Beyond GDP: a review and conceptual framework for measuring sustainable and inclusive wellbeing

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Policy making has long focused on economic growth as measured by gross domestic product (GDP), diverting attention from sustainable wellbeing for all. Despite high-quality proposals to go beyond GDP, their integration into policy and societal discourse remains limited. A new UN initiative, Valuing What Counts, provides an opportunity for establishing and institutionalising global measurement of metrics beyond GDP, a crucial step to enable a transition into a safe and just space for humanity. Here, we inform this process by consolidating 50 years of literature on Beyond GDP metrics, addressing three core challenges. First, we resolve the lack of interdisciplinary collaboration by integrating five scientific schools of thought in one measurement approach. Second, we alleviate confusion arising from numerous Beyond GDP alternatives, offering a structured analysis of 65 metrics, delineating their measurement objectives. Finally, we bridge the divide between scientific proposals and country-specific approaches. We unite country-specific needs with a standardised and interdisciplinary measurement approach, presenting a dashboard for sustainable and inclusive wellbeing.

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Introduction

Sustainable wellbeing for all cannot be achieved by an economic system that focuses solely on economic growth as measured by gross domestic product (GDP). Although economic growth is historically correlated with well-being,[1] it has been long-established that GDP does not capture wellbeing directly. Indeed, the primary architect of GDP, Simon Kuznets, highlighted the inadequacy of GDP as a gauge of the welfare of a nation,[2] let alone the shortcomings of GDP in capturing dimensions outside the economic domain that influence wellbeing, such as people's health, safety, and happiness. Income measures such as GDP per capita should also not be taken as a proxy for wellbeing. Research has shown that although lower-income countries score lower on wellbeing measures than higher-income countries,[3] this relationship levels off at a particular income.[4–7] Adding further nuance to this discussion, although there is a correlation between wellbeing indicators such as happiness and income (within and among nations), long-term growth rates of happiness and income are not statistically significantly linked.[8] GDP is only one of many factors influencing wellbeing.

Furthermore, GDP does not measure important societal outcomes such as inequality and poverty. For example, global wealth growth from 1995 to 2021 showed a stark reality: the global population earning the top 1% of highest incomes received 38% of the growth, while the population with the 50% lowest incomes only received 2% of the growth.[9] Despite a substantial decrease in the relative number of people living in hardship over the past decades, 1·1 billion people are still living in poverty today.[10]

The focus on short-term GDP growth also drives environmental damage that can substantially constrain the potential wellbeing of future generations. Climate change is already increasing food insecurity around the world, and extreme weather events forced 20·3 million people to relocate in 2023 alone—impacts that will only worsen as the global average temperature increases further.[11–13] Additionally, human activities have triggered unprecedented species extinction levels, undermining the resilience of ecosystems to threats such as pests and climate change, compromising the wellbeing of current and future generations.[14]

There is increasing recognition that policy makers should go Beyond GDP, meaning that they should broaden their focus to other interdisciplinary metrics that reflect the wellbeing of current and future generations.[15,16] Alternative metrics, such as the Sustainable Development Goals (SDGs), Human Development Index, and Genuine Progress Indicator exist, but they face severe challenges in overcoming the intellectual and institutional lock-in of GDP and a lack of methodological consensus.[17–21] Overcoming these challenges is vitally important in a transition towards sustainable and inclusive wellbeing. That is, a transition to a system in which all of humanity, both today and in the future, is able to live life in general health and happiness, respecting planetary boundaries and the social and economic foundations of a healthy life. A new institutional process, the UN's Valuing What Counts initiative, seeks a global consensus on the scientific concepts essential for advancing Beyond GDP. The goals of the initiative are to adopt 10–20 headline Beyond GDP indicators at the UN's Summit of the Future in 2024. Given the pivotal role of the UN in standardising and institutionalising GDP, this initiative could facilitate a global shift towards Beyond GDP measurements.

To our knowledge, this review is the most extensive to date, and considers three core challenges that have impeded Beyond GDP progress since the 1970s, offering input for the UN initiative. We aimed to integrate multiple scientific schools of thought in one measurement framework to address the need for an interdisciplinary approach. To alleviate confusion arising from numerous Beyond GDP metrics, we also aimed to provide a structured analysis of these metrics, delineating their measurement objectives into three dimensions:

wellbeing, inclusion, and sustainability. Another objective was to unite country-specific needs with a standardised and interdisciplinary measurement approach, presenting a dashboard for sustainable and inclusive wellbeing to embed the headline indicators to be considered at the UN's 2024 Summit of the Future. The review concludes with recommendations for key areas of future research.

Methods

Search strategy and selection criteria

Our aim was to consolidate the literature on Beyond GDP over the past 50 years, encompassing historical development, scientific schools of thought, a broad overview of metrics, and initiatives by government agencies to move beyond GDP.

Beyond GDP is a topic that is extensively discussed in literature. To identify the most relevant reviews, we selected reviews from authors and institutions recognised for their comprehensive expertise in this field. Existing Beyond GDP reviews were used to identify pertinent literature related to the historical evolution of Beyond GDP, the underlying scientific schools of thought, Beyond GDP metrics, and country-specific approaches (see appendix p 3 for an overview of existing literature). In a next step, and after our first content analysis (see Data synthesis and context analysis), we identified two selection criteria for Beyond GDP metrics: metrics must relate to wellbeing, inclusion, or sustainability but not concern merely a niche of a dimension (such as education or ocean health), and metrics must be applicable on a national level. Country-specific approaches were selected if they related to wellbeing, inclusion, or sustainability (but not merely a niche of a dimension), and they were developed and implemented by a national government agency.

