Measuring the Wealth of Nations:

A review

IISD
International Institute for Sustainable Development

Livia Bizikova
Rob Smith
Zakaria Zoundi

July 2021

International Institute for Sustainable Development

The International Institute for Sustainable Development (IISD) is an award-winning independent think tank working to accelerate solutions for a stable climate, sustainable resource management, and fair economies. Our work inspires better decisions and sparks meaningful action to help people and the planet thrive. We shine a light on what can be achieved when governments, businesses, non-profits, and communities come together. IISD's staff of more than 120 people, plus over 150 associates and consultants, come from across the globe and from many disciplines. With offices in Winnipeg, Geneva, Ottawa, and Toronto, our work affects lives in nearly 100 countries.

IISD is a registered charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Province of Manitoba and project funding from governments inside and outside Canada, United Nations agencies, foundations, the private sector, and individuals.

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org
Twitter: @IISD_news

Measuring the Wealth of Nations: A review

July 2021

Written by Livia Bizikova, Rob Smith, and Zakaria Zoundi

Photo: Unsplash/Victoriano Izquierdo

About this paper

This paper is part of the International Institute for Sustainable Development's (IISD's) efforts to support the adoption of wealth measurement in countries around the world. With funding from the International Development Research Centre (IDRC), IISD examines the potential for comprehensive wealth measures to better guide policy decision making to increase human well-being. This work is based on collaborations with other international and country-level experts as well as IISD's previous major reports on comprehensive wealth in Canada (Smith et al., 2016, 2018) and on broader concepts and indicators for measuring sustainable development.

This paper provides a brief overview of recent efforts by international agencies and academic institutions to develop and apply comprehensive wealth measurement tools. Our review is limited to examples of comprehensive wealth measurement as applied to several countries, so it does not include work on specific capital estimates, applications to a small number of countries, or theoretical research/framework development.

Table of Contents

1.0 Introduction

There is mounting concern from many perspectives that GDP is not a useful or accurate measure of national well-being. GDP, which measures the income generated by the nation's economy during a given period, is one of the most frequently cited and influential indicators of our time. Policies designed to boost GDP tend to favour short-term gains over long-term sustainability. Even though growth in GDP is often (and incorrectly) used as a proxy for greater well-being, it is increasingly understood that well-being in the long run is determined not by a nation's income but by its **wealth**. If the economy and society rest on a base of declining wealth, development is unsustainable, and well-being will eventually decline. Measuring wealth in its fullest sense is the focus of this review paper.

2.0 Why Wealth Measures Are Needed to Move Beyond GDP

Leading researchers and organizations argue there is a need to look beyond GDP and measure socio-economic progress in a way that builds—rather than jeopardizes—the assets needed to improve well-being in the future (see Box 1). **A comprehensive measure of wealth**[1] is called for to complement GDP and **provide the full picture of economic and social trends and whether they are sustainable** (Lange et al., 2018, pp. 3).

Box 1. What leading experts say about measuring comprehensive wealth

- "As a measure of economic activity, GDP is indispensable in short-run macroeconomic analysis and management, but it is wholly unsuitable for appraising investment projects and identifying sustainable development. … In order to judge whether the path of economic development we choose to follow is sustainable, nations need to adopt … an inclusive measure of their wealth." (Dasgupta, 2021, p. 5)
- "While some well-being gains since 2010 have gone hand-in-hand with recent GDP growth, this is far from guaranteed in all cases—especially for health outcomes, inequalities and the environment." (Organisation for Economic Co-operation and Development [OECD], 2020, p. 16)
- "GDP misleads when used in social evaluation not because it is [only] a measure of means [to achieve welfare goals], but because it is not the right measure of means." (United Nations Environment Programme [UNEP], 2018, p. vii)
- GDP "does not reflect depreciation and depletion of assets, whether investment and accumulation of wealth are keeping pace with population growth, or whether the mix of assets is consistent with a country's development goals." (Lange et al., p. 3)
- GDP "growth is a necessary but not sufficient condition for robustly rising median living standards. Accordingly, policymakers and citizens alike would benefit from having an alternative, or at least complementary, bottom-line metric that measures the level and rate of improvement in shared socioeconomic progress." (World Economic Forum [WEF], 2018, p. 2)
- "Shortcomings of GDP can be addressed by accounting properly for investment in intangible assets, removing unproductive financial investment and adjusting for income distribution, but followed by the adoption of an alternative measurement framework for well-being based on the 'wealth economy.'" (Zenghelis et al., 2020, p. 4)

[1] In keeping with IISD's work on expanded wealth measurement (IISD, 2016, 2018), we use the term *comprehensive wealth* in this note. Other researchers in the area refer to inclusive wealth. The two are synonymous for all intents and purposes.

Comprehensive wealth is seen as a measurement tool to help countries determine whether their policies and investments promote sustainable well-being. Wealth measurement allows for the identification of systemic risks across capital types that could undermine future well-being and wealth (OECD, 2020; UNEP, 2018). The development of comprehensive wealth accounts can increase transparency and assist with public deliberation on difficult decisions about reducing inequality and improving well-being (World Inequality Lab [WIL], 2018).

