data might be inconsistent to the emissions shown in the environmental accounts of all countries. The natural cycles data would therefore need to be fully reconciled with the underlying emissions data. This has sometimes been done for individual natural cycles, such as the climate system. The global carbon project links input-output structure (in both monetary and physical terms) to the global carbon cycles.

4.4 People, Human Time and Distribution

The number of people is also a unit which is applicable to stock-flow accounting. In demographic data a starting stock of people (on January 1st) is defined for a given country. During that year, there will be births, deaths and (net) migration which will lead to a new total on the 31st of December. Richard Stone, who was the most influential author of the SNA1953 created a system of socio-demographic statistics in the early 70s based on this type of demographic arithmetic (Stone, 1971, 1975).

To lay the foundation of the accounts in this section, Table 12 is first introduced. This table is not part of the macro-economic WISE accounts but rather looks at the micro-data perspective: it shows the various characteristics of all individuals in the world. While it is impossible to create such a database, it helps to conceptually understand the underlying statistical information at the individual level.

Table 12 is organised according to countries and households[12]. The bold variables refer to stock measures while the normal font are flows. Table 12 also shows the four measurement units:

- *People*. Then there are accounts that are measured at the level of number of people. We can count the number of people according to their gender, educational attainment and employment status at certain point in time (stocks). We have not recorded the flow measures, but it is clear that if someone has one diploma on the 1st of January and they graduate for another during the year that they shift from one category of the other.

[11] See for example: GRU - Global Resource Use

[12] Of course, people can move from one country to the next, or shift their households (divorce or children moving out of the home). We do not deal with these complications here.

- *Human time*. The most predictable stock measure for human time is age, which increases by one year, every year. Then there are flow measures related to the activities, which should add up to the 24 hours in a day. Finally, there are cumulations are a life which we can make. For example, the number of years of education is a stock measure, which is often used in policy.
- *Mass/Money*. Money and mass, can be linked to these demographic data. However, this is where the households level of analysis is more obvious, because not all of these variables can be measured at the individual level. For example, while income from employment can be linked to a person, other forms of income (for example from a company, or assets) is sometimes only attributable at the household level. This holds especially consumption. Some items in consumption is individual but a lot is communal (e.g. electricity, salt tables and chairs) or very hard/non-sensical to assign to individuals.
  The mass and monetary totals of these variable will also be consistent to various totals in the monetary and mass accounts presented earlier. The balancing of money in terms of stocks of assets and their flows (income, consumption etc) which holds at the national accounts also hold at the household level. The same holds for the material balance.

Note that other characteristics can easily be added to this micro data perspective. For example, whether someone is suffering from a chronic disease or is living in a house that they own (or the quality of the house in terms of square meters or other characteristics). There are many other aspects that have a discrete classification at a discrete point in time and would be subject to stock-flow accounting.

The micro-data shown in Table 12 is never publicly available, and even if some countries have this type of administrative data, it will not be for all variables mentioned. The role of administrative data is increasing, but the privacy laws rightly restrict use of this data. Hence, the WISE accounting framework concentrates on producing aggerated macro-economic data (Tables 13-15 which are based on the hypothetical micro-data of Table 12) :

- Table 13 (balancing unit is people). This is applied to show the many dimensions of demographic distribution.
- Table 14 (balancing unit is human time). This account shows the distribution of time according to individuals.
- Table 15 (balancing unit of money and mass). This data is shown at the household level because it shows the distribution of mass and money which are better assigned at the individual level. Note that some monetary categories can be assigned to individuals. For example, wage compensation can be assigned to a person and could also be recorded in the same way as in Table 13.

Table 12. Demographic Micro-Data (People, Human Time, Money and Mass)

			People						**Human Time**				**Money**				**Mass**			
			Gender	**Education**	**Employment**															
				Highest diploma	**Employee**	**Self-employed**	**Unemployed**	**Other inactive**	**Age**	Activities	**Years of Education**	In formal education	**Assets**	Income	Savings	Consumption	**Assets**	Consumption	Emissions	Change in Stock
	Person	**Household**																		
	Person 1	Household 1																		
	….																			
Country 1	Person N																			
	Person 1																			
	….																			
Country…	Person N																			
	Person 1																			
	….																			
Country N	Person N																			

Table 13. Individual Distributional Account (people)