See Online for appendix

These criteria led to an initial selection of metrics and country initiatives, which were presented to interdisciplinary scientific audiences and policy advisers. This includes presentations at the Beyond-Growth Conference (Brussels, Belgium; May, 2023), the International Society for Quality-of-Life Studies Conference (Rotterdam, Netherlands; September, 2023), the Ministry of Finance in the Netherlands (The Hague, Netherlands; October, 2023), and a variety of meetings with peers. Based on feedback provided by these audiences, the selection was expanded to include 65 metrics and 28 country-specific initiatives.

Data synthesis and content analysis

The existing reviews highlight relevant scientific schools of thought and seminal Beyond GDP reports. Based on these schools of thought and reports, we concluded that Beyond GDP measurement should include three dimensions: wellbeing, inclusion, and sustainability. We used this three-dimensional approach to do a structured analysis of the measurement objectives of 65 metrics. We produced a shortlist of Beyond GDP metrics that are most salient in science, policy making, and society by quantitatively analysing rankings from Google Scholar and Google, citations from seminal publications, and a check for institutionalisation (see appendix pp 15–19 for detailed criteria and scores per metric). Concerning country-specific initiatives, our focus centred on identifying commonalities and pronounced differences to ascertain potential characteristics to integrate into an interdisciplinary measurement framework. We analysed the following specific characteristics: index or dashboard classification, thematic domains, indicators, practical application, and stakeholder consultations.

Results

Historical background

The success of GDP

The success of GDP is built on the standardisation and institutionalisation of measurement. Measurement of the economy finds its roots in the 17th century, prompted by the need to fund wars in the UK and France.[22] This early economic quantification, evolving through influential works such as Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations*[23] and Alfred Marshall's Principles of Economics,[24] laid the groundwork for national income accounts developed by economists such as Colin Clark, Simon Kuznets, and Richard Stone in the 1920s, 1930s, and 1940s.[22] These endeavours were a response to the increased demand for economic statistics during the Great Depression, World War 2, and post-war reconstruction efforts. Since 1953, the UN's System of National Accounts (SNA) provides a comprehensive standard for national accounting, including guidance on GDP measurement.[25] The SNA not only met the demand for standardisation of economic statistics, but also set the stage for widespread adoption of GDP measurements and the establishment of growth targets.[26] Growth has since become a goal in itself, rather than a way to finance wars or to create employment, and economic thinking obtained increasing political, societal, and cultural sway.

The rise of neoliberalism in the 1980s reinforced the economic growth paradigm. Following a period of stagflation and economic turmoil in the 1970s, support for the previously dominant Keynesian economic policies diminished.[22] This gave way to perspectives advocating for limited government intervention, free markets, unrestricted trade, and privatisation,[27] overshadowing non-economic policy objectives. The period between the mid-1980s and the late 2000s—often called the Great Moderation—showcased steady economic growth in high-income countries with moderate inflation. However, it brought about negative impacts in low-income and middle-income countries,[28] worsened income inequality within countries,[29] and left alarming signals of environmental breakdown unchecked.[30] In response to the narrow focus on economic growth, a surge in alternative metrics emerged to complement or replace GDP.

A brief history of Beyond GDP

The number of alternatives to GDP has increased rapidly over the past three decades, as each alternative struggled to compete with the economic growth paradigm. The first real rise in proposals for alternative Beyond GDP metrics occurred in the early 1970s following a time of substantial social unrest marked by protests and social movements (figure 1). The publication of the Club of Rome's Limits to Growth report[31] in 1972 was also important for galvanising activity. However, GDP remained dominant throughout the following decades as sustainable development saw increasing attention in global policy making circles, following the publication of *Our Common Future*, often referred to as the Brundtland Report,[32] in 1987.

The increased focus on sustainable development influenced the 1993 revision of the SNA, which, by this time, was used by more than 180 countries to measure GDP.[18] The 1993 revision of the SNA enabled a linkage to non-monetary data, including the System of Environmental Economic Accounting (SEEA), a first attempt to harmonise an accounting system for natural capital and environmental sustainability. Physical indicators described in the SEEA are widely used in science and increasingly in policy, but have a much smaller social and policy influence than GDP.

Throughout the early 2000s, Beyond GDP metrics and initiatives continued to proliferate. The UN presented the Millennium Development Goals in 2001,[33] Eurostat began working on Sustainable Development Indicators in 2005,[18] and the World Bank published their first *Where is the Wealth of Nations?*[34] report in the same year. In 2008, unsatisfied with the state of economic and social statistical information, the then President of France, Nicolas Sarkozy, commissioned a report on the measurement of economic performance and social progress (hereafter: the SSF Report).[15] Led by Joseph Stiglitz, Amartya Sen, and Jean-Paul Fitoussi, the SSF Report was an important milestone that continues to shape Beyond GDP initiatives and country-specific frameworks today. The SSF Report was influential in the development of the Organisation for Economic Co-operation and Development (OECD) Better Life Initiative,[35] launched in 2011, and in the Commission of European Statisticians (CES) recommendations on measuring sustainable development,[36] a collaboration of statisticians of the UN, OECD, and Eurostat. Together, the SSF Report and the Brundtland Report inspired the CES to approach wellbeing from three dimensions: here and now, later, and elsewhere, and to include both subjective and objective indicators.[36] The SSF Report has also helped to shape Eurostat's publication *Quality of Life*.[37]

Perhaps the most widely adopted Beyond GDP initiative is the 2015 UN SDGs. These 17 goals and 231 underlying indicators are embraced globally by governments and companies. Compared with other Beyond GDP initiatives, it reached an unprecedented level of institutionalisation and harmonisation. However, the absence of a scientifically backed theoretical framework and the large number of indicators challenge the use of SDGs as a Beyond GDP framework.

