COMPREHENSIVE WEALTH REPORT

Moving Beyond GDP Through Comprehensive Wealth

Findings for Ethiopia, Indonesia, and Trinidad and Tobago

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Comprehensive Wealth Report — Moving Beyond GDP Through Comprehensive Wealth: Findings for Ethiopia, Indonesia, and Trinidad and Tobago

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Executive Summary

There is a growing agreement among global leaders that countries need to move beyond GDP as their primary yardstick to measure progress. The United Nations Secretary-General calls excessive reliance on GDP a "glaring blind spot in how we measure economic prosperity and progress" (United Nations, 2021, p. 4). The G7 heads recognized in 2018 that GDP is "insufficient for measuring success" (G7, 2018, p. 2). There is, thus, much interest at the moment in new measures that consider development from a broader perspective than GDP. Countries require such measures if they are to meet today's challenges.

Though consensus is emerging that countries must move beyond GDP by adopting new measures of progress, just what those measures should be remains a matter of debate. Careful thought will be required, as GDP remains popular with decision-makers and resistance to change is likely. As a guide, GDP has many attractive features such as conciseness—it summarizes a large amount of information into a single number; robustness—it is supported by decades of theory and practice; and relevance to the concerns of policy-makers and the public—despite its limitations. What GDP measures (that is, income in people's pockets) is important. Moving beyond GDP should not imply that it should be abandoned then. Rather, what is needed are complementary measures that provide a foundation for more sustainable policy decisions while matching GDP's conciseness, robustness, and relevance.

The International Institute for Sustainable Development agrees with those who call for countries to begin using expanded—or *comprehensive*—wealth measures to assess progress. Comprehensive wealth focuses on the portfolio of assets that underlie well-being broadly: natural, human, social, produced, and financial capital. As a means of moving beyond GDP, comprehensive wealth has much to offer. Like GDP, it is concise. Just a few high-level indicators suffice to measure a country's comprehensive wealth portfolio. It is also robust, resting on theory and practice stretching back more than a century. Finally, it is relevant to well-being across all its dimensions—economic, social, and environmental.

Working with academic partners,[1] this study assessed whether compiling comprehensive wealth data covering the period 1995–2020 was possible for three countries at differing levels of development (Ethiopia, Indonesia, and Trinidad and Tobago) and whether doing so revealed insights into their development paths not apparent from GDP data.

We found that most of the data required to compile comprehensive wealth measures were available from national statistical agencies or central banks. Only a small amount of the data required had to be sourced from international sources. We further found that the measures we compiled revealed trends in all three countries that tell stories quite different from those told by GDP.

In Trinidad and Tobago, we found overreliance on fossil fuels, which resulted in steadily declining comprehensive wealth from 2008 to 2020. This unsustainable trend led

[1] The partner institutions were the Department of Economics, Mekele University, Ethiopia; the Institute for Economic and Social Research Faculty of Economics and Business, Universitas Indonesia; and the Sir Arthur Lewis Institute of Social and Economic Studies, University of the West Indies, Trinidad and Tobago.

to a significant drop in the country's well-being beginning in 2013, confirming that comprehensive wealth is a valuable tool for predicting future declines in well-being when wealth is not maintained. These findings demonstrate the risks associated with dependence on depletable resources such as oil and gas for development, especially when GDP is used as the main measure of national success and trends in resource wealth are not apparent to decision-makers and the public.

In Indonesia, we found that well-being could have been higher if the country's comprehensive wealth portfolio—especially its vast natural capital—had been better managed. In a trend that runs counter to expectations, Indonesia actually created less well-being per unit of wealth in 2020 than it did in 1995. The key insight here is that national development—contrary to the thinking behind the GDP growth paradigm—is first and foremost a matter of properly managing the nation's portfolio of assets. Not all countries do equally well at this. Indonesia could truly benefit from considering this insight in its policies, as the country is foregoing well-being through inefficient management of its comprehensive wealth.

In Ethiopia, the challenge we found was neither declining comprehensive wealth nor inefficiency in its use—the country is doing well on both those fronts—but simply the very low level of wealth. Despite more than doubling its comprehensive wealth between 1995 and 2020, the average Ethiopian benefited from only about one tenth as much wealth as typical citizens in Indonesia and Trinidad and Tobago in 2020. The other challenge we found was the high concentration of Ethiopia's human and natural capital in traditional agriculture, which is labour intensive and yields relatively poor returns compared with other sectors. This concentration prevents the country from deploying its human capital where it might generate greater well-being and from benefiting more broadly from its natural capital. One means of addressing this would be to reorient the country's investments in its produced capital, which we found do not adequately address the need for increased use of modern farming methods and equipment. The country's efforts to increase its wealth should thus prioritize enhancing the productivity of the human, natural, and produced capital dedicated to agriculture. This would free up labour and investment flows to boost other sectors of the economy that create greater well-being.

We believe the insights revealed through the study are important. Regrettably, none of these insights are evident when GDP is the primary gauge of national success, as is the case in all three countries today. We argue that the citizens of these countries—indeed, of all countries—would be better off if their governments compiled comprehensive wealth measures and used them, alongside GDP, to guide decision making. This would help ensure a greater focus on ensuring long-term well-being.

To this end, senior decision-makers in government should inform themselves about the importance of moving beyond GDP and the reasons why comprehensive wealth is a key step in that direction. They should fund national statistical offices to begin the regular measurement of comprehensive wealth and commit to integrating comprehensive wealth measures into government decision-making. With comprehensive wealth measures in their toolkits, governments would be much better placed to shape policies with the long-term sustainability of well-being front and centre.

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1.0 Introduction

There is a lot of talk today about the need to move "beyond GDP." GDP is criticized both for dominating discussions around the development of nations but also for being inherently unsuited to that role (see Box 1). Countries require new measures that consider development from a broader perspective if they are to meet today's challenges. What lies beyond GDP, though? Which pathway should countries take to get there?