Traditionally, national wealth has been understood and measured narrowly as only two types of capital: produced capital (things like buildings and machinery) and financial capital (things like bank accounts, stocks, and bonds). We now understand this narrow conception of wealth fails to capture crucial factors affecting economic potential and quality of life and that an expanded notion of wealth is needed. In addition to produced and financial capital, nations must also measure the stocks of natural, human, and social capital they benefit so much from. Together, these five types of capital make up the **comprehensive wealth portfolio** (see Box 2).

Box 2. Assets included in the comprehensive wealth portfolio

- **Produced capital** includes roads, railways, ports, houses, machinery, and a wide variety of other manufactured assets and physical infrastructure.
- **Financial capital** covers stocks, bonds, and other financial assets.
- **Natural capital** includes marketable natural resources (such as forests) and mineral deposits (including hydrocarbons). It also includes ecosystems of all kinds that produce essential goods and services not captured by markets.
- The collective knowledge, skills, and capabilities of the population make up **human capital**—the result of lifelong learning in both formal and informal settings.
- **Social capital** includes the norms and behaviours that define interactions between members of society, including such fundamental elements as rights, laws, social inclusion, exchange, and governance.

2.1 The Role of Wealth Measures in Building Resilience

Comprehensive wealth provides clear insights into economic and social resilience, an essential aspect of well-being. Resilience refers to the collective capacity to absorb, adjust to, and recover from stresses and shocks without reducing well-being. Examples of shocks include long-term stresses such as the transformation of energy infrastructure and economic systems to reduce greenhouse gas (GHG) emissions and short-term extreme climate events. Unexpected external shocks like the COVID-19 pandemic[2] can severely damage citizens' well-being in both the

[2] Dasgupta (2021, pp. 28, footnote 22) specifically stresses that "the COVID-19 pandemic can in large measure be traced to weaknesses in commodity supply chains [produced capital] and to biodiversity loss [natural capital]."

short and long terms. Shocks inflict more than increased mortality and morbidity, however—dealing with them also diverts financial and human resources away from other pressing needs. The COVID-19 pandemic, for example, has forced governments to spend hundreds of billions of dollars they did not plan to spend on supporting laid-off workers and purchasing tests and vaccines, placing immense burdens on financial capital. High levels of financial debt weigh heavily on countries, reducing resilience by borrowing against the well-being of future generations (WEF, 2017). Likewise, governments' responses to the pandemic have pushed the boundaries of social norms, place equally immense burdens on social capital. Robust financial and social assets can be used to see a country through difficult times like these. But if these assets are not properly measured, how do we know if they are robust enough when challenging times arrive? Of course, responses to other types of shocks, whether environmental, health, economic, political, or technological, will require different suites of assets. Without comprehensive measures of wealth, decision-makers have at best a limited understanding of national resilience to disasters.

Recent studies on comprehensive wealth (see Section 3) show how different types of capital contribute to resilience to climate change, environmental degradation, and natural disasters. But these studies also emphasize that GDP growth derived from depleting natural capital such as water, air, soil, minerals, forests, and marine ecosystems will undermine resilience and increase the vulnerability of future generations. They also point out that fossil fuel reserves—important sources of wealth in many countries—are increasingly at risk because of global energy system decarbonization to mitigate climate change.

Climate change impacts and natural disasters also feature in comprehensive wealth accounting. The impacts of climate change, together with ongoing environmental degradation, will significantly increase vulnerability in some regions and reduce local capacity to manage natural, human, and produced capital (UNEP, 2018). Resilience can be increased by investing in the quality and maintenance of produced capital (e.g., infrastructure) to achieve longer lifetimes and reduce depreciation. Additional ways to build resilience at the country level include investing in education and innovation to increase human capital and optimizing the use of natural capital (sustainable use of renewables and efficient extraction of non-renewable resources) (Lange et al., 2018).

2.2 Wealth Measurement Can Support the 2030 Agenda

The 2030 Agenda provides a framework and means of implementation to achieve the UN's SDGs globally by 2030. Dasgupta (2021) sees comprehensive wealth measures as a critical guiding metric and prioritization tool to develop national SDG strategies, as they assist with balancing efforts to improve human and produced capital without the depreciation of natural capital when selecting investments and policies to achieve the SDGs.

In terms of specific SDGs, SDG 17, which aims to strengthen means of implementation and revitalize the Global Partnership for Sustainable Development, is directly supported by comprehensive wealth measurement. This goal is critical for achieving the rest of the SDGs, as

it aims to eliminate deep-rooted practices preventing decision-making that focuses on ensuring sustainability. It covers finance, trade, technology transfer, capacity building, and systemic issues. Among the systemic issues it aims to address are institutional, policy, and data challenges that limit countries' abilities to make decisions based on sustainability indicators and high-quality data. To do so, policy and institutional coherence, data, monitoring, and accountability will have to be implemented.