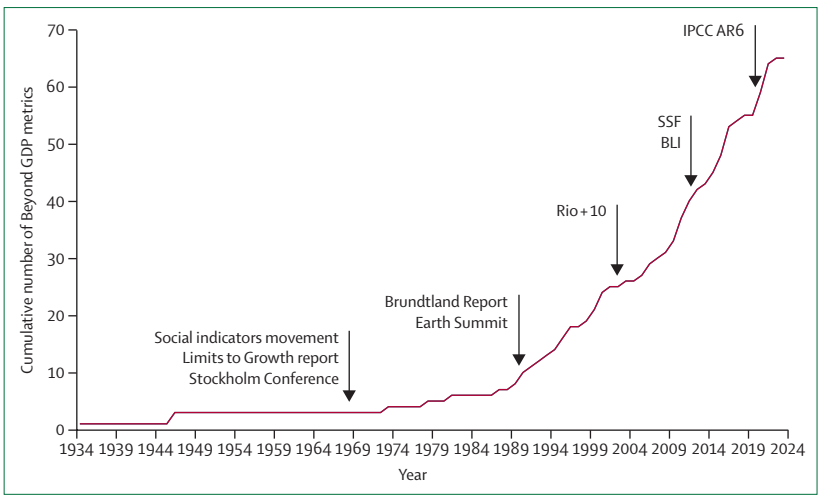

Figure 1: **The increase in Beyond GDP metrics over time**
The development of 65 Beyond GDP metrics is shown from 1934 to 2020, alongside key events influencing their development (the selection of these metrics is described in the Methods section). The full list of the 65 metrics is in the appendix (pp 5–14). BLI=Better Life Initiative. GDP=gross domestic product. IPCC AR6=The Intergovernmental Panel on Climate Change's Sixth Assessment Report. Rio + 10=World Summit on Sustainable Development, held in Johannesburg (South Africa) in August, 2002, 10 years after the UN Conference on Environment and Development held in Rio de Janeiro, Brazil (Rio Conference). SSF=Stiglitz, Sen, and Fitoussi report on the measurement of economic performance and social progress.

Unprecedented global momentum for Beyond GDP

As environmental crises intensify and inequalities grow, interest in Beyond GDP initiatives is resurging. In 2020, the OECD launched the Centre on Well-being, Inclusion, Sustainability, and Equal Opportunity. The following year, the UN launched its own Beyond GDP initiative, which included *Valuing What Counts*,[16] a report defining three outcome elements: wellbeing and agency, respect for life and the planet, and reduced inequalities and greater solidarity. In 2022, the Club of Rome published *A Survival Guide for Humanity*,[38] presenting five system-shifting steps to achieve prosperity for all within planetary boundaries. In May, 2023, Members of the European Parliament convened the Beyond Growth conference to explore sustainable prosperity in the EU, challenging conventional economic, social, and environmental policies and governance. Additionally, multiple European research projects have been focusing on public policies and indicators for wellbeing and sustainable development (appendix p 4). Although language and scopes might differ, all these initiatives share a common goal: placing sustainable and inclusive wellbeing at the core of their agendas.

The current imperative lies in unifying these diverse Beyond GDP initiatives, as the history of GDP illustrates the importance of harmonisation and institutionalisation efforts. A scientific basis for such unification is crucial,

as Beyond GDP metrics should provide a scientifically backed, empirical basis for progress.[16] It is essential that this basis is interdisciplinary, as wellbeing is a multidimensional concept relating to various scientific disciplines. We illustrate how five scientific schools of thought can be unified, providing an interdisciplinary and scientific basis to the measurement of sustainable and inclusive wellbeing.

An interdisciplinary synthesis of five scientific schools of thought

Scientists from many different disciplines have tried to understand human and societal wellbeing and their determinants, each offering unique insights to inform policy makers and stakeholders. Here, we synthesise five key scientific schools of thought, which were selected as described in the Methods. These schools of thought are subjective wellbeing, welfare economics, needs theories, the capabilities approach, and ecological approaches.

Subjective wellbeing is characterised by the assumption that wellbeing can be self-evaluated through surveys.[39] There are three commonly recognised elements of subjective wellbeing: life satisfaction, affect, and eudaimonia. Life satisfaction refers to an individual's overall evaluation or judgement of their life as a whole. Affect refers to the experience of positive and negative emotions, typically measured with a reference to a particular point in time. Eudemonic wellbeing is associated with a sense of purpose, meaning, and fulfilment in life.[40]

Numerous studies have investigated the determinants of subjective wellbeing. The importance of mental health, social connections, freedom, and employment stand out as determining factors of individual life satisfaction.[39,41,42] Income explains only a small part, which can be partially explained by the offsetting effects of social comparison and adaptation.[39] However, on a national level, the change in GDP per capita is an important factor explaining variations in life satisfaction across countries.[43] Personality traits, along with genetic and environmental contributions, are also known to influence life satisfaction[44] but are usually left out in macro-analyses of determinants of life satisfaction due to data availability. Although terminology and correlation strength differ across studies, key components affecting self-evaluated life satisfaction are very similar.