These are questions of active debate. Of the possible ways forward, few stand out as robust, practical, and focused. Of these, the International Institute for Sustainable Development (IISD) agrees with those who call for countries to begin using expanded—or comprehensive—wealth measures to assess progress (see, among others, Agarwala et al., 2020; Arrow et al., 2012; Dasgupta 2001, 2012, 2014, 2021; Dasgupta & Mäler, 2000; Hamilton & Clemens, 1999; Kurniawan & Managi, 2018; Lange et al., 2018; Polasky et al., 2015; Smith et al., 2016, 2018; United Nations Environment Programme (UNEP), 2018; UN University-International Human Dimensions Programme (UNU–IHDP) & UNEP, 2012, 2014, 2023; World Bank, 2011; and Zenghelis et al., 2020). Comprehensive wealth (CW) focuses on the portfolio of assets that underlie well-being broadly: natural, human, social, produced, and financial capital. Comprehensive wealth is sometimes called *inclusive* wealth. We take the terms to be interchangeable. Our use of "comprehensive" is simply for consistency with IISD's earlier studies on Canada (Smith et al., 2016, 2018) and is not meant to deny the validity of "inclusive" as an alternative descriptor.[2]

In this report, we present the findings of a multi-year project funded by Canada's International Development Research Centre and carried out by IISD and partner institutions[3] to measure CW for three countries at differing levels of development: Ethiopia, Indonesia, and Trinidad and Tobago. The primary goal was to see whether CW measures could be compiled for the countries using national data and following methods similar to those used in previous studies of CW in Canada by IISD (Smith et al., 2016, 2018). A secondary goal was to consider what CW measures reveal about the countries' development that is different from what GDP alone says. A final objective was to identify the challenges standing in the way of the broader implementation of CW measures in country development planning and assessment.

We found that compiling a long time series of CW measures (1995–2020) for each of the three countries was, in fact, possible using mostly national data. We further found that those measures revealed important features of development not obvious when GDP alone is considered. Finally, we identified a (not insurmountable) number of challenges that future efforts must overcome if CW measures are to be available to governments for use. We present our findings in detail further below. First, though, we delve more deeply into the arguments for choosing CW as a pathway beyond GDP.

[2] The term "inclusive" is used, notably in the work undertaken by UNEP (UNU–IHDP & UNEP, 2012, 2014; UNEP, 2018, 2023).

[3] The partner institutions were Department of Economics, Mekele University, Ethiopia; the Institute for Economic and Social Research Faculty of Economics and Business, Universitas Indonesia; and the Sir Arthur Lewis Institute of Social and Economic Studies, University of the West Indies, Trinidad and Tobago.

Box 1. Calls for countries to move beyond GDP

World leaders are increasingly of the consensus that nations should move beyond GDP as their primary metric for gauging progress. The UN Secretary-General calls excessive reliance on GDP "a glaring blind spot in how we measure economic prosperity and progress" (UN, 2021, p. 4). Group of Seven heads recognize that GDP is "insufficient for measuring success" (Group of Seven, 2018, p. 2). Yet, for 75 years, politicians, investors, business leaders, and the public around the world have looked to GDP as the primary judge of how well their countries are doing. If GDP is growing, a country is said to be moving in the right direction. If GDP growth is weak or, worse, negative, alarm bells will ring and a change of course will be loudly called for.

Despite its widespread use as a progress measure, GDP was not designed as such. Many instances exist where increasing GDP and increased well-being are not correlated. GDP focuses only on short-term economic output, ignoring the costs of this output in terms of environmental degradation, lost community trust, growing inequality, mounting debt, and more. It is equally blind to the many elements of well-being found outside the market, including volunteering, unpaid housework, enjoyment of nature, and social connections. Decision-making that focuses on GDP growth is, therefore,

- biased toward short-term concerns,
- overly concerned about what happens to the market economy, and
- not concerned enough about the consequences of economic growth on other determinants of well-being, especially in the long term.

2.0 Comprehensive Wealth as a Pathway Beyond GDP

Though consensus is emerging that countries must move beyond GDP and adopt new measures of progress, just what those measures should be remains a matter of debate. Careful thought will be required in choosing them, as GDP remains popular with decision-makers and resistance to change is likely. As a guide, GDP possesses several appealing features including its conciseness—condensing vast amounts of data into a single figure; its robustness—backed by decades of theoretical and practical application; and its relevance—addressing the interests of both policy-makers and the public, despite its shortcomings. Rather, what is needed are complementary measures that provide a foundation for more sustainable policy decisions while matching GDP's conciseness, robustness, and relevance.

The list of approaches fulfilling the criteria for moving beyond GDP is not long. It is easy to imagine large dashboards of indicators that covering most dimensions of well-being (such as Department of Finance Canada, 2021; Government of Ireland, 2022; and Treasury of New Zealand, 2022), but these often lack concision and conceptual robustness. It is also possible to suggest various composite indexes[4] that are both concise and multi-dimensional, but these too can suffer from conceptual shortcomings, particularly in weighting for aggregation.

Some argue that GDP itself simply needs to be modified to address its shortcomings.[5] Expanding GDP to include the value of unpaid household work or degradation of the environment are common proposals. Reforming GDP is certainly a good idea—but it is not enough. Even if it were improved in various ways, GDP would remain focused on the short term and, therefore, insufficient as the core measure of national progress. The determinants of *future* well-being will always fall outside GDP's scope, no matter how it is measured. As noted by the Cambridge University economist Sir Partha Dasgupta in his landmark review *The Economics of Biodiversity*, GDP may be "indispensable in short-run macroeconomic analysis and management [but] it is *wholly unsuitable for … identifying sustainable development*." Rather, "in order to judge whether the path of economic development [nations] choose to follow is sustainable, [they] need to adopt a system of economic accounts that records an *inclusive*[6] *measure of their wealth*" (Dasgupta, 2021, p. 5, emphasis added).

A growing number of experts—including those at the UN Environment Programme and the World Bank—agree with this idea (see, among others, Agarwala et al., 2020; Arrow et al., 2012; Dasgupta 2001, 2012, 2014, 2021; Dasgupta & Mäler, 2000; Hamilton & Clemens, 1999; Kurniawan & Managi, 2018; Lange et al., 2018; Polasky et al., 2015; Stockholm Environment Institute & Council on Energy, Environment and Water, 2022; Smith et al.,

[4] For example, the Human Development Index and the Oxford Multi-dimensional Poverty Index.

[5] One of the earliest such proposals was the "measure of economic welfare" of Nordhaus and Tobin (1972), which built upon GDP by adjusting it to account for household non-market production, the value of leisure time, and welfare-reducing disamenities of urban life. Later efforts like the "index of sustainable economic welfare" and the "genuine progress index" built upon Nordhaus and Tobin's work (International Monetary Fund, 2020).