Comprehensive wealth measurement will support SDG 17 by providing data, tracking progress, and improving capacities of countries to measure sustainable development. Enhanced measurement of wealth would assist countries with frameworks and guidelines for data collection, processing, and use of wealth indicators to guide decision making. It is worth noting that all the SDGs touch on matters for which wealth measurement is relevant, and so compiling comprehensive national wealth measurement estimates will not just directly address SDG 17 but will indirectly address all other SDGs as well.

Wealth measurement can contribute to SDG 17 by improving coherence at the policy and institutional levels and providing specific insights into accountability in moving to a sustainable pathway represented by the index and its components (Lange et al., 2018, p. 47). Wealth measurement highlights deficiencies related to poverty (SDG, 1) and food security while valuing sustainable agriculture (SDG 2) and healthy lives and well-being (SDG 3). Current approaches to wealth measurement show how produced capital is not necessarily inclusive, as promoted in SDG 8 (UNEP, 2018), nor does it necessarily align with sustainable consumption and production patterns identified in SDG 12 (UNEP, 2018).

Achieving the SDGs and implementing the Paris Agreement on climate change will require large financial investments to strengthen all kinds of capital. By tracking broad measures of wealth, these investment decisions can properly account for the impacts of associated emissions and environmental degradation. These comprehensive measures of wealth will be particularly needed in developing countries facing difficult decisions in addressing climate change and achieving the SDGs.

3.0 International Efforts to Measure Comprehensive Wealth

Over the last two decades, international, governmental, and non-governmental agencies have undertaken efforts to improve the measurement of wealth (see Box 3).[3] Global leaders increasingly recognize the need to go beyond GDP in assessing development and its sustainability. For example, in their communiqué from the 2018 summit in Charlevoix, Quebec, G7 leaders recognized "that economic output alone is insufficient for measuring success" and acknowledged "the importance of monitoring other societal and economic indicators that measure prosperity and well-being."[4] In addition, and as already noted, SDG 17 aims to eliminate deeply rooted decision-making practices and measures biased against sustainability.

Box 3. Global efforts to measure comprehensive wealth

- The recently released and widely quoted review The Economics of Biodiversity led by Professor Sir Partha Dasgupta (Dasgupta, 2021) makes a strong case for the measurement of wealth as the basis for understanding sustainability and for better managing our relationship with the natural world. This review, commissioned by the UK Treasury, focuses on setting the direction of the United Kingdom's economic policy and working to achieve strong and sustainable economic growth.
- The World Bank published the first set of comparable international comprehensive wealth figures in the 1990s (Hamilton & Clemens, 1999; World Bank, 2006) and has updated its dataset several times since (World Bank, 2011; Lange et al., 2018). It has also added a wealth-related indicator to its global development indicators. The outcomes of this effort are summarized in *The Changing Wealth of Nations (CWON)*, which is published every few years, most recently in 2018 (Lange et al., 2018).
- A team led by Professor Sir Partha Dasgupta of Cambridge University with colleagues at UNEP, Kyushu University and elsewhere has released three global Inclusive Wealth Reports with estimates for most countries (Managi & Kumar, 2018; United Nations University, International Human Dimensions Programme & United Nations Environment Program, 2012, 2014).
- WEF has advocated for wealth measurement through a number of projects, reports, and smaller articles and blogs. WEF (2017, 2018) also uses an inclusive growth and development index that combines measures of current well-being along with wealth-based measures of the long-term sustainability of well-being.

[3] See the Appendix for a discussion of the approach used to identify these efforts.

[4] http://www.g7.utoronto.ca/summit/2018charlevoix/communique.html

- The Bennett Institute for Public Policy at Cambridge University, which was launched in 2018, recently published Valuing Wealth, Building Prosperity (Zenghelis et al., 2020). This report stresses the need to develop new measures to track national wealth, as many changes in the structure of the economy are invisible to GDP but have important implications for well-being.
- The Paris School of Economics houses the World Inequality Lab. Run by Professor Thomas Piketty and others, the lab's main focus is on measuring income inequality for all countries in the world, published in their World Inequality Report (2018). The report makes fledgling efforts at measuring wealth inequality as well, and they state their intention to improve their estimates of national wealth and its distribution.
- The OECD has measured different aspects of well-being by using a set of indicators of perceived well-being by OECD citizens. The outcomes are summarized in a biennial report entitled *How's Life?* that was first published in 2011 and most recently in 2020 (OECD, 2020). The report reviews living conditions and citizen perceptions of their quality of life as well as trends at household and community levels.
- The report of the UN Economic Commission for Europe (UNECE) on statistics for sustainable development (UNECE et al., 2009) presents a set of sustainable development indicators that integrates the capital approach and draws on indicators used in policy development and assessment.
- The Capitals Coalition is a global collaboration effort formed in Davos (Switzerland) in 2020 to strengthen natural capital accounting metrics and complement these with other measures of capital (Capitals Coalition, n.d.). The Coalition aims to take a systemic approach to measuring resilient and stable development by bringing together over 350 organizations representing all parts of society and spanning the global economy.
- The French Commission on the Measurement of Economic Performance and Social Progress (the so-called "Stiglitz Commission"—Stiglitz et al., 2009, 2018) has produced several reports. The most recent report (Stiglitz et al., 2018) advocates for indicators to measure sustainability of growth and summarizes the past 10 years of collecting well-being data and using them to inform policies.