Self-evaluated individual life satisfaction is the dominant approach in subjective wellbeing; however, this approach can be controversial. The OECD highlights the importance of considering positive and negative affect in addition to life satisfaction.[40] Academic literature highlights the importance of considering a broader range of self-evaluation measures,[45] with some work specifically focusing on eudemonic wellbeing[46,47] or collective wellbeing.[48] The latter is especially important to account for cultural differences in the concept of wellbeing, arguing that individual life-satisfaction is not the best indicator of wellbeing within more collectivist cultures.

Welfare economics uses the concept of utility to understand wellbeing. Economists such as Jeremy Bentham and John Stuart Mill associated utility with happiness, but the focus on happiness diminished in the 1920s and 1930s, when an emphasis was placed on the need to measure more objective concerns.[49] For example, Arthur Pigou assumed material prosperity would make people happier and society better.[50] Central to welfare economics is the use of an economic model to measure welfare or to investigate an optimal allocation of resources to create the highest level of social welfare.

Welfare is usually calculated as the sum of monetised values of welfare-affecting components, proxied by market prices, statistically estimated if these are lacking as a reference, or via surveys when no other options are available (that is, contingent valuation methods). Common components of welfare include income or consumption, leisure, unpaid work, the social cost of income inequality, human capital, and natural capital depletion, as illustrated by the Genuine Progress Indicator and similar metrics.[51–56] Income, consumption, leisure, and unpaid work are usually considered as flow variables, meaning they are measured over a specific time horizon. Capital accounts are measured as stocks, capturing the total quantity of specific resources at one specific point in time. The consideration of capital accounts is also known as wealth accounting.[57] The overall value of welfare depends on the inputs and the assumptions of the model. For example, an assumption must be made about inequality aversion, which will influence the total amount of estimated welfare.[58]

Needs theories are based on the understanding that people have specific basic needs that are required for a fulfilling life. Common components of needs theories include physical and mental health, safety, and freedom. Perhaps the earliest example of this thinking was with Abraham Maslow in 1943,[59] who argued that there is a hierarchy of such needs, usually depicted in Maslow's pyramid where physiological needs need to be met first, followed by safety and security, then followed by love and belonging, self-esteem, and self-actualisation. However, later researchers disagree with Maslow and suggest that no such hierarchy exists. Manfred Max-Neef[60] suggested that existential needs are subsistence, protection, affection, understanding, participation, idleness, creation, identity, and freedom, and that each existential need can be satisfied by factors that relate either to being, having, doing, or interacting. Examples of satisfiers of subsistence include physical health (being), food (having), eating (doing), and living environment (interacting).[60] John Rawls[61] identified a set of primary goods that citizens need to lead a free and complete life. These include basic rights and liberties, freedom of movement and choice among a wide range of occupations, the power of offices and positions of responsibility, income

and wealth, and the social bases of self-respect, which involve recognition of citizens' worth by social institutions.[61] Len Doyal and Ian Gough[62] suggest that human need fulfilment is about the goal of having a minimally impaired participation in society. This can only be achieved if people can fulfil the basic needs of being in good health and having autonomy, the latter requiring good mental and physical health, social and cognitive capacities, and opportunities for societal participation.[62] Both Max-Neef[63] and Doyal and Gough[64] agree that it is possible to define a fundamental and universal set of objective human needs, even if the particular ways in which we satisfy these needs vary across cultures.

The capability approach defines wellbeing in terms of people's capability to function—essentially, their ability and freedom to lead the kind of life they value. According to Amartya Sen,[65] the greater one's capabilities to achieve valuable functioning, the higher the quality of life is considered. Sen distinguishes three aspects in relation to quality of life: agency achievement, personal wellbeing, and the standard of living.[66] Deprivation of capabilities can be understood in terms of poverty, which is not limited to having a low income. The capability to function might be influenced by a wide range of factors, such as living environment, education, and mental and physical health.[67] In practice, the capability approach focuses on observable achievements. Martha Nussbaum developed a list of the most important capabilities, which has been empirically operationalised by Anand and colleagues.[68,69] Nussbaum's list has similarities to measurement frameworks based on needs theories. The capability approach inspired the development of the Human Development Index and the Multidimensional Poverty Index,[10,70] both of which also relate to needs theories.

Ecological approaches are based on the premise that human wellbeing is intricately linked to the Earth's systems, recognising that the Earth has a specific carrying capacity that should not be exceeded if the wellbeing of future generations is to be safeguarded.[71] The Limits to Growth report is an example of early work that integrates demographic, social, and technical developments with environmental limits.[31] The Ecological Footprint is a metric that links dynamics in the socioeconomic sphere to the Earth's carrying capacity.[72] More recently, researchers have defined nine planetary boundaries within which humanity can operate safely. Transgressing one or more planetary boundaries poses potentially catastrophic risks that will trigger abrupt and severe environmental change.[73] Kate Raworth[74] combines the concept of planetary boundaries with social floors—a concept linking to needs theories—in a doughnut-shaped framework, providing another approach for integrating social dynamics and environmental concerns.