[6] Though Professor Dasgupta refers here to "inclusive" wealth, "comprehensive" could have been used without changing the intent.

2016, 2018; United Kingdom Office for National Statistics, 2022; UNEP, 2018; UNU–IHDP & UNEP, 2012, 2014, 2021; World Bank, 2011; and Zenghelis et al., 2020). They argue that decision-makers need to focus as much (if not more) on *wealth* as on GDP to ensure sustainability. They note that it is not enough to focus on wealth as traditionally understood. Rather, in addition to the traditional wealth components of produced and financial capital, they argue countries must also track the evolution of their human, natural, and social capital. As already noted, this broad portfolio of assets goes by the name *comprehensive wealth* to reflect the fact that it covers all types of assets. The assets that make up the CW portfolio—such as healthy ecosystems, strong communities, educated citizens, high-quality buildings and infrastructure, and sound financial holdings—are what countries need to generate well-being for their citizens, both today and in the future. A sound national CW portfolio is the basis for clean air and water, social trust, a productive workforce, and a vibrant financial sector, among many other elements of well-being. Because the assets of the CW portfolio are long-lived, they can generate well-being not just today but far into the future if they are properly managed.

As a means of moving beyond GDP, CW measures have much to offer. Like GDP, they are concise. Just a few high-level indicators suffice to measure a country's CW portfolio (see below for more on how CW is measured). CW is also robust, supported by a theoretical foundation and guidance that goes back over a century. And, as noted, it is relevant to well-being across all its dimensions—economic, social, and environmental.

Though not everyone will be familiar with CW, most people will grasp its importance intuitively. People understand that, in the long run, their well-being is not determined by how much they earn today but by their capacity to earn tomorrow and beyond. They also understand that more than money matters to their well-being. What they "earn" more broadly through interacting with family and neighbours, enjoying the benefits of nature, and feeling safe in their communities also counts greatly. Even though they might not use the term "assets," they grasp that it is their assets that determine their long-term earning potential, both monetary and non-monetary. These assets include both what they might possess personally (a home and property; money in the bank; skills, knowledge and experience; relations with family, friends, and society at large, etc.) and the assets they share with other citizens, such as healthy ecosystems and efficient public infrastructure. Together, these personal and shared assets make up each person's CW portfolio—and determine their prospects for long-term well-being. People understand that their personal wealth portfolios must be maintained if their well-being is to be sustained in the future. This is the root of the old idea of "saving a penny for a rainy day."

The same is true for countries: national wealth determines the prospects for the long-term well-being of countries and their citizens. A country's CW portfolio comprises the individual portfolios of its citizens and businesses plus the public assets owned collectively. As with individuals, national wealth portfolios must be maintained over time for well-being to be sustained. If wealth is not maintained, a country will erode its productive base by living off its inheritance rather than building for the future. That is the essence of unsustainability.

An obvious question is "What exactly must be maintained to preserve and enhance wealth?" The total number of factories, cars, educated workers, trees, lakes, mineral deposits, corporate shares, savings bonds, and engaged, trusting citizens? In some sense, yes. But this is not a

very useful way to think about it. One pitfall is that it would be cumbersome to track all these things individually. More importantly, it would be difficult to compare them against one another. How does a factory compare against a hectare of trees in terms of supporting well-being? Are citizens better or worse off if they own more corporate shares but levels of community trust fall?

Box 2. Measuring comprehensive wealth is a necessary but not sufficient condition for achieving sustainable well-being

We argue, along with others, that assessing progress toward sustainable well-being is not possible without measuring CW, since the assets it comprises are the basis for long-term well-being. Well-being is sustainable only when its pursuit does not undermine the basis on which it rests. Whether this is occurring in a particular situation cannot be determined without tracking and monitoring the assets that make up the CW portfolio.

Thus, CW is a *necessary* part of any measurement framework beyond GDP. But it is not *sufficient*. It is not enough to simply know how big the CW portfolio is. It is essential, as well, to know how successful countries are at turning their wealth into well-being-enhancing flows today. Such flows come in the form of goods and services produced by using the assets of the CW portfolio in production activities within and outside the market. The benefits of the goods and services produced within the market are already captured by GDP, which is why GDP remains essential to measuring progress. What GDP does not capture are the benefits of goods and services generated outside the market. Examples include not only the benefits of natural capital (e.g., clean air and water) but also those of social capital (e.g., community safety civic and mutual trust).

A comprehensive and adequate framework for assessing progress would therefore include CW indicators, GDP, and a few additional indicators that focus on well-being benefits not captured by the market. The purpose here is not to detail these other indicators but to acknowledge their importance in any effort to go beyond GDP. Similar to CW indicators, these additional metrics must be concise, robust, and relevant if they are to gain acceptance by decision-makers.

The problems of measurement and comparability are greatly reduced if all assets are measured using the same yardstick. Practically speaking, this means using monetary values (or "shadow prices"[7]) whenever possible. Monetary valuation permits most of the CW portfolio to be measured using just a handful of indicators. Of course, not all elements of the CW portfolio can, or should, be valued. Social capital, in particular, is likely best measured using non-monetary indicators, at least for now.[8] The same is true of elements of natural capital, such as unique ecosystems for which no known substitutes exist. Thus, a complete wealth measurement system would comprise monetary indicators of assets amenable to valuation

[7] Shadow prices are monetary units that reflect the relative value of different assets in generating well-being "at the margin." They are not readily observed, though in some cases they can be approximated with market prices. They are measurable using models, though this can be challenging.

[8] It should be noted that research on the valuation of social capital is being undertaken. See, for example, Hamilton et al., 2016.

(the majority) plus a limited number of non-monetary indicators related to social and natural capital. This would represent a robust *and concise* addition to decision-makers' toolboxes. If decision-makers focused on this small suite of indicators, in addition to GDP and a limited number of other flow-related indicators (see Box 2), it would lead to more sustainable policy outcomes than today's approach in which achieving GDP growth counts above most else.