Gender				**Total**	**Age** (0-14/ 15-64/ 65+)	**Education** (No schooling/ Primary/ Secondary/ Tertiary)
Total	**Total**	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Total	**Dec 31st**			
	Age (0-14/ 15-64/ 65+)	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Aging	Flow			
		Total	**Dec 31st**			
	Education (No schooling/ Primary/ Secondary/ Tertiary)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Total	**Dec 31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Total	**Dec 31st**			
Male	**Total**	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Total	**Dec 31st**			
	Age (0-14/ 15-64/ 65+)	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Aging	Flow			
		Total	**Dec 31st**			
	Education (No schooling/ Primary/ Secondary/ Tertiary)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Total	**Dec 31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Net migration	Flow			
		Total	**Dec 31st**			
Female	**Total**	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Total	**Dec 31st**			
	Age (0-14/ 15-64/ 65+)	**Total**	**Jan 1st**			
		Births	Flow			
		Deaths	Flow			
		Net migration	Flow			
		Aging	Flow			
		Total	**Dec 31st**			

	Education (No schooling/ Primary/ Secondary/ Tertiary)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Total	**Dec 31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	**Total**	**Jan 1st**			
		Additions	Flow			
		Subtractions	Flow			
		Net migration	Flow			
		Total	**Dec 31st**			

Table 14. Individual Distributional account (human time)

Gender				**Total**	**Age** (0-14/ 15-64/ 65+)	**Education** (No schooling/ Primary/ Secondary/ Tertiary)
Total	**Total**	Activities[13]	Flow			
		Total	**Dec 1st -31st**			
	Age (0-14/ 15-64/ 65+)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Education (No schooling/ Primary/ Secondary/ Tertiary)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	Activities	Flow			
		Total	**Dec 1st -31st**			
Male	**Total**	Activities	Flow			
		Total	**Dec 1st -31st**			
	Age (0-14/ 15-64/ 65+)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Education (No schooling/ Primary/ Secondary/ Tertiary)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	Activities	Flow			
		Total	**Dec 1st -31st**			
Female	**Total**	Activities	Flow			
		Total	**Dec 1st -31st**			
	Age (0-14/ 15-64/ 65+)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Education (No schooling/ Primary/ Secondary/ Tertiary)	Activities	Flow			
		Total	**Dec 1st -31st**			
	Employment (Employed (Employees, Self-employed), Unemployed, Inactive)	Activities	Flow			
		Total	**Dec 1st -31st**			

[13] For time use categories think of paid work, unpaid work, learning, leisure, sleep and other personal care.

Table 15. Household Distributional account (money and mass)

			Total	**Household types** One-person household, Couple household (Without children, With children), Single-parent household, Multi-generational household, Other household types)[14]
Total households	**Total**	**Jan 1st**		
	Net additions	Flow		
	Total	**Dec 31st**		
Wealth/ income	**Total wealth**	**Jan 1st**		
	Employee wages	Flow		
	Self-employed wages	Flow		
	Capital income	Flow		
	Taxes/subsidies	Flow		
	Social transfers	Flow		
	Consumption	Flow		
	etc	Flow		
	Total Wealth	**Dec 31st**		
Mass	**Total**	**Jan 1st**		
	Consumption	Flow		
	Emissions	Flow		
	Stock change	Flow		
	Total	**Dec 31st**		

Data Strategy

The data availability varies per account discussed:

- *Individual Distributional Account (people).* These type of population are the foundation of any national statistics system. However, censuses of the total population are expensive are often only done once every 10 years. In some countries, they have started using administrative data for population statistics. These data are collated at the UN Population Division. Note that some parts of the global accounts might not be available. For example a fully consistent matrix which shows migrants from the source country to the destination country might not be available.[15] The situation in terms of distributional data is very mixed. For some demographic totals, such as the gender split, the data are well known. Also labour data, broken down into demographic characteristics are known.
- *Individual Distributional account (human time).* Creating time use accounts that are consistent to national accounts are very rare, with only some countries having undertaken them. Time use surveys have been done by some countries (Charmes, 2015) but these surveys are hardly ever annual. The surveys design is sometimes inconsistent to national accounting principles. Two well-known time use database are HETUS and MTUS which would be a good starting point for data construction. Novel electronic approaches are being piloted to make the current expensive survey approaches cheaper.

[14] Other household categories could also be taken. See for example (Bartova et al., 2025).

[15] Note that some of the variable can also be expanded with extra information. For example, specifying the causes of deaths is possible using data from the WHO.