The scientific schools of thought translate into four key insights for Beyond GDP measurement. The first is that wellbeing is a multidimensional concept with subjective and objective dimensions. The importance of subjective dimensions, which might include concepts such as life satisfaction, affect, and eudemonic wellbeing, map to the subjective wellbeing approach and needs theories. Welfare economics theoretically has a subjective component as well, since utility is based on individual preferences. However, in empirical applications, welfare economics highlights the relevance of objective dimensions, as does the ecological approach and some work in the field of needs theories and the capability approach. Second, measuring the wellbeing of current generations is different from measuring the wellbeing of future generations. Both are relevant. Potential trade-offs and synergies in current and future wellbeing are illustrated by welfare economics and the ecological approach. Current and future wellbeing should be measured separately to support decision making that safeguards the wellbeing of both current and future generations effectively. Third, the distribution of wellbeing matters. Basic needs exist for everyone, as highlighted by needs theories. Abundance within some regions cannot compensate for deprivations elsewhere (both within and between countries). Welfare economics also illustrates that society as a whole might be better off when inequality is limited. Finally, human wellbeing will be harmed if the Earth's carrying capacity is exceeded. The ecological approach illustrates the necessity of operating within Earth's planetary boundaries to safeguard the wellbeing of future generations.

Building on scientific schools of thought, key literature, and initiatives such as the UN's Beyond GDP initiative, the Brundtland Report, the SSF Report, and the CES recommendations, wellbeing measurement is categorised into three main dimensions: wellbeing, inclusion, and sustainability. Wellbeing encompasses outcome indicators that assess the average current level of wellbeing, such as life expectancy and air pollution. Inclusion encompasses outcome indicators on the distribution of wellbeing, including indicators of distributions within groups and between groups, and deprivations. Sustainability encompasses indicators crucial for assessing current conditions that affect the wellbeing of future generations, including indicators of climate change and human capital. Indicators for wellbeing are generally flow measures, whereas those for inclusion and sustainability incorporate both flow and stock measures.

The three-dimensional measurement framework allows the assessment of the level of sustainable and inclusive wellbeing, or what some might refer to as simply wellbeing, assuming that true wellbeing is inherently inclusive and sustainable. However, for measurement purposes, it is important to use a three-dimensional approach, for the reasons described. Importantly, the approach to measuring sustainable and inclusive wellbeing allows movement beyond the concept of Beyond GDP, offering a concept of a future towards which people transition; whereas Beyond GDP only highlights what is left behind.