3.0 Results

The primary objective of this project was, as noted, to determine the feasibility of compiling CW measures for Ethiopia, Indonesia, and Trinidad and Tobago using national data sources and methods similar to those used by IISD (Smith et al., 2016, 2018) in the study of Canadian CW. On this question, our conclusion is substantially affirmative. We found most of the data required to compile annual CW measures from 1995 to 2020 in all three countries. The data were generally available from national statistical offices and central banks. Often, they were available for download from government websites though in some instances we had to rely on direct contact with officials to obtain data. In a few instances, only paper-based copies of the data were available and these had to be transcribed into electronic databases. In the relatively few instances where data were not available directly from national sources, we relied on international sources, such as the World Bank and UN. In many instances, the data we obtained from these organizations had originated from national sources, so these were essentially national data accessed through a third party. Only a small amount of the data required came from international sources and did not originate from a national source.

The second objective of the project was to determine whether the compilation of CW measures reveals anything of importance about the countries' development paths not already apparent from GDP data. Again, our conclusion is affirmative. As discussed below, we discovered trends in all three countries that tell stories about their development quite different from those told by GDP. In the case of Trinidad and Tobago, we found evidence of unsustainable depletion of natural capital leading to a loss of well-being. Our findings confirmed that CW is, as theory suggests, a valuable tool for predicting declines in future well-being when wealth is not maintained, as CW declined long before income did.

In Indonesia, though we did not find evidence of declining well-being, we did find that well-being could be higher than it is today if wealth was better managed. The key insight here is that development is—contrary to the thinking behind the GDP growth paradigm—first and foremost a matter of properly managing a nation's portfolio of assets. Indonesia could truly benefit from employing this "new economic grammar" (Dasgupta and Levin, 2023) in its policies, as we found instances where the country is, to use a common expression, "leaving money on the table" through inefficient use of its wealth.

In Ethiopia, the challenge is neither declining well-being nor inefficiency in the use of wealth—the country is doing well on those fronts—but low levels of wealth overall and misallocation of the investment needed to boost it.

All these findings are important, and none of them are evident when GDP is the primary gauge of national success. We contend that the citizens of these countries would be better off if their governments compiled CW measures and used them, alongside GDP, to guide decision-making with a focus on ensuring long-term well-being first and short-term benefits second.

Before discussing our results in more detail, it is important to outline how we measured CW. We did so in real (that is, inflation-adjusted) per capita values[9] using 2017 as the base year for the real values.[10] Below we refer to these real per capita values as the *comprehensive wealth index* (CWI). We also refer to various sub-indexes of the CWI—for example, the human capital index. To facilitate the comparison of results across the countries, the CWI and its various sub-indexes are presented below in U.S. dollars converted from local currency units using the relevant 2017 purchasing power parity exchange rate (PPP–USD).[11] We also refer to real per capita GDP figures expressed in 2017 PPP–USD for each country and, for ease of expression, refer to these as the country's GDP index (GDPI).

3.1 Trinidad and Tobago

Our results for Trinidad and Tobago reveal worrisome trends in the country's development. Moreover, what we found runs counter to the story told by its GDPI. While the GDPI suggests sound economic development overall in Trinidad and Tobago from 1995 to 2020, its CWI paints a picture of moderate progress at best. The GDPI grew by more than 112% over the 25 years studied. During the same time, the CWI grew by just 11%.[12] The trends in the CWI in the latter half of the study period, in particular, raise concerns about the sustainability of well-being in Trinidad and Tobago (see Figure 1).

The low growth in the CWI was related to the country's overreliance on a depletable and volatile natural resource—fossil fuel—as the basis of its national wealth. Following the 2008 global financial crisis, Trinidad and Tobago's CWI began a steady decline to 2020, falling 3.6% annually on average during these years. This was driven by a dramatic drop in the value of the country's fossil fuel assets, which had lost essentially all their value by 2019. This outcome was due to a combination of rising costs, falling production, dwindling reserves, and low prices. The country's *human capital index* also suffered an important decline, falling from a high of USD 217,800 in 2008 to USD 155,300 in 2020 (a 29% decline in total).

It is not known what happened to Trinidad and Tobago's CWI in the years after 2020 (the end of our study period). If the declines witnessed up to 2020 persisted, there are reasons to believe that the well-being of the average citizen today is considerably below what it was just 15 years ago and may be permanently so. Certainly, there were signs already in 2020

[9] Real per capita values were used because it is those that, according to theory, are a nearly ideal measure of the sustainability of well-being. We say "nearly ideal" because even when measured according to theory (that is, using shadow prices rather than market prices and covering every asset that contributes to well-being), there will remain some elements of well-being that are not derived from the benefits of owning and using assets (such as pure spiritual well-being).

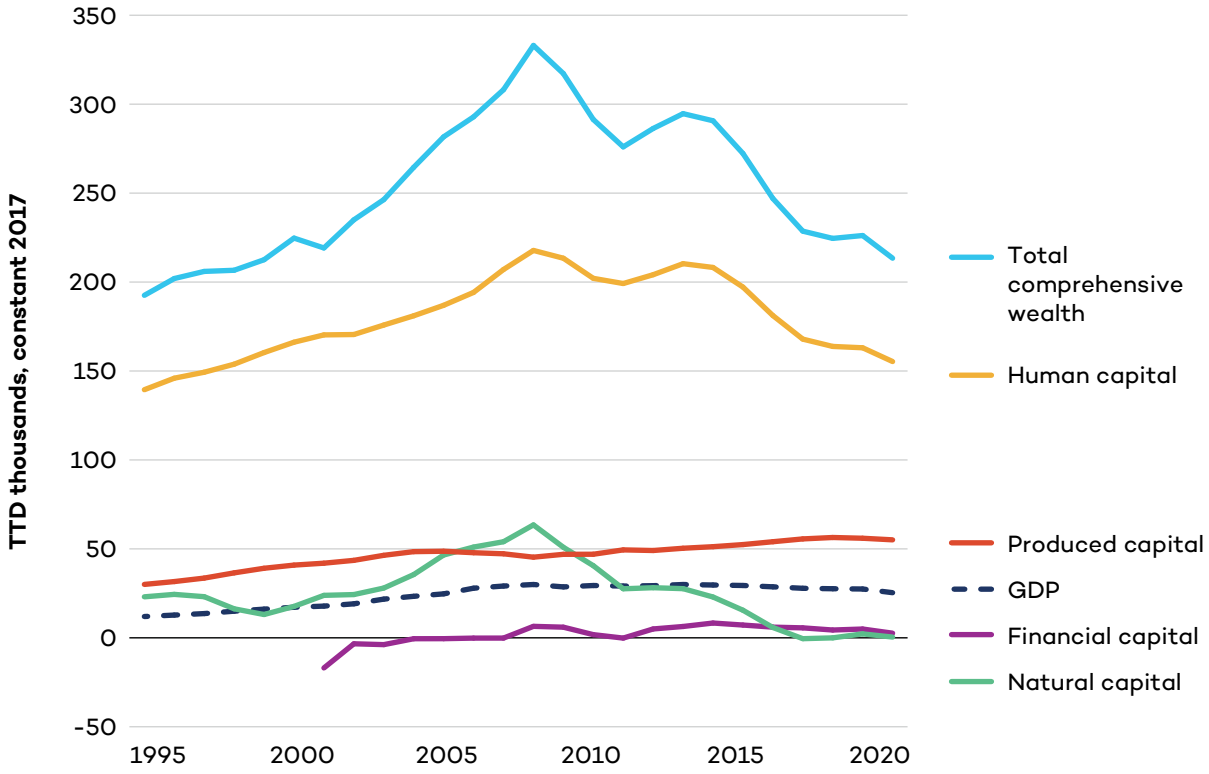
[10] We derived real asset values by deflating our estimated nominal asset values using the consumer price index of the country in question.