All the efforts described in Box 3 attempt to move beyond GDP through some type of expanded wealth measurement. Approximately half of the efforts include the development of an aggregate index of comprehensive wealth while the remainder present disaggregated data on wealth and its components. Table 1 summarizes the different approaches taken to developing expanded indexes and indicators of wealth.

Table 1. Overview of indexes and indicators for expanded wealth measurement

	Last published	Capital types included	Countries included	Index name	Monetary valuation
The Changing Wealth of Nations, World Bank	2018[5]	Natural, human, produced, and financial capital	141 countries	Comprehensive wealth	✓
Inclusive Wealth Report, UNEP	2018	Natural, human, produced capital	141 countries	Inclusive wealth	✓
How's Life? 2020 Measuring well-being, OECD	2020	Economic, natural, human, social (these focus on future well-being)	37 OECD countries and four partner countries	Not aggregated	X
Dasgupta Review, UK	2021	Natural capital with reference to human, social, and financial capitals	Global with country examples	Inclusive wealth	✓
The Inclusive Growth and Development Report, World Economic Forum	2017	Key national performance indicators and Inclusive Growth and Development Indicators (7 pillars with 15 indicators)	140 countries grouped by income levels	Inclusive growth and development	X
Valuing Wealth, Building Prosperity, Bennett Institute, Cambridge	2020	Produced (physical assets), financial (net financial capital), natural, human, social and intangible assets (intellectual property and data)	Various (30 European countries or 140 countries worldwide)	Comprehensive wealth	✓
World Inequality Report, World Inequality Lab, Paris	2018	Produced, financial, and natural capital	Various (individual countries and regions)	Not aggregated	X

[5] The next report is expected to be published in 2021.

4.0 Global Trends In Comprehensive Wealth

The various efforts at measuring comprehensive wealth discussed above generally find improvements in wealth at the global level and in most countries during recent decades, though there are exceptions.[6] When looking at different types of capital, however, the studies conclude that there are significant challenges to future well-being with respect to declining financial and natural capital and stagnation in levels of social capital. Human and produced capital, in contrast, generally show gains in the recent decades. The decreasing contribution of natural capital has been compensated for to some extent by investment in human capital and produced capital (UNEP, 2018).

The studies report diverse concerns for the wealth of specific regions or groups of people. For example, growing global wealth has been accompanied by growing inequality between nations in terms of total and per capita levels of wealth (UNEP, 2018). Despite increasing total wealth in most countries, per capita wealth did not rise in many cases, indicating that well-being has not improved (Lange et al., 2018). OECD countries exhibited increased wealth across various measures, which included improved life satisfaction (as well as life expectancy) in 2018 compared to 2013 (OECD, 2020).

The studies also point to the widening gaps between countries in terms of their potential to sustain future gains in well-being as a function of their combined types of capital. Countries that have done well in strengthening most types of capital are leaders in improving their current and potential future well-being. At the same time, many countries have achieved GDP growth even as various types of capital are depleted, thus limiting their opportunities for future development and sustainability (Lange et al., 2020; OECD, 2020).

The reports provide suggestions for policy changes that could reorient investment to build wealth and strengthen assets (see Table 2). Global trends in wealth creation are strongly dependent on **natural capital**. Between 1990 and 2014, the global average share of natural capital was 20% of the capital portfolio; however, relative to produced and human capital, the share of natural capital has declined (UNEP, 2018). Natural capital is the largest component of wealth in low-income countries (47% in 2014) and accounts for more than one-quarter of wealth in lower-middle-income countries (Lange et al., 2018). The rate of natural capital depreciation has been, on average, five times greater in developing countries than in the high-income OECD countries (UNEP, 2018). Most countries face declining natural capital, including deterioration of marketable natural resources as well as declining quality and quantity of ecosystems. For example, one-third of fish comes from overharvested populations, and the area of primary forest worldwide has decreased by over 80 million hectares since 1990 (Food and Agriculture Organization of the United Nations [FAO] et al., 2020; FAO & UNEP, 2020). In terms of the contribution of natural

[6] Notably, IISD's work on measuring comprehensive wealth in Canada has revealed worrying trends in Canada's wealth, with stagnant human capital, declining natural capital, poorly diversified produced capital and unsustainable trends in financial capital.

resources to national wealth, nearly two-thirds of resource-rich countries that have remained low-income since 1995 are also affected by conflicts or fragility, demonstrating that natural resource wealth alone cannot guarantee improvement in well-being (Lange et al., 2018). Finally, the capacity of natural capital to contribute to global wealth is under threat from climate change, biodiversity loss, and deteriorating ecosystem services.