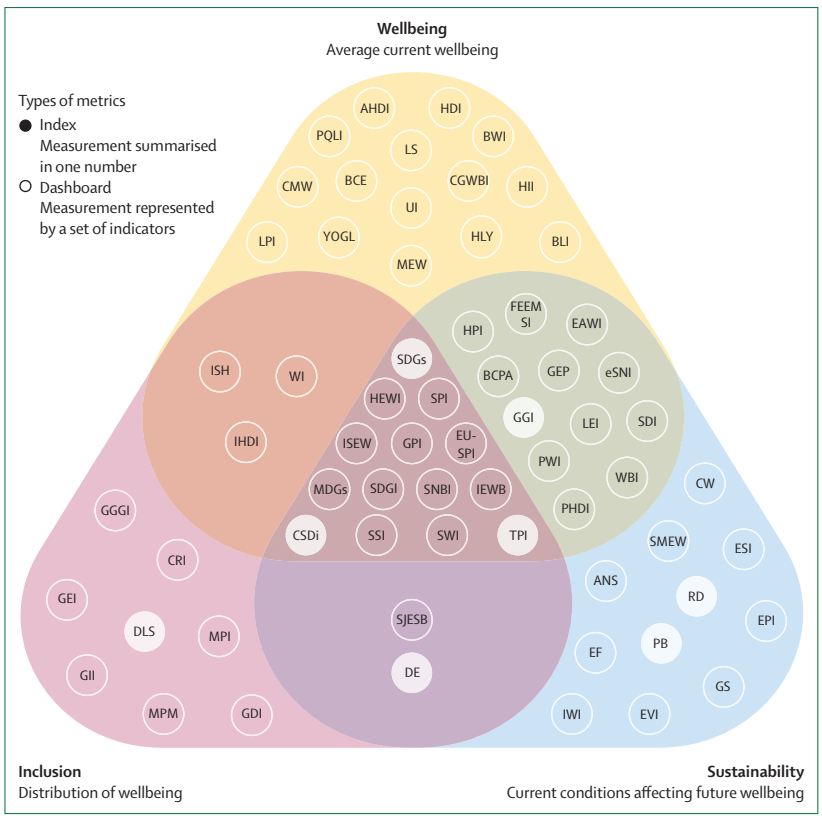

Figure 2: **Wellbeing, inclusion, and sustainability triangle of Beyond GDP metrics**
The triangle shows an overview of 65 Beyond GDP metrics that are plotted based on the dimension they relate to: wellbeing, inclusion, or sustainability, or a combination of two or three of these dimensions. See appendix pp 5–14 for a description of the metrics. AHDI=Augmented Human Development Index. ANS=Adjusted Net Savings. BCE=benefits and costs experienced. BCPA=benefits and costs of present economic activities. BLI=OECD Better Life Index. BWI=Better Wellbeing Index. CGWBI=Composite Global Wellbeing Index. CMW=Composite Measure of Wellbeing. CRI=Commitment to Reducing Inequality Index. CSDi=Commission on Sustainable Development Indicators. CW=Comprehensive Wealth. DE=Doughnut Economics. DLS=Decent Living Standards Framework. EAWI=Economic Aspect of Welfare Index. EF=Ecological Footprint. EPI=Environmental Performance Index. ESI=Environmental Sustainability Index. eSNI=environmentally Sustainable National Income. EU-SPI=EU-Social Progress Index. EVI=Environmental Vulnerability Index. FEEM SI=Fondazione Eni Enrico Mattei Sustainability Index. GDI=Gender Development Index. GDP=gross domestic product. GEI=Gender Equality Index. GEP=Gross Ecosystem Product. GGGI=Global Gender Gap Index. GGI=Green Growth Indicators. GII=Gender Inequality Index. GPI=Genuine Progress Indicator. GS=Genuine Savings. HDI=Human Development Index. HEWI=Human Economic Welfare Index. HII=Happy Income Index. HLY=Happy Life Years. HPI=Happy Planet Index. IEWB=Index of Economic Wellbeing. IHDI=Inequality-adjusted Human Development Index. ISEW=Index of Sustainable Economic Welfare. ISH=Index of Social Health. IWI=Inclusive Wealth Index. LEI=Life Evaluation Index. LPI=Legatum Prosperity Index. LS=Life Satisfaction. MDGs=Millennium Development Goals. MEW=Measure of Economic Welfare. MPI=Multidimensional Poverty Index. MPM=Multidimensional Poverty Measure. OECD=Organisation for Economic Co-operation and Development. PB=Planetary Boundaries. PHDI=Planetary Pressures-Adjusted Human Development Index. PQLI=Physical Quality of Life Index. PWI=Personal Wellbeing Index. RD=resilience dashboards. SDGs=Sustainable Development Goals. SDGI=Sustainable Development Goal Index. SDI=Sustainable Development Index. SJESB=Safe and Just Earth System Boundaries. SMEW=Sustainable Measure of Economic Welfare. SNBI=Sustainable Net Benefit Index. SPI=Social Progress Index. SSI=Social Security Index. SWI=Sustainable Wellbeing Index. TPI=Transitions Performance Index. UI=U-Index. WBI=Wellbeing Index. WI=Welfare Index. YOGL=Years of Good Life.

Synthesis of Beyond GDP metrics using the three-dimensional approach

Here, we analyse the extent to which existing Beyond GDP metrics capture the dimensions of wellbeing, inclusion, and sustainability. Numerous Beyond GDP metrics have been proposed. To alleviate confusion arising from the large number of alternatives, we used the three-dimensional approach for a structured analysis of 65 Beyond GDP metrics, delineating their measurement objectives. An overview of these 65 indices and indicator dashboards, plotted according to the three dimensions, is shown in figure 2 (see appendix pp 5–14 for the full description of these indices and dashboards).

We categorised Beyond GDP metrics into indices and dashboards. Indices are single numbers, calculated based on underlying indicators that relate to multiple themes, such as education and health. By this definition, GDP is also an index, as it is based on multiple aspects of the economy. The income Gini coefficient and the mean years of schooling are not considered to be indices, as they relate to a single theme (income and education, respectively). We consider these to be indicators. Dashboards, which show an array of indicators, are common.

Figure 2 shows a dominance in proposals using an index approach and a strong under-representation of metrics that capture both inclusion and sustainability, although these aspects pose the greatest challenges of our time. There are few metrics that assess inequalities in wellbeing beyond the income and gender dimension (appendix pp 5–14). Metrics that relate to wellbeing, inclusion, and sustainability group the three dimensions into one single index or present them in a dashboard of indicators. These metrics are the most comprehensive. However, indices in this category often obscure valuable information about the status of current and future wellbeing, or distributional aspects, since different aspects are grouped together in one number. Some initiatives present both an index and underlying indicators (eg, the Social Progress Index and the Transitions Performance Index), overcoming this problem.

We also made a shortlist of Beyond GDP metrics that are currently the most salient in science, policy making, and society. The top Beyond GDP metrics, listed in alphabetical order, include the Better Life Index, Doughnut Economics, Ecological Footprint, Gender Development Index, Gender Equality Index, Gender Inequality Index, Human Development Index, Life Satisfaction, Multidimensional Poverty Index, Planetary Boundaries, and SDGs.

This shortlist should be interpreted with caution. We aimed to create an objective, accurate, consistent, and transparent methodology in selecting these metrics. However, some objectives might be in conflict, and finding the appropriate balance can be subjective. Notably, despite expectations based on our own experience in the field, the U-Index and welfare economic measures such as the Genuine Progress Indicator, Index of Sustainable Economic Welfare, Genuine Savings, Adjusted Net Savings, Comprehensive Wealth, and Inclusive Wealth Index did not rank high enough to be included in the shortlist. These metrics are popular in

Figure 3: **World map of countries using a Beyond GDP measurement framework**
27 countries have a national Beyond GDP framework in place. The selection method for the corresponding 28 country-specific approaches (New Zealand has two initiatives, see appendix pp 20–23 for a brief explanation of each initiative) is shown in the Methods. GDP=gross domestic product.

the scientific domain but have less political and societal salience than other metrics.

Country implementation and policy success

We identified commonalities and differences in 28 country-specific initiatives to ascertain which characteristics are recommended for integration into an interdisciplinary measurement framework, addressing the divide between scientific proposals and country-specific approaches (figure 3; see appendix pp 20–23 for a brief explanation of each initiative).

The predominant approach for measuring wellbeing involves the development of indicator dashboards, as they are more informative for policy makers than an index approach. There are two countries that group performance into a single index (Bhutan and Canada). In several cases, national dashboards draw explicitly from recommendations of the SSF Report, the OECD Better Life Framework,[35] CES recommendations on sustainable development,[36] and Eurostat's Quality of Life Framework[37] (appendix p 24). For OECD countries, most national initiatives illustrate a high level of coverage of 15 dimensions of wellbeing, inclusion, and sustainability as presented in the OECD's Better Life Framework.[75] For many other country-specific initiatives it is unclear how they link to a scientific conceptual framework.