[11] The 2017 purchasing power parity exchange rate values for each country were taken from the World Bank. We took 2017 as the base year for the project since that is the most recent year for which the World Bank has PPP values based on direct survey data in its international price comparison project.

[12] Specifically, real GDP per capita grew from USD 11,960 in 1995 to USD 25,400 in 2020. The corresponding figures for the CWI are USD 192,500 and USD 213,400.

that at least one measure of well-being—market income as measured by GDPI—had fallen considerably by 2020. Though the GDPI held steady after 2008, it began to fall in 2014. It fell less[13] than the CWI, however (see Figure 1).

Figure 1. Trinidad and Tobago – Strong signals of unsustainability



Source: Authors' calculations based on data from the Central Bank of Trinidad and Tobago, Central Statistical Office, National archive, Ministry of Energy and Energy Industries, World Bank, FAOSTAT, and Economic Commission for Latin America and the Caribbean.

The fact that the GDPI's decline began 5 years after the CWI's and that the GDPI's was less significant shows the value of the CWI as an indicator of future well-being. A stakeholder considering Trinidad and Tobago's GDPI performance during the period from 2008 to 2013 might have been a bit concerned by the slight downturn in 2009, but not really alarmed. Though the GDPI stagnated for a few years, it did not begin falling consistently until 2013. What that observer would not have known, however, was that the CWI had declined by 12% between 2008 and 2013. This decline proved telling, as it presaged the 15% decline in the GDPI that began in 2013 and continued unabated to 2020.[14]

[13] Real GDP per capita fell, on average, by 1.3% annually from 2008 to 2020 compared with the 3.6% average annual drop in the CWI.

[14] The decline in real GDP per capita continued in 2021 but was reversed in 2022, the last full year for which data on real GDP are available from the Trinidad and Tobago Central Statistical Office. Real GDP per capita in 2022 remained far below its 2008 peak, however.

In other words, the CWI was—as early as 2009—telling an important part of Trinidad and Tobago's development story that the GDPI was not. The CWI revealed the extent to which the country's GDPI was being maintained in the years after 2008 by the unsustainable depletion of its wealth, especially its fossil fuel assets. As theory would suggest, this wealth depletion eventually led to declines in well-being (at least, that part of well-being measurable by the GDPI). It is possible that other elements of well-being were declining as well—for example, the non-market well-being associated with human and social capital.

The experience of Trinidad and Tobago highlights the risks associated with overreliance on depletable resources such as oil and gas for development, especially when GDP is used as the main measure of national success. The growth of the country's fossil fuel sector led to excessive investment in the petroleum industry, skewing too much of the country's wealth—human, produced, natural, and financial—in that direction. Investment in non-oil sectors, including agriculture, the fishery, and forestry, received too little attention as a result. It is a classic story of "too many eggs in one basket." This story and its consequences for long-term well-being was, of course, not fully clear to Trinidadians and Tobagonians as it unfolded. Most of the news they would have received would have been about GDP growth, which gave the appearance that development was sound until long after it was not. Had CWI measures been available, politicians, journalists, academics, and the public would have known earlier that their well-being was in jeopardy, giving them more time to plan and execute a strategy to deal with the consequences of their declining fossil fuel wealth.