- *Household Distributional account (money and mass).* Micro-data for income and wealth distribution are more prevalent, in the form of tax data. There are methods to alter them to reflect national accounting totals have also been created. The mass account will be the biggest challenge. The conversion of monetary data to physical flows seems doable, but the estimation of stocks changes (and waste flows) have fewer reliable data sources.

Institutionally, there are UN groups that are pursuing an accounting approach to the statistic based on people and human time. The most prominent is the UN Friends of the Chair Group on Social and Demographic Statistics which is working towards and overarching conceptual framework for social and demographic statistics.

4.5 Completing the WISE Accounts: Units, Thematic Accounts and Indicators

The WISE accounts presented above are based on stock-flow units: money, mass, people and human time. However, this is not an exhaustive list of the units that can be used in Figure 4. The accounting identities could also be expressed in other units. For example, energy and land area also provide excellent balancing units. Energy is the unit used by the SEEA Energy Accounts (UN-DESA, 2019) while land is foundational to the SEEA ecosystem accounts (UN et al, 2021).[16]

Note that in some cases balancing items only work for one dimension. For example, it is possible to make a global account for a commodity, e.g. the number of cars. This balance holds for the commodity level of the supply and use table, but not for the industry level. This is because the car industry produces many cars, but on the input side there are sheet metal, tyres and parts. There is a mass balance but not a car balance if one looks at the inputs and outputs of the car industry.

The WISE accounts also allow for thematic accounts. This caters to policy domains which transcend a single accounting unit. For example, labour policy requires data in terms of money, jobs, employment and hours worked and it often also requires demographic breakdowns according to gender, age and educational attainment. So, data from the various unit-based accounts mentioned above could be collated into a labour account (in fact, chapter 16 of the SNA2025 has a sophisticated labour accounting structure that also includes additional aspects that were not covered by this report such as voluntary work). The labour accounts are therefore a special thematic WISE account.

Finally, there is the issue of indicators which can be derived from the WISE accounts. The next chapter will provide information about the WISE evaluation metrics (which were on the shortlist discussed earlier). However, stock and flow data (absolute, ratio or shares) provide important information about the system dynamics. For example, labour force participation, wages per hour or many other ratios provide useful

[16] Note that some of these additional functional units can also be linked to the planetary boundaries (see Figure 6). For example, the number of species is (conceptually) also a stock-flow measure which relates to biosphere integrity and novel entities. Landsystem change can be linked to the land use accounts.

information about the stocks and flows. Table 16 shows a typology of WISE indicators and some examples.

A special flow-flow ratio is a “price”. These can be calculated as the monetary value per unit of product or the monetary value per mass unit. In theory, multiplying each entry of the global physical and monetary supply and use tables are linked by the price per unit mass. However, the definition of appropriate prices is not straightforward.[17]

Table 16. Indicator types from WISE accounts

Indicator type	**Numerator**	**Denominator**	**Example**
Flow	Flow		Greenhouse gas emissions
Stock	Stock		Population
Flow Share	Flow (Same unit)	Flow (Same unit)	Agricultural value added as share of GDP
Flow Ratio	Flow (Different unit)	Flow (Different unit)	Labour productivity (GDP/hours worked)
Flow-Stock share	Flow (Same unit)	Stock (Same unit)	Birth rate (births per female population)
Flow-Stock ratio	Flow (Different unit)	Stock (Different unit)	Greenhouse gas emissions per capita
Stock-Stock Share	Stock (Same unit)	Stock (Same unit)	Elderly people (>65 years) as a share of the total population
Stock-Stock Ratio	Stock (Different unit)	Stock (Different unit)	Wealth per capita

[17] Almost each “actor”/”sector” pays a different price for the same mass of different physical materials. Prices for consumption bundles are already hard to observe and need to be estimated. There are global raw material prices, but taxes and subsidies, trade margins among others distort the global price in a different way for every sector. A review of macroeconomic approaches to modelling Wellbeing, Inclusion, and Sustainability | WISE Horizons

Chapter 5. WISE Accounts – Evaluation Metrics

Stock-flow accounting is a foundation to represent the changes in the natural, social and economic systems. However, it does not answer the question whether things are going well or not. Is there progress? To fully evaluate whether things are going well the accounts need to provide information about the three dimensions identified earlier: wellbeing, inclusion and sustainability. It is important that the evaluation metrics for WISE are linked to the accounts so that the trade-off and win-win relationships become more evident.

5.1 WISE Indexes

As discussed in section 1.2 a shortlist has been selected from the many options which are available. These come from various schools of thought and they include 5 prominent indexes and 6 dashboards (which were discussed in table 1). Table 17 shows how the indexes are linked to the WISE accounts. Dashboards are discussed the next section.