Human capital and its share of the wealth portfolio have typically grown during the last decades, with an approximately 59% share of wealth across all countries for the period 1990–2014 (UNEP, 2018). This rising trend is expected to continue, as a skilled labour force has become essential to secure a role in the future of the global economy. In lower-middle-income countries, the share of human capital in total wealth has grown by approximately 10% during the last two decades (Lange et al., 2018). In OECD countries, the performance of human capital is mixed with considerable positive contributions due to a growing share of young adults completing senior secondary education and still low contributions in some countries due to higher rates of labour underutilization (OECD, 2020). Finally, there is a significant gender gap in human capital in terms of women's contribution to the paid labour force. Women on average account for less than 40% of measured human capital because of their lower earnings (Lange et al., 2018). Public investments in health and education, including higher education, would provide the greatest returns to national wealth (OECD, 2020; UNEP, 2018; see Table 1).

Social capital is considered an important determinant of future well-being in all the studies. Research shows that robust social capital based on trust, civic engagement, and effective institutions enables economic well-being and economic growth (Zenghelis et al., 2020). The studies stress the importance of social capital as a critical component of any country's wealth, but data on social capital are typically not integrated into aggregate indices due to difficulties in measuring its value. The studies typically measure social capital through a set of non-monetary indicators such as trust in government, gender parity in politics, volunteer rates, and voting turnout. Based on these and others, there has been virtually no progress in OECD countries with respect to social capital since 2010 (OECD, 2020). Most of the reports suggest social capital should have a growing role in a country's wealth, and these indicators should be better integrated into wealth measurement.

The studies find that **produced capital** is growing at the global level, though it accounts for less than 20% of total wealth in many countries (UNEP, 2018). The share of produced capital is often higher in high- and middle-income countries and lower in developing countries; for example, its share was less than 5% in some sub-Saharan African countries in 2014 (UNEP, 2018). In high-income OECD countries, human capital accounts for the largest share of wealth followed by produced capital—these countries have a relatively small share accounted for by natural capital (less than 5%). The low share of produced capital in low-income countries is alarming given the significant infrastructure needs there. Lange et al. (2018) point out that there is a consistent relationship between the growth rate of produced capital financed from public and private investments and the growth rate of natural resource extraction. This points to the need to identify the best ways to invest the rent from natural resources to maximize wealth, for example, in

infrastructure, education and health care (for more policy recommendations see Table 2). Climate change and environmental degradation have the potential to negatively impact infrastructure and other produced capital, leading to premature asset degradation or obsolescence and generating spillover impacts for human and financial capital as well.

Trends in **financial capital** show increases in both public and household debt in many countries. Financial wealth accumulation as a share of national income is falling, while private financial wealth is rising (UNEP, 2018). This suggests that income and wealth inequality may be worsening both within and between countries. Policy measures to reduce debt loads and socio-economic inequality would help address these issues, although massive fiscal transfers are not always seen as compatible with long-term growth and competitiveness (WEF, 2017).

Finally, while the five capital types cover critical aspects of future wealth, they do not capture some important factors. These include the growing role of intangible assets (e.g., intellectual property and data) in wealth generation (Zenghelis et al., 2020), labour underutilization (which poses risks to human capital through the degradation of skills [OECD, 2020]), growing income inequality in nearly all countries, and the role of institutions and policies addressing inequality (WIL, 2018) and others. These gaps can be addressed by a set of additional indicators complementing the indices already developed and continuously improving accounting systems for the types of capitals.

Table 2. Policies suggested to increase wealth

Capital	Suggested policy measures to build capital
Natural capital	• Invest in efficient use of natural capital and capture rents from natural capital sources, such as minerals, for investment in infrastructure and education to grow wealth (Lange et al., 2018). • Increase extension and training in agriculture and forestry to improve natural capital through soil conservation, emissions reductions, and reduced resource degradation (UNEP, 2018). • Address the depreciation of natural capital through greenhouse gas (GHG) emissions, water stress and impacts on biodiversity (UNEP, 2018). • Incorporate natural disaster impacts and resilience in the assessment of all types of capital (Zenghelis et al., 2018).
Human capital	• Democratic access to education and mechanisms to ensure that people at the bottom of the income distribution have access to well-paying jobs should be a policy priority, although education will not prove sufficient to tackle inequality. (WIL, 2018). • In South Asia and Sub-Saharan Africa, investment in health and education, including higher education, would provide the greatest returns to national wealth (UNEP, 2018). • Specific education and skills development for youth will be needed to better integrate youth into the labour market. Access to education should be improved (OECD, 2020). • More equal access to education and well-paying jobs is key to addressing the stagnating or sluggish income growth rates of the poorest half of the population (WIL, 2018). • Reduce inequality using investments in skills development and redistribution to improve the situation of marginalized groups, in addition to investment in institutions to enable social inclusion (WEF, 2017).