3.2 Indonesia

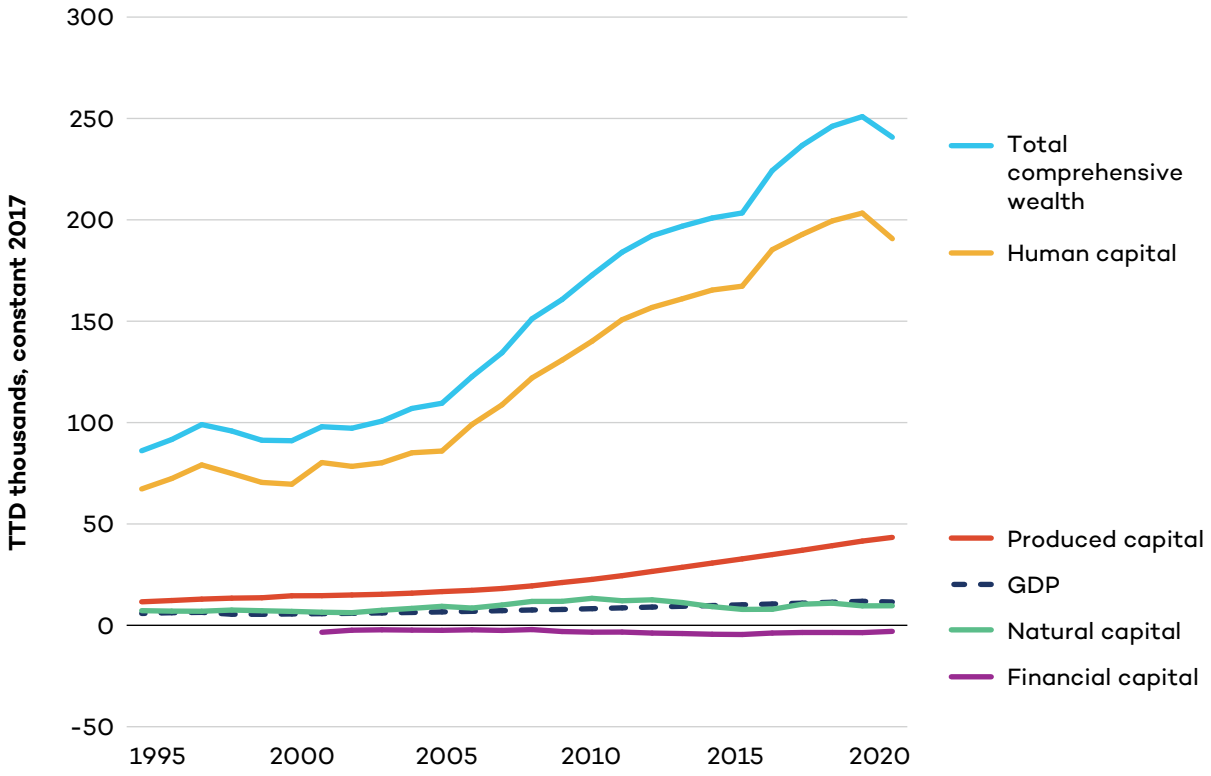
Over the 25 years from 1995 to 2020, Indonesia's CWI nearly tripled, increasing from USD 86,100 in 1995 to USD 240,750 in 2020 (see Figure 2). This corresponded to an average annual growth rate of 4.3%. Most growth came from increases in the value of Indonesia's human and produced capital indexes, which grew at average annual rates of 4.4% and 5.0% respectively. The country's natural capital index, in contrast, hardly changed over the period. The financial capital index, for its part, was also essentially flat and, since Indonesia is a net debtor country,[15] was a drag on overall wealth, though a small one.

In contrast to the CWI's 4.3% annual growth, Indonesia's GDPI grew considerably more slowly. The GDPI grew from USD 5,860 to USD 11,500, for an average annual growth rate of just 2.8%. The relatively slow growth of Indonesia's GDPI compared with its CWI suggests the country has not benefited as much from its increasing wealth as it might have. Indeed, in 1995, Indonesia created USD 68,000 of GDP for every million dollars in real wealth (a rate of return on wealth of 6.8%), but this figure had fallen to USD 47,800 by 2020 (a rate of return of 4.8%). This trend runs counter to what a country would normally hope to achieve as its development proceeds. As time goes by and an economy and society become more advanced, the income generated from a unit of wealth should, ideally, increase. In Indonesia, it fell.

[15] The financial capital index is measured by the country's international investment position, which is the difference between the foreign financial assets it owns and its financial liabilities to foreigners. If the financial capital index is positive, this means the country is a net lender and its foreign financial assets are more valuable than its financial liabilities to foreigners.

Assessing the reasons for Indonesia not fully realizing the benefits of the growth in its wealth was beyond the scope of the project. The main benefit of our results is in making this finding apparent, which is possible only when CW measures are compiled. By showing that Indonesia is not benefiting from the growth in its wealth as much as it might, the CWI provides a window into the possibilities for the country if it were to better manage its assets. Had Indonesia simply maintained the rate of return it enjoyed on its wealth in 1995, it would have earned 42% more income in 2020 than it did. That additional income would have been sufficient to push Indonesia solidly into the World Bank's class of upper-middle-income nations, placing the country closer to achieving the goal of achieving high-income status by 2045 (Ministry of National Development Planning/Bappenas, 2019).[16]

Figure 2. Indonesia – Increased wealth not fully translating into increased income



Source: Authors' calculations based on data from BPS-Statistics Indonesia, Bank Indonesia, Ministry of Agriculture, Ministry of Environment and Forestry, FAO, World Bank Data Bank, U.S. Geological Survey.

[16] The World Bank judges countries' income status on the basis of gross national income (GNI) per capita measured in nominal U.S. dollars converted at market exchange rates (GNI is a measure similar to GDP but accounting for Indonesian income earned abroad). In 2020, Indonesia's GNI per capita by this measure was USD 3,900, which placed it just below the World Bank's threshold of upper-middle-income status for that year (USD 4,096). Had Indonesia maintained its 1995 return on wealth in 2020, its GNI per capita in that year would have been closer to USD 5,500. The World Bank's threshold for consideration as a high-income country in 2020 was USD 12,695, so Indonesia would have been closer to its goal but still a good distance from reaching it.

Although we were not able to fully investigate the reasons for Indonesia's income shortfall, evidence suggests that one concern is the failure of the country to realize the full potential of its natural resource wealth. As one example, Indonesia appears to be less successful in creating wealth from its commercial timber stocks than similar countries. Malaysia, for example, generated six times more wealth for every tree harvested for commercial use in 2018.[17] Further, though Indonesia ranks among the top global producers of timber, fish, coal, natural gas, oil, nickel, gold, tin, and copper, it ranked only 14th in terms of aggregate natural resource wealth and 79th in per capita terms in 2018, according to the World Bank (2021). Brazilians benefited from almost twice as much natural capital per capita as Indonesians in that year. Chinese citizens enjoyed nearly six times as much.

These results suggest that Indonesia is not managing its natural capital as effectively as it might have and, therefore, is foregoing income that it might have otherwise benefited from. As noted, the extra income it could earn by better managing its forests and other natural capital could help it escape the middle-income trap. For example, if it managed to generate the same wealth per commercial tree harvested as Malaysia, that alone would have boosted its CWI in that year by about USD 2,500.

Development should be seen first and foremost as a process of comprehensive wealth portfolio management (Dasgupta and Levin, 2023). Some countries do better at this than others. Those that do better can enjoy higher living standards from the same asset base. Indonesia could be one of those countries, but currently, it is not. Regularly compiling and using CW accounts to guide policy-making would be a wise step in that direction.