Table 17. Link of WISE Indexes to WISE Accounts

	School of thought	**Index/Dashboard**	**Link to WISE accounts**
Wellbeing	Welfare Economics	Benefits and costs experienced (BCE)	This would use monetary data from (e.g. consumption from the monetary SUTs) and sometimes adjust these. For example, the use of durables by consumers is spread over time in the BCE. A lot of the BCE will also involve using non-monetary data from various WISE accounts (in mass, people or time) and then using a shadow price to make a monetary estimate of the wellbeing effect. For example, leisure time (from the time use accounts) can be given a monetary value.
		Equivalent income/ Consumption	These approaches use similar variables as the BCE index.
	Subjective wellbeing	Subjective wellbeing (Affect) U-index	The U-index will be based on the time use accounts which will also need to simultaneously measure affect.
		Subjective wellbeing (Life Evaluation)	Subjective wellbeing is not directly linked to the objective variables in the WISE system accounts. However, the SWB can be used to analyse what the driven forces are of life satisfaction.
	Capability Approach	Human Development Index	The human development index would take data from the MSUT as well as the demographic accounts (health and education).

Inclusion	See Above	Benefits and costs experienced (BCE)	These inclusion metrics could be created for various demographic groups using data from the distributional accounts (table 13-15).
		Equivalent income/ Consumption	
		Subjective wellbeing (Affect) U-index	
		Subjective wellbeing (Life Evaluation)	
		Human Development Index	
Sustainability	Welfare Economics	Comprehensive Wealth	These data would use some of the SNA data on assets (economic and financial capital) but also augment it with physical data on natural resources, from the asset accounts as well as human capital from the distribution accounts for individual (people).
		Planetary Boundaries	6 out of the 9 planetary boundaries are based on physical data and so data can be taken from the PSUT (emissions) or and the natural cycle accounts. The other three planetary boundaries are based on species and land use. Although we have not explicitly shown these accounts, they could also be conceptualised in the WISE accounting framework.

5.2 WISE Dashboards

The previous section focussed on the shortlisted Beyond-GDP indexes. However, the WISE accounts can also provide a wide variety of indicators. These could be used to populate the 6 shortlisted dashboards discussed below:

- **Sustainable development goals (SDGs)**. While the SDGs do not structure their data according to wellbeing, inclusion and sustainability, they could quite easily be assigned to this structure. Therefore, many of the SDGs could be derived from the WISE accounts. The WISE Horizons project will be working on this link in a future report on SDG modelling.
- **OECD Better Life Initiative (BLI).** This is also a dashboard based on the Brundtland-Stiglitz framework, and focussed on measuring wellbeing and inclusion originally. They have also recently expanded to include sustainability in their dashboard.
- **CES recommendations on measuring sustainable development**. This is another framework that is based on the Brundtland-Stiglitz framework and the BLI, but also includes the sustainability dimensions.
- **European Commission's Interservice group on Sustainable and Inclusive Wellbeing**. This group also adopt the Brundtland Stiglitz framing and strives for a dashboard and index for Sustainable and inclusive wellbeing. The link with the WISE accounts could quite easily be achieved.
- **Doughnut Economics**. While this framework is not based on the Stiglitz foundation, it can easily be linked: the outer ring of the doughnut is linked to

planetary boundaries and the inner ring to inclusion (which would come from the distributional accounts).

- **Needs Approaches**. While there is no agreed-upon framework for needs, we do want to mention that the WISE accounts can be linked to most of the prominent categories in prominent publications (Doyal & Gough, 1984; Nussbaum, 2003).

Chapter 6. Conclusions and Next Steps

This report argues that in the Beyond-GDP debate it is also important to combine that with a "Beyond-SNA" strategy. An accounting framework makes it possible to analyse the trade-offs and dimensions of wellbeing, inclusion and sustainability. This could be used to analyse past developments and would also be the data foundation of post-growth models that assess policy options or potential futures.

The report does not provide a full accounting framework. That would require an extensive statistical handbook (note that the current SNA is already more than 1000 pages and by extension a full WISE accounting document would require a couple thousand pages). However, this report provides the foundational concepts and big-picture architecture of the "WISE accounts". These are interdisciplinary in the sense they adopt multi-unit stock-flow accounting, evaluation metrics from various scientific schools of thought, and are global in their scope.