Capital	Suggested policy measures to build capital
Social capital	• Policies and institutions supporting social inclusion are critical and should be a global priority for both developed and developing countries. Low- and middle-income countries especially should prioritize inclusionary investments (WEF, 2017). • Education and skills development should emphasize adaptive and flexible knowledge and skills to mitigate the negative effects of technological change on social cohesion and social justice (Zenghelis et al., 2018). • Build social capital by investing in institutions, positive behaviours and cultures (UNEP, 2018). • Innovation in institutions such as new rules, in addition to improved governance and policies, should be prioritized instead of focusing only on produced capital and knowledge capital (Zenghelis et al., 2018).
Produced capital	• Investing in produced capital would help some poor countries increase economic growth by developing infrastructure, new technologies, and efficient management/processing systems (UNEP, 2018). • Low-income countries heavily dependent on agricultural land and forests (renewable natural capital) should develop larger and more diverse portfolios of assets, especially human capital, but also infrastructure and other produced capital to build wealth (Lange et al., 2018). • Increased investment in R&D will be a key driver of changes in the stock of intellectual property assets (Zenghelis et al., 2018).
Financial capital	• Policies to encourage more economy-wide investment in other forms of capital to raise adjusted net saving (UNEP, 2018). • Reducing public debt using different means such as wealth taxation and inflation (WEF, 2018). • Poverty reduction efforts could address high levels of household debt and financial insecurity. Targeted income support could overcome challenges such as employment loss and illness (OECD, 2020).

5.0 Concluding Notes

Advocates for comprehensive wealth argue that moving beyond GDP to provide a more complete picture of national well-being and its sustainability is essential. A number of efforts by eminent researchers and international organizations demonstrate that practical and detailed wealth measurement is possible and that it reveals trends not evident through the short-term lens of GDP.

For a nation to claim it is developing, well-being levels must be sustained. Greater well-being today at the expense of less tomorrow is not development at all. Understanding whether a nation is developing sustainably requires understanding how its comprehensive wealth is evolving. Simply measuring how quickly GDP is growing is no longer enough, if it ever was. It is essential to know whether the asset base that underpins GDP is growing alongside GDP. If it is not, then economic and social progress rests on an unsustainable drawing down of capital. Still, in spite of its importance as a measure of sustainability, no country measures comprehensive wealth today.

IISD believes this should change. Countries should begin with urgency to balance the one-sided view of progress offered by GDP. With comprehensive wealth as another lens on progress, citizens would know with confidence whether their well-being was on a sustainable path – and they would be able to hold their leaders accountable. Just as importantly, decision-makers would have a new tool to guide decision making in the context of climate change adaptation, green growth objectives, growing inequality, health risks, and a host of other challenges faced today. Today, the decision-making scales are tipped in favour of short-term economic growth—it is time that they be balanced.

References

Capitals Coalition. (n.d.). *Home page*. https://capitalscoalition.org/

Dasgupta, P. (2021). *The economics of biodiversity: The Dasgupta Review.* HM Treasury. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

Food and Agriculture Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Emergency Fund (UNICEF), World Food Programme (WFP), & World Health Organization (WHO). (2020). T*he state of food security and nutrition in the world 2020. Transforming food systems for affordable healthy diets*. FAO. https://doi.org/10.4060/ca9692en

Food and Agriculture Organization of the United Nations & United Nations Environment Program. (2020). *The state of the world's forests 2020. Forests, biodiversity and people*. http://www.fao.org/documents/card/en/c/ca8642en/

Hamilton, K., & Clemens, M. (1999). Genuine savings rates in developing countries. *World Bank Economic Review, 13*(2), 333–356. https://documents1.worldbank.org/curated/en/637171468340206712/pdf/772930JRN019990Box0377302B00PUBLIC0.pdf

International Institute for Sustainable Development (IISD). (2016). *Comprehensive wealth in Canada—Measuring what matters in the long run*. International Institute for Sustainable Development. https://www.iisd.org/publications/comprehensive-wealth-canada-measuring-what-matters-long-run

International Institute for Sustainable Development. (2018). C*omprehensive wealth in Canada 2018 – Measuring what matters in the long term*. International Institute for Sustainable Development. https://www.iisd.org/publications/comprehensive-wealth-canada-2018-measuring-what-matters-long-term

Lange, G.-M., Wodon, Q., & Carey, K. (2018). *The changing wealth of nations 2018: Building a sustainable future*. World Bank. https://openknowledge.worldbank.org/handle/10986/29001

Managi, S. & Kumar, P. (Eds.). (2018). *Inclusive wealth report 2018.* Routledge. https://www.taylorfrancis.com/books/e/9781351002073

Organisation for Economic Co-operation and Development (OECD). (2020). *How's life? 2020: Measuring well-being*. OECD Publishing. https://doi.org/10.1787/9870c393-en

Stiglitz, J. E., Sen, A., & Fitoussi, J.P. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress.* Commission on the Measurement of Economic Performance and Social Progress. https://www.insee.fr/en/information/2662494

Stiglitz, J.E., Fitoussi, J., & Durand, M. (2018). *Beyond GDP: Measuring what counts for economic and social performance*. OECD Publishing. https://doi.org/10.1787/9789264307292-en

United Nations Economic Commission for Europe (UNECE), Organisation for Economic Co-operation and Development, & Statistical Office of the European Communities (Eurostat). (2009). *Measuring sustainable development*. https://unece.org/DAM/stats/publications/Measuring_sustainable_development.pdf

United Nations Environment Program (UNEP). (2018). *The inclusive wealth report 2018*. https://www.unep.org/resources/report/inclusive-wealth-report-2018

