Beyond GDP

The idea of global sustainability accounting

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Dedication and Acknowledgement: This brief is dedicated to the memory of Dr. Michael Bordt, former Regional Advisor on Environment Statistics at ESCAP and Adjunct Professor at the University of Ottawa, Department of Geography, Environment and Geomatics. Michael tragically passed away on August 5, 2021 and is very much missed by his family and colleagues. He is the lead author of Table 1, the SDG typology, and much of the rest of the text. I worked very closely with him for years and we developed the ethical perspectives together. I took the liberty to finalize this brief as best as I could. I very much appreciate the comments and support from Rikke Munk Hansen, as well as comments by Robert Smith, Ben Cashore and Ryan Katz-Rosene.

– Marc Saner.
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Beyond GDP: The Idea of Global Sustainability Accounting
Abstract

To illustrate the idea of global sustainability accounting, we propose a new ledger that shows a highly aggregated and inclusive approach. With this, we respond to the call for new measures to complement GDP by the UN Secretary General. Our approach highlights the tension between human-centered and ecosystem-centered value systems. The ledger is also explicit about disservices the environment may provide to humans, and services that humans may provide to the environment (both can easily be absent in sustainability indicators). We believe that this approach will support debates that are inclusive of diverging environmental value systems and of diverging attitudes toward ecosystem restoration and technology. Most of all, it delivers an account that can compete with the seductive simplicity of GDP.

Keywords: GDP, sustainability accounting, SDGs, SDG indicators
In this brief, we argue for the utility of a highly aggregated approach to global sustainability accounting as a means of clearly measuring progress in efforts to achieve the Sustainable Development Goals (SDGs). We hope that this idea is helpful in the context of the recent “call for new measures to complement GDP” by the UN Secretary General (UN 2021).

Our highly aggregated approach should be seen in addition to—rather than in competition with—fine-tuned, specific, disaggregated accounting systems. Also, we present and defend a final product rather than a precise path to get there. This vision is aimed at both users and producers of sustainability accounts and should motivate collaboration.

Our vision is inspired by the success of GDP. We are fully aware of the limitations of GDP estimates, but we also notice that this indicator is internationally used by politicians of all stripes. GDP on its own provides a simplistic measure that tells politicians and the public if economic matters are looking up or down. An environmental account that is nearly as simple would be equally attractive (van den Bergh, 2022).

In analogy to the market-centric GDP, those who champion the much broader SDGs (United Nations, 2014a) will depend on a knowledge system that extends from individual data elements to high-level aggregates, particularly if they adhere to the adage that “what gets measured gets managed.” The problem is the SDGs currently have 232 unique indicators, and each would have to be tracked to assess progress along the 169 targets of the 17 goals (United Nations Statistics Division, 2019).

This disaggregated approach provides precision but quickly becomes overwhelming for those who need clear communications with the public and in the setting of international diplomacy.

Numerous global sustainability accounts in support of the SDGs are being developed (United Nations et al., 2014b; European Union, 2018; Landers & Nahlik, 2013; Bordt & Saner, 2018, 2019). However, we do not currently have a comprehensive and coherent accounting system across all SDGs. The top-down approach used in the Sustainable Development Index (Hickel, 2020) has a similar aim, but relies on only two measures (CO₂ and material footprint) instead of aggregating existing human and ecosystem data that rest in national accounts. Existing national indicator systems are in various stages of development and often incommensurable (Bidarbakht-Nia, 2018; Bordt, 2018). Existing statistical measurement frameworks focus on economic accounting (United Nations Statistics Division, 2008), individual indicators (United Nations Statistics Division, 2013), environmental-economic accounting (United Nations et al., 2014b) or ecosystem accounting (United Nations et al., 2014c) and are incomplete with respect to the breadth of human values and components of the environment covered (Bordt & Saner, 2018). What is needed, then, is a highly aggregated measure; one that can draw on existing data on human and ecosystem well-being.
One approach for going “beyond GDP” is to include environmental concerns by monetizing externalities and including them into existing GDP estimates. A price on carbon emissions is an example. This approach benefits from the popularity of GDP as a measure of success, but we find it overly human-centered. We believe that we can do better than a single, human-centered (anthropocentric) measure.

A second approach is triple bottom-line accounting (Elkington, 1997). The three units of attention, sometimes paraphrased as “people, planet, prosperity” or “equity, environment, economy”, were brought to global awareness by the Brundtland report (World Commission on Environment and Development, 1987). The triple bottom-line widens the attention from a single financial bottom-line by including social and green bottom lines, which is indeed more inclusive of environmental concerns. We believe, however, that the three units represent a back-handed way to keep attention on human affairs by allocating two 2/3 to our species (economy, equity) and 1/3 to the remaining planet (environment) that harbors over 8 million species (Sweetlove, 2011) within complex, dynamic abiotic systems.