Regardless of whether nations refer to existing frameworks or not, they align thematic domains and indicators to their specific needs. As a result, there is a wide variance in the number of indicators encompassed in similar frameworks worldwide. For instance, Ireland's framework incorporates 33 indicators,[76] whereas Italy's encompasses 152.[77] A concise number of indicators is generally easier to interpret and more likely to be comparable across countries.[16] Strikingly, among the shortlist of top Beyond GDP metrics we identified, only the SDGs are present in multiple national frameworks (Belgium, Denmark, Iceland, Ireland, Ghana, the Netherlands, and Rwanda).

The application of the frameworks varies, with some countries correlating specific targets to indicators or using their frameworks as monitoring tools in budgeting processes (eg, Ghana, New Zealand, the United Arab Emirates, and Wales[78–81]), whereas other countries use their frameworks primarily for informational purposes.[82] Some countries attach a clear vision (eg, Botswana and Ghana) or policy targets to the indicators (eg, China and Rwanda). New Zealand has two initiatives, one focused on government policies and one focused on information provisioning.[79] Given the heterogeneity in application of the frameworks, it is anticipated that any global measurement framework will offer structured guidance for implementation. Implementation guidance could take the form of a tiered approach, as this will help countries to enrol at different stages of the use and integration of a measurement framework.

Heterogeneity is also present in key values intrinsic to countries' cultural fabric. Examples include *buen vivir* in Ecuador, the cornerstone principle of shared destiny and collective action in Canada, and compatibility with *te ao Māori* and Pacific cultures in New Zealand. These frameworks include some country-specific indicators such as percentage of people speaking the native language and artistic skills. Country-specific or region-specific indicators are also important to reflect a country's economic development

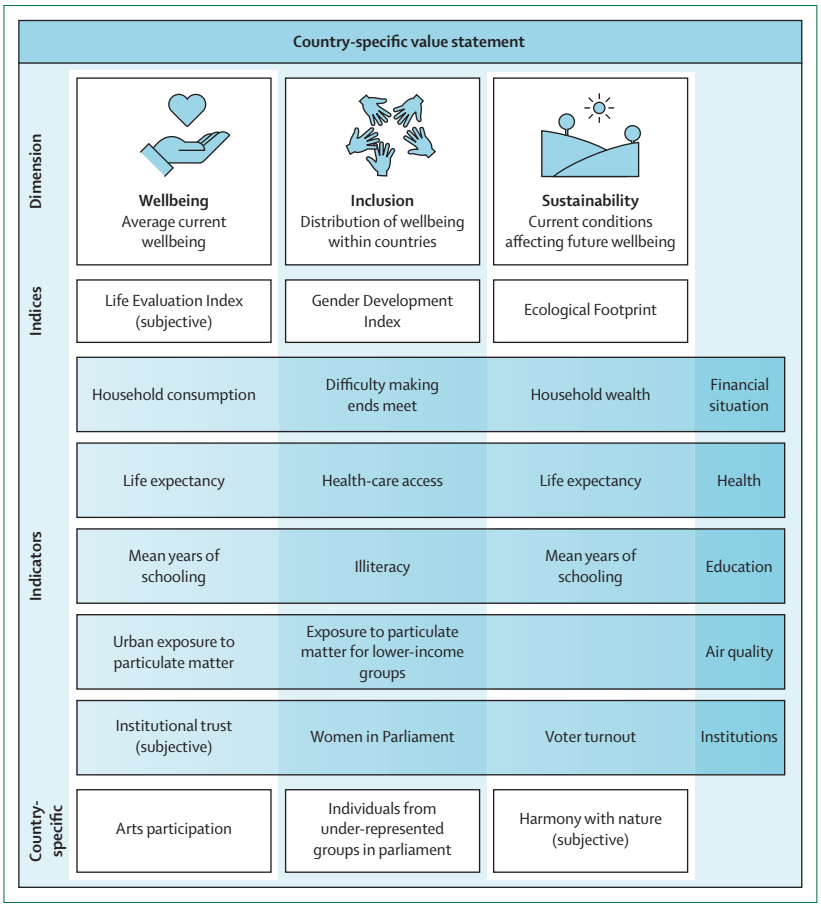

Figure 4: **An example dashboard of wellbeing, inclusion, and sustainability**
This dashboard was developed based on the analysis of the history of GDP and Beyond GDP, the scientific schools of thought, Beyond GDP metrics, and country-specific initiatives. The framework includes a headline space for country-specific value statements to reflect country-specific values. The dashboard is built along two axes: the conceptual dimensions of wellbeing, inclusion, and sustainability, following recommendations from the scientific schools of thought, and thematic domains, following country-specific initiatives. The dashboard includes exemplary indices for communication purposes, subjective and objective indicators to capture the multidimensional nature of wellbeing, and country-specific indicators. Indicators are structured based on their relation to the conceptual and thematic domains. GDP=gross domestic product.

stage, as there is a clear distinction between indicators favoured by higher-income countries and lower-income countries. For example, obesity and smoking prevalence are often a priority in the measurement frameworks of higher-income countries, whereas wastewater treatment and drinking water are priorities often found specifically in frameworks of lower-income countries.[83] It is likely that any global measurement framework will incorporate some flexibility to accommodate measurement preferences related to countries' unique circumstances, as highlighted by the UN.[16] One way in which this could be achieved is by a built-in distinction between a fundamental set of universal domains and indicators, and space for country-specific indicators. A third category could include a regional set of domains and indicators tailored to country groups.