3.3 Ethiopia

Like Indonesia, Ethiopia made substantial progress in expanding its CWI between 1995 and 2020[18] despite facing social, economic, and environmental challenges (see Figure 3). The CWI more than doubled over the period from USD 11,000 to USD 24,470, growing annually at an average rate of 3.4%. In later years, there was a reversal of this generally positive trend, with the CWI declining in 2019 and 2020. Despite the generally upward trend, Ethiopia's CWI remained very low relative to those of Trinidad and Tobago and Indonesia. The average Ethiopian benefited from only about one tenth as much wealth as typical citizens in those other countries. This is consistent with the findings of the World Bank (2021), which ranked Ethiopia as the 13th-poorest country in the world in terms of CW in 2018. The country's low level of wealth is one important reason why Ethiopia chronically falls into the low-income category according to the World Bank's classification.

Despite its low levels of wealth, Ethiopia did well in increasing the well-being it derives from its wealth over time. Unlike Indonesia, which generated considerably more income per million U.S. dollars of wealth in 1995 than in 2020, Ethiopia steadily increased this ratio. In 1995, Ethiopia generated USD 60,900 of income for every million dollars in wealth, a bit less than the USD 68,000 Indonesia accomplished. By 2020, this value had risen to USD

[17] Based on data on timber production from the FAO Forestry Production and Trade database and data on timber wealth from the World Bank (2021).

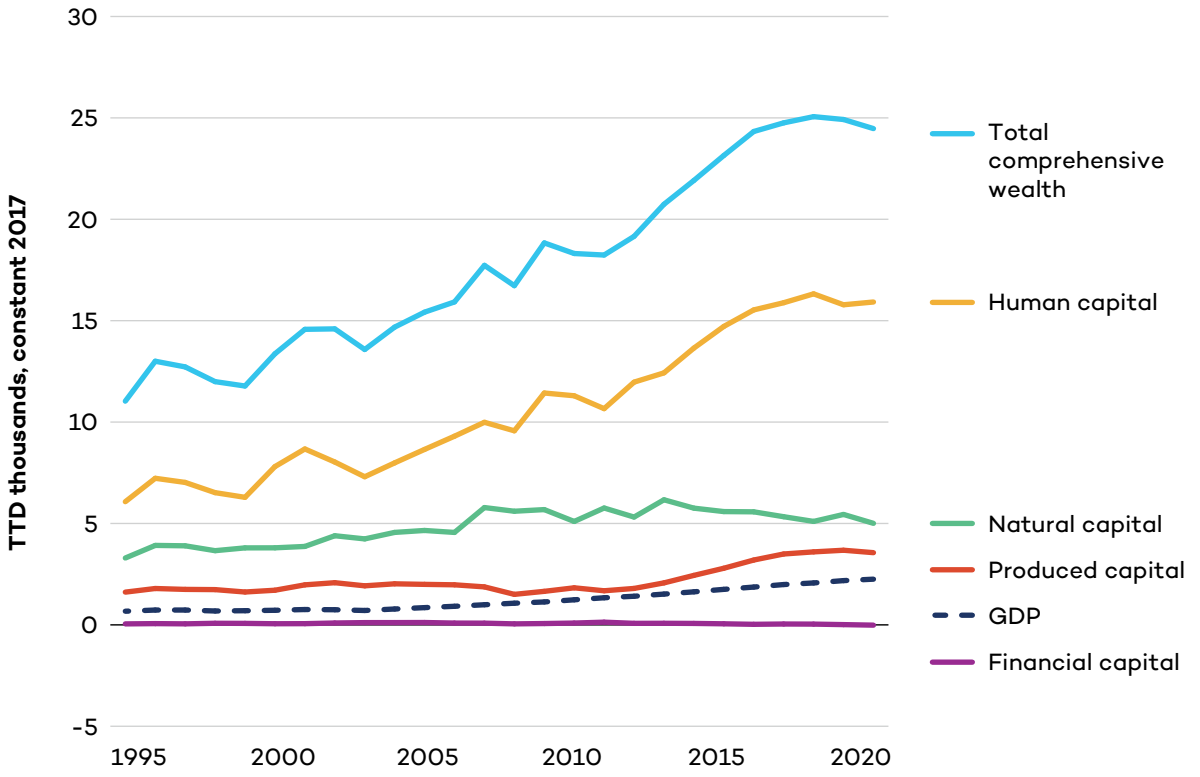
[18] Ethiopian statistics are generally presented for fiscal rather than calendar years. For ease of exposition, we refer to calendar years here, taking the Ethiopian fiscal year 1994/95 to represent 1995 and so on.

92,100 in Ethiopia and fallen to USD 47,500 in Indonesia. This finding, which, again, is apparent only when CW data are available for the country, suggests that Ethiopia's biggest challenge is increasing its wealth rather than improving the efficiency with which it converts wealth into income.

Human capital was the main driver of growth in the Ethiopia's CWI, but most of its human capital is found in the agriculture, forestry, and retail trade sectors.[19] The country's efforts to increase its CWI should prioritize enhancing the productivity of human capital in these sectors and growing it in other sectors where it will yield greater well-being gains.

Natural capital is the second largest contributor to Ethiopia's CWI, most of it again concentrated in agriculture in the form of farmland. Growing this wealth by enhancing productivity in agriculture through targeted investments in sustainable land management and/or nature-based solutions should be a priority.

Figure 3. Ethiopia – Impressive gains but wealth remains far below others



Source: Authors' calculations based on data from Central Statistical Agency, Ministry of Finance, National Bank of Ethiopia, Natural Gum Production and Marketing Enterprise (NGPME), Economy Watch, the World Bank, and FAO.

[19] For details of the breakdown of wealth by economic sector in Ethiopia, see the accompanying detailed country report, which is available here.

Unlike in Indonesia and Trinidad and Tobago, where produced capital was the second largest contributor to the CWI after human capital, in Ethiopia it placed third, reflecting the country's low level of industrial development. Although the agricultural sector is dominant in terms of both human and natural capital, investment in produced capital in the agriculture industry grew at a relatively low rate compared to other sectors that contribute less to real GDP. The agricultural sector remains dominated by traditional farming technologies (such as ox-powered plows). A focus on increased investment in produced capital in the agricultural sector to increase the productivity of the sector and its contribution to the economy would, arguably, be Ethiopia's most effective policy for quickly increasing its CWI. The service, education, and health sectors all accounted for small percentages of the stock of produced capital, and these low levels of investment will also constrain the future development of the country's human capital.