The report also argues that it is feasible, from a conceptual and empirical point of view, to create these WISE accounts. It is more a matter of connecting the existing accounting systems (starting with the SNA, SEEA- central framework and population and housing guidelines etc) and then utilising the many databases that already exist.

There is also institutional momentum to start a discussion about a broader accounting framework. The SNA was revised in 2025 and put wellbeing and sustainability on the agenda (it was the topic of chapter 2). In addition the High-level Expert Group on Beyond-GDP will report in the beginning of 2026. There are also groups such as the UN Expert Group of Wellbeing Measurement (EGWM) which aims to create a framework for sustainable and inclusive wellbeing (FISW). The OECD also has a long term commitment, applying the Better Life Initiative. Importantly these initiatives all have in common that there is conceptual and terminological convergence to the Brundtland-Stiglitz framing of sustainable and inclusive wellbeing.

What are the next steps towards a WISE accounting, both in terms of conceptualisation, their adoption and empirical implementation? Progress is needed in three areas.

6.1 Global Interdisciplinary Statistical Collaboration

The draft WISE accounts presented in this report, of course need to be developed further conceptually. To facilitate this discussion, a statistical working group or task force under the UN Statistical Commission should be established. This group should consistent of an eclectic group of statisticians and academics that cover all the scientific schools of thought.

An important practical issue which needs to be settled in this forum is the relationship between the global and national statistical mandates. The WISE accounts should be a collaboration between the national and global statistical systems and institutions. While a lot of the data will be collected by national statical offices, collating the accounts into global accounts should be done by international institutes. There are two roles that international organisations would play. 1) reconciling national data that is inconsistent, e.g. international institutes already play

a role in reconciling trade data 2) Adding data on things that are measured outside of national territories. E.g. the natural cycles (such as the atmosphere or oceans) will need to be estimated by a global institute.

The group discussion needs to be interdisciplinary by design. Currently, statistical discussion on "Beyond-GDP" are often dominated by economic statisticians (with expertise in welfare economics). This report has shown that the WISE accounts should be linked to other schools of thought. To facilitate this, the international statistical discussions would need to be expanded with contributions from other schools of thought in social sciences and natural sciences.

6.2 Post-Growth WISE Models

An important use of the WISE accounts would be to function as the foundation of a new generation of post-growth WISE models.[18] This is because policy makers do not just want to know what happened in the past, but also want scenarios of the future or want to know what would happen if a certain policy was implemented.

While the proposed WISE accounts establishes a comprehensive stock-flow structure across economic, societal, and environmental dimensions, it is important to acknowledge that stocks and flows alone are insufficient to fully capture system behaviours and interactions necessary for policy analysis and evaluation. To move decisively beyond GDP-centric measurements, the WISE accounts should be used to integrate system dynamics into nature-society-economy models, focusing on feedback loops and inter-system interactions. Feedback loops explain how changes in one system can amplify or mitigate effects in another, shaping overall system outcomes in non-linear and perhaps counterintuitive ways.

Feedback loops frequently involve significant time lags and thresholds. For example, environmental degradation may not immediately impact economic productivity but can lead to sudden systemic shocks once environmental thresholds are breached. The WISE account system proposed here can facilitate tracing the evolution of such thresholds through time, adding transparency to environmental-economic modelling approaches.

A big omission in macro-modelling is the importance of institutions, power and governance. The current setup of the WISE accounts, described in this report, do not yet resolve this. However, the distributional data shown is probably symptomatic to some of the power dynamics, and could be a fruitful first step in further understanding.

6.3 Empirical Implementation – A European Pilot?

Can a prototype of the WISE accounts be empirically implemented? An experimental version of the WISE accounts would help to show what the framework would look like and it would give modellers a first taste of the kind of information it could use in post-growth WISE models.

[18] A review of macroeconomic approaches to modelling Wellbeing, Inclusion, and Sustainability | WISE Horizons

While the WISE accounts are conceptually global in nature, a useful first step would be to develop the WISE accounts (as shows in chapter 4) for countries with more advanced statistical systems first. The Europe Union would seem to provide an excellent basis to create such as prototype.

In terms of main data sources, it would seem advisable to link the monetary accounts to the IMF MARIO database (which is a collaborative effort with Eurostat) or EUROSTAT's FIGARO database). Recently, EUROSTAT has also published the FIGARO-NAM. There are also other sources such as EU-KLEMS, World-KLEMS, ILO, population statistics from the UNPD, SEEA accounts from Eurostat, HETUS and MTUS which should be used to create a European WISE accounting database, augmented by other countries with sufficient data.

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