United Nations University–International Human Dimensions Programme & United Nations Environment Program. (2012). *Inclusive wealth report 2012 – Measuring progress toward sustainability*. Cambridge University Press. https://wedocs.unep.org/handle/20.500.11822/32228

United Nations University–International Human Dimensions Programme & United Nations Environment Program. (2014). *Inclusive wealth report 2014 – Measuring progress toward sustainability*. Cambridge University Press. https://www.greengrowthknowledge.org/research/inclusive-wealth-report-2014-measuring-progress-toward-sustainability

World Bank. (2006). *Where is the wealth of nations?: Measuring capital for the 21st century*. The World Bank. https://openknowledge.worldbank.org/handle/10986/7505

World Bank. (2011). *The changing wealth of nations: Measuring sustainable development in the new millennium*. Washington: The World Bank. https://openknowledge.worldbank.org/handle/10986/2252

World Economic Forum (WEF). (2017). *The inclusive growth and development report 2017*. https://www.weforum.org/reports/the-inclusive-growth-and-development-report-2017

World Economic Forum. (2018). *The inclusive development index 2018. Summary and data highlights*. https://www.weforum.org/reports/the-inclusive-development-index-2018

World Inequality Lab. (2018). *World inequality report*. https://wir2018.wid.world/files/download/wir2018-summary-english.pdf

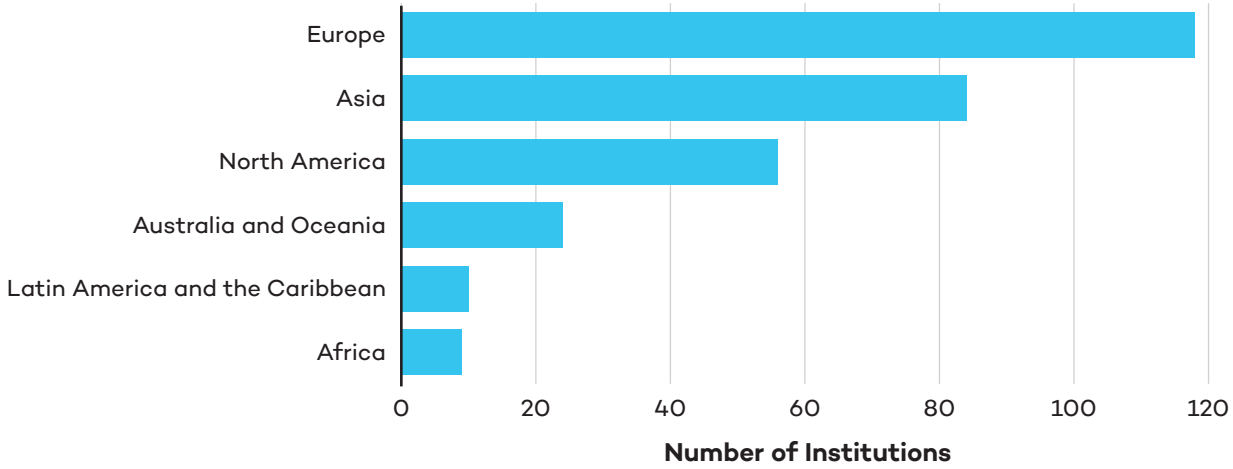
Zenghelis, D., Agarwala, M., Coyle, D., Felici, M., Lu, S., & Wdowin, J. (2020). *Valuing wealth, building prosperity* [Wealth Economy Project first year report to LetterOne]. https://www.bennettinstitute.cam.ac.uk/publications/valuing-wealth-building-prosperity/

Appendix. Agencies and Institutions Engaged in Wealth Measurement

To identify groups active in studying alternative wealth measures, we relied on publications by well-established international agencies such as the World Bank, WEF, UNEP and the OECD as listed above (Box 2). In addition to these international agencies, there are also academic institutions and universities active in research on wealth measurement. To identify academic institutions, we searched peer-reviewed publications in English on the topic of wealth measurement, collected using trusted databases by major scientific publishers such as ScienceDirect and Google Scholar.[7] We focused on articles published between 2010 and 2020. Abstracts of articles that were suggested during the keyword searches were reviewed to make sure that they substantially covered the issues of wealth measurement. In this section, we describe the international agencies and academic institutions active in wealth measurement.

In total, we found 138 articles and identified 319 academic institutions, government agencies, and non-governmental organizations engaged in related research. Out of these 319 institutions, 251 (79%) were universities, their faculties, and departments as well as research institutes. The other 68 (21%) were government, non-governmental, and international agencies such as the World Bank, Asian Development Bank, and Secretariat of the Convention on Biological Diversity, as well as national statistical offices and diverse ministries. The collected research publications on wealth measurement were a somewhat collaborative effort. Publications were attributed to one, two, or three or more authors in roughly equal proportions—54 articles (39%) have one author, 40 (29%) have two authors, and 45 (32%) have three or more authors.