3.4 Non-Market Wealth

In addition to the results discussed above, we also compiled data on non-market forms of wealth—specifically, non-market natural capital and social capital. Regarding the former, we focused on simple biophysical indicators related to climate variables and the extent of key ecosystems, given the importance of each in maintaining the functioning of natural systems to which all economies and societies have become adapted (Young & Steffan, 2009; National Oceanic and Atmospheric Administration, 2023).

Data for non-market wealth were more difficult to come across, and we have not answered questions about the sustainability of non-market natural capital or social capital in anything close to a definitive way. With that caveat in mind, we can report that the trends in the climate indicators we compiled[20] were consistent with the expected impacts of climate change. Similarly, our indicators of ecosystem extent all suggested increasing pressure on key ecosystems from expanding human populations. As for social capital, drawing any conclusions based on the data we compiled is difficult due to gaps and inconsistencies. At most, we can report that there is no clear evidence of meaningful change in one direction or the other in terms of social capital in any of the three countries.

[20] We compiled two climate indicators for each country, one focused on the departure of average annual surface air temperatures from the 30-year normal and the other focused on the same thing but for precipitation.

4.0 Future Work and Recommendations

Though the goals of the project were largely affirmed through our results, the data we compiled remain inadequate in several ways. This is to be expected. National statistical offices around the world employ large teams of statisticians and economists to compile monthly, quarterly, and annual estimates of GDP. The resources available for this study were tiny in comparison, so it stands to reason that inadequacies would emerge. Further, GDP has been compiled for over 75 years now, so countries have invested large amounts of time and effort in the collection of the required input data. The same is not true of the input data required to compile CW. Neither of these concerns will disappear until governments commit to the compilation of CW measures, a point we take up below.

4.1 Future Work

Regarding the methods we used in the study, three areas stand out as targets for future work. The first is the measurement of human capital. Due to resource and data constraints, we were obliged to adopt a simplified approach to measuring human capital rather than the more sophisticated but data-demanding method known as the lifetime income approach (Jorgenson & Fraumeni, 1989). Our approach rested on the estimation of aggregate returns to human capital in the form of labour compensation, which we obtained from national accounts data.[21] This resulted in estimates of human capital that were more closely correlated with GDP trends than we would have liked and that lacked important detail in terms of gender, age, and level of education. Future work should, ideally, adopt the lifetime income approach to overcome this problem. To that end, a helpful step would be for human capital experts to undertake studies in any of the three countries to see whether the data required to compile lifetime income-based estimates can be obtained.

Second, it would be important to improve our estimates of non-market wealth. Ecosystems and social capital contribute in many ways—arguably the most important ways—to human well-being, and we are not satisfied that our results capture the trends in these assets adequately. Again, a helpful step would be for natural and social capital experts could study the non-market assets in these countries and improve on our rudimentary estimates. Among other goals, improving the disaggregation of social capital data by community group (including for Indigenous communities) would be important.

Finally, an improved method for measuring assets in inflation-adjusted values should be explored. Our approach of deflating nominal asset values by the consumer price index is unsatisfactory in several ways. For one, the consumer price index is not a suitable deflator, as the goods and services considered in its compilation do not generally include the assets

[21] We took labour compensation to be the sum of the variable "compensation of employees" from the national accounts of each country plus a varying share of the variable "mixed income." We assumed shares of mixed income that reflected the degree to which mixed income was thought to be split between returns to human capital (wages) and returns to produced capital (operating surplus accruing to business owners). In service industries, where most mixed income would be returns to human capital, these shares were high (80%–90%). In industries outside the service sector, the shares were generally lower, reflecting the greater use of produced capital in those industries.

measured in CW. For another, the consumer price index treats all assets as though they are simply "stores of value" that can be readily sold and converted into income to support consumption. This is, arguably, true only in the case of financial assets, which serve no other purpose than as stores of value. All other assets in the CW portfolio are better thought of as "instruments of production." For these, what matters most for sustainability analysis is the trends in their quantities. Economists refer to these quantities as "volumes," and there is an entire branch of the field devoted to the theory and practice of measuring the volume of assets (mainly focused on produced capital measures) over time using price-weighted indexes. Adjustment for inflation, through the use of such a volume index, should be considered in future work.

4.2 Recommendations

We believe our results demonstrate the value CW measures could have for the three countries considered. Yet, because such measures are not regularly compiled in any of the countries—or in practically any country for that matter[22]—their citizens and leaders are not as aware as they should be of the situations they face. A change in the measures used to guide decision-making is thus called for. Ethiopia, Indonesia, and Trinidad and Tobago—along with all other countries—should, with urgency, begin compiling and using CW measures as part of their decision-making toolkits. To this end, the following steps toward the integration of CW measures into policy-making are recommended:

Informing Decision-Makers About Comprehensive Wealth

Senior decision-makers in government departments with central and cross-cutting roles should inform themselves of the importance of moving beyond GDP and the reasons why CW is a key step in this direction. The arguments should make it clear that CW is not meant to replace GDP but to complement it to improve decision-making. By working with both CW and GDP, decision-makers would be better equipped to balance short- and long-term considerations.

Compiling Official Estimates of Comprehensive Wealth

National statistical offices should be mandated and funded to begin the regular measurement of CW. Depending on the available financial and human resources, the work could initially focus on produced capital, financial capital, and the part of natural capital related to commercial natural resources (e.g., timber, minerals, oil, and gas). Because the management of wealth touches all sectors of the economy and society, it is essential that ministries support the compilation of data and analysis by the statistical office.

[22] The only country that approaches having a compilation of a set of CW measures as laid out in this report is the United Kingdom through its Office of National Statistics, and there it has only been part of the regular statistical work program in the last 2 years (Heys, 2022). The country that comes next closest is New Zealand, where the statistical office measures the elements of "future well-being" as part of its well-being indicators initiative (Treasury of New Zealand, 2022). The New Zealand initiative does not include a monetary estimate of human capital, however, making it of limited value for the kind of analysis undertaken in this report.

Using Comprehensive Wealth for Decision-Making

The last step is a commitment to integrate CW measures into government decision-making and processes. The measures should be used to shape new policies and/or to revise existing ones, with a focus on ensuring long-term well-being first and short-term benefits second.

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