Most initiatives are created with the help of experts, sometimes combined with engagement with a wider range of stakeholders. Although the intensity and focus of consultations on either the indicators or dimensions might vary, these engagements can contribute substantially to establishing the legitimacy of the indicator dashboards,[84] provided that the engagement processes are carried out well. Most initiatives acknowledge that the creation of dashboards is an ongoing and iterative process, allowing for adjustments based on new developments and feedback.

The absence of a global standard gave countries the freedom to develop a framework suitable to their needs. However, national initiatives cannot clearly be compared to each other, the scientific basis is not always clear, and there is no stimulus for global adoption. These issues hamper the identification of global synergies and trade-offs in achieving progress for all. A standardised approach to the measurement of sustainable and inclusive wellbeing should overcome these downsides while remaining flexible to suit the unique circumstances of each country.

Discussion

Dashboard of wellbeing, inclusion, and sustainability

Based on the review of existing metrics, we created a structured dashboard to embed the headline indicators to be considered at the UN's 2024 Summit of the Future (figure 4). This framework addresses the core challenges for a successful Beyond GDP transition. First, it enables an interdisciplinary approach by embedding three dimensions (wellbeing, inclusion, and sustainability), as well as objective and subjective indicators to measure development within these dimensions. Second, the framework allows for the inclusion of existing metrics, again structured according to the three dimensions to elucidate the measurement objective of specific metrics. Last, the dashboard balances the requirements for a standardised and interdisciplinary measurement framework with flexibility to account for country-specific circumstances.

The dashboard includes indices, indicators, and an option to add a country-specific value statement along with country-specific indicators (figure 4). The indices can be existing metrics spanning across the wellbeing, inclusion, and sustainability dimensions. Specific indicators can be relevant for multiple dimensions if they are relevant for the wellbeing of current and future generations. Indicators are structured to also represent thematic domains (eg, education and health). The selection of themes and indicators is inspired by existing literature such as the OECD's Better Life Framework and the CES recommendations on measuring sustainable development.[35,36] Additional quantitative research and UN and stakeholder consultations are required to determine real-world indices, indicators, and thematic domains, with attention paid to finding the right balance of comprehensiveness and conciseness. Although the shortlist of Beyond GDP

metrics provides valuable inspiration, a final selection should be more concise to avoid overlap and should consider including other metrics, such as the Genuine Progress Indicator. In addition to national dashboards, regional and global dashboards can help to assess wellbeing, inclusion, and sustainability on a larger scale, adding a between-country and global perspective to the domain of inclusion.

Future research

We identified several areas of future work that have the potential to amplify the implementation and impact of a future framework for wellbeing, inclusion, and sustainability. Any future framework needs to remain adaptive and responsive to the evolving needs of society and the environment. An ex-ante adaptation strategy, and potentially an exit strategy, could help to avert potential lock-ins. For example, institutionalisation of structural evaluations by national governments and the UN, in which both existing and potential new metrics are assessed against stringent criteria, might help the framework to remain adaptive to the needs of each country. Further research is necessary to investigate the design of such a strategy.

We call for a wellbeing accounting system similar to the SNA to bolster the process of harmonisation and institutionalisation. The SNA could be extended to integrate a variety of wellbeing accounts, including accounts on demographics, distributions, environment, and time use. Currently, the 2008 SNA is being revised, working towards the construction of the 2025 SNA. The new SNA will take a preliminary stride towards a more comprehensive measurement system with the inclusion of a wellbeing and sustainability chapter,[85] yet further adaptations are needed for the realisation of a truly integrated and multidimensional accounting system. In 2019, Rutger Hoekstra[18] provided suggestions for the design of such a system, which can be implemented by national statistical bodies. Crucially, to direct societal evolution towards sustainable and inclusive wellbeing, it is essential to also integrate corporate perspectives and practices. A next step should involve advancing and integrating corporate accounting systems with the national framework, demanding more collaborations between the Beyond GDP scientific community and corporate entities.

It is also important to develop models for wellbeing, inclusion, and sustainability to facilitate informed decision making about the future, allowing Beyond GDP metrics to serve a broader purpose than tracking past developments. The models can use elements of input–output models and stock–flow consistent models to provide a comprehensive tool for policy makers, researchers, and other stakeholders in shaping a sustainable and inclusive future.[86] Models can already be developed using existing data, such as the World Development Indicators from the World Bank and data for multiple indices from the UN.

This review highlights the possibility and necessity of an interdisciplinary synthesis in the next phase of institutionalisation and harmonisation of Beyond GDP metrics. We propose a way to unite different scientific schools of thought (subjective wellbeing, welfare economics, needs theories, the capabilities approach, and ecological approaches), how to navigate the large number of proposed metrics, and how to balance a standardised and scientific approach with country-specific needs. With these impediments overcome, the Beyond GDP community and the UN might pave the way for a paradigm shift towards a holistic and globally accepted measurement framework, ultimately fostering sustainable and inclusive wellbeing.

Contributors

AJ did the literature search, literature collection, and literature analysis, created the figures, and wrote the original manuscript draft. RW, PB, and RH critically reviewed and edited the manuscript. RH conceptualised the review and coordinated the literature search and literature collection. All authors approved the manuscript and had final responsibility for the decision to submit for publication.

Declaration of interests

We declare no competing interests.

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