Figure A1. Location of universities and research institutes publishing peer-reviewed articles on wealth measurement (number of institutions per region listed in each bar of the graph)



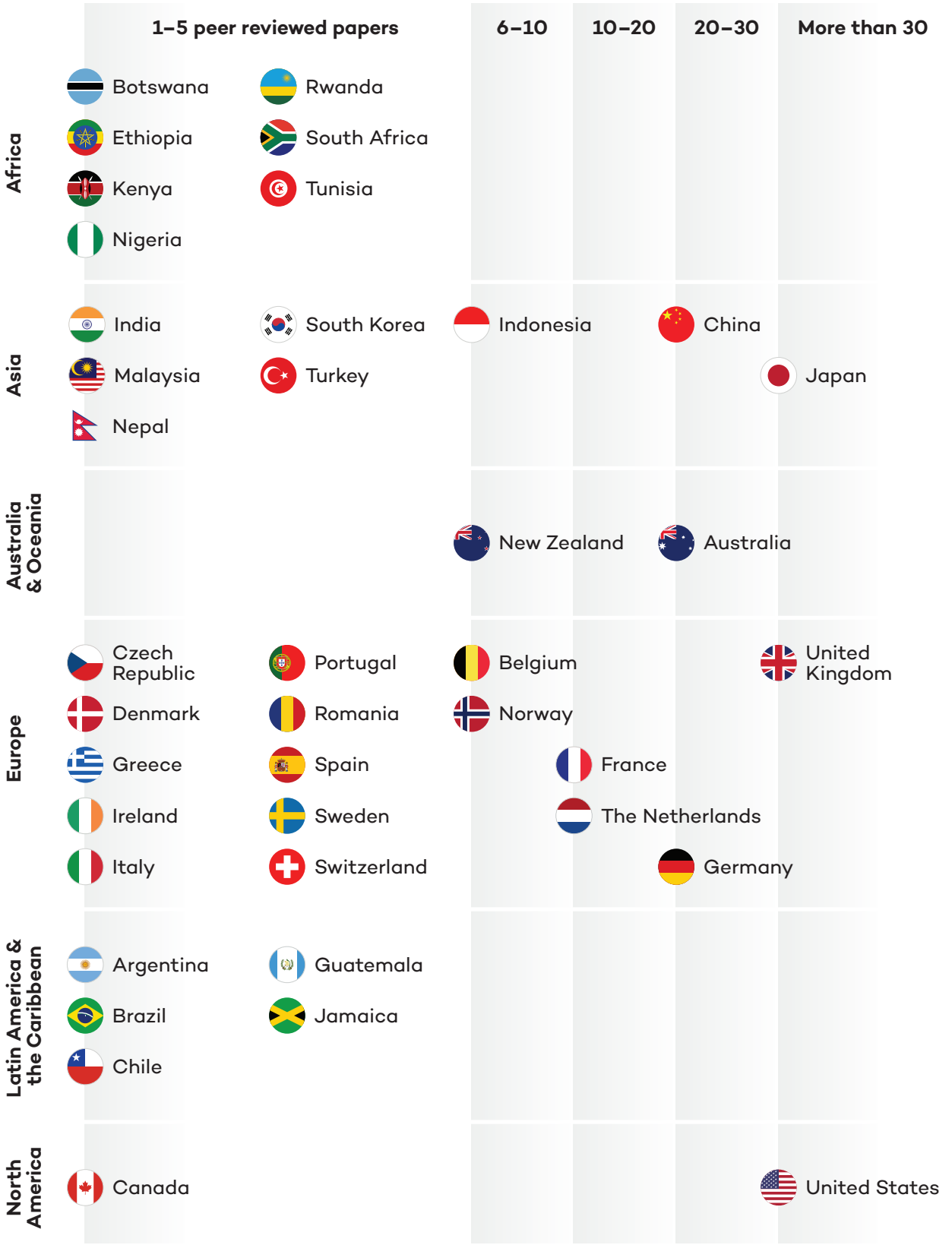
[7] Links to the websites: ScienceDirect.com; Google Scholar

Research on comprehensive measures of wealth is distributed across the continents (Figure A1). The highest engagement was documented in Europe and included 37% (118 institutions), followed by Asia with 26% (84 institutions) and North America 22% (71 institutions). Published research in this field is very limited in Africa and Latin America and the Caribbean (LAC) (only 10% of identified institutions). The low shares for LAC and Africa could also be due to our focus on articles in English (Figure A2).

The three countries with the highest share of research publications in this field were the United States, Japan, and the United Kingdom (Table A1). At the institutional level, the most engaged agencies across the globe were Kyushu University in Japan, as well as Harvard University's Kennedy School and the Massachusetts Institute of Technology in the United States. Kyushu University and its Faculty of Engineering and Management have been closely involved with UNEP's Inclusive Wealth Report publication and served as co-author for the latest edition (UNEP, 2018). In addition, Kyushu faculty members, especially Professor Shunsuke Managi,[8] have published over 20 peer-reviewed articles on the topic of inclusive wealth during this time frame. Several universities from Germany, the Netherlands, and the United Kingdom round out the most active institutions.

[8] managi-lab Publication (managi-lab.com)

Figure A2. Countries and their peer-reviewed outputs on expanded wealth measurement



Published by the International Institute for Sustainable Development

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org
Twitter: @IISD_news

IISD

iisd.org