We propose a third approach, a dual system that keeps track of “human well-being” and “ecosystem well-being” symmetrically, in parallel. This provides a constant dual focus of attention on both anthropocentric and non-anthropocentric value-systems. Showing non-anthropocentric measures parallel to the traditional anthropocentric measures should improve acceptance by environmentalists of all stripes (“shallow” or “deep”; Naess, 1973; Norton, 1991). We have argued elsewhere for the importance of building consensus on earth measurements (Saner & Bordt, 2016). The simplicity of the approach, we hope, would also address concerns regarding complex “dashboards” and the emergence of a “cottage industry” with “with hundreds of different “products” [addressing beyond GDP needs]” (Hoekstra, 2019, p. 10).

To accomplish these important goals, the evidentiary basis for decisions should reflect the full breadth of value systems in a simple way. In the context of environmental ethics, these value systems are commonly represented as diverging between anthropocentric and non-anthropocentric viewpoints. A symmetrical accounting system emphasis these two value-systems equally: people (including our prosperity) and planet get equal space in the account. We are aware that many users and producers of sustainability statistics will be accustomed to triple-bottom line accounting and the corresponding Venn diagram. It may require some perseverance to communicate that the economy is a human-made tool rather than an end-in-itself. In our ethical belief system, both humans and ecosystems are ends-in-themselves: they have “intrinsic value.” In contrast, the economy only has “instrumental value”, but with the important ability to support both
human- and ecosystem well-being. It is for this reason, that we promote two, rather than three bottom lines.

Similarly important is the symmetrical, parallel recording of human and ecological services and disservices. The system we propose shows measures of ecosystem disservices in parallel with ecosystem services (i.e., the ecosystem is not always benign; for example, it harbors pandemics) and, similarly, human disservices in parallel with human services (i.e., we are of course capable of harming ecosystems, but we are also able to improve them). This should improve acceptance by both techno-pessimists and techno-optimists.

Some readers will be skeptical of any system that expresses strong dualisms. We are very aware of the downsides or drawing lines between “humans” and “ecosystem”, and between “services” and “disservices”. Such lines distract from the interdependence of all things and from the values embedded in any judgment. The alternative of conflation, however, seems worse, because whenever we attempted to focus on overlaps in the past (the Venn diagram is a good example), we seem to end up with a strong human-centered bias. Lip-service to environmental concerns is also our concern. The lines we draw are aimed at drawing the line on the greenwashing of anthropocentrism.

Juxtaposing the human and ecosystem perspectives, rather than collapsing one under the other, allows for a discourse that remains honest about value disagreements, rather than hiding what we see as a healthy tension. The tension may also help to make sense of the SDGs, which contain goals, objectives, instruments, and a huge array of concerns, many of which are inversely related to each other. The sustainability accounting ledger we propose below allows for debate and adjudication of these tensions rather than assuming they all go in the same direction.
Any sustainability accounting system should allow the recording, storing, analysis and reporting of foundational environmental records over time. **Table 1** provides a very basic high-level sustainability account creating a time-series of human and ecosystem well-being, as well as change over time and state. The table can be used as a pedagogical and heuristic tool particularly with super-holistic aggregates in mind (for example “pseudo-dollars”, or “exergy”, Jørgensen et al., 2010).

We deliberately present the numbers without measurement units because we do not yet have an “Esperanto” for the economics of sustainability accounting and problems with aggregation and substitution abound in practice. The measurement units in a fully developed ledger would depend on context, aggregation and substitutability assumptions used. The ledger we show below does not address the thorny “translation” problem that an aggregation of existing evidence about human and ecosystem well-being will pose, especially in the design of the base reference state. Instead, we show the end vision to motivate such translation work.

The format of **Table 1** provides decision-makers and publics quickly with a sense of “are things headed up or down, and how fast?” It visualizes the aggregation needed to discuss and decide at the planetary level on vision, perspective, and approach. Importantly, it illustrates the overall utility of sustainability accounting which should foster support for more fine-tuned, disaggregated systems that are absolutely required.

**Table 1:** Sample Sustainability Accounting Ledger.

<table>
<thead>
<tr>
<th>TIME</th>
<th>HUMAN WELL-BEING</th>
<th>ECOSYSTEM WELL-BEING</th>
<th>CHANGE</th>
<th>STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T0</strong> (Sample Base)</td>
<td>200</td>
<td>800</td>
<td>N/A</td>
<td>1000</td>
</tr>
<tr>
<td><strong>T1</strong> (Sample Loss)</td>
<td>60</td>
<td>-30</td>
<td>5</td>
<td>-100</td>
</tr>
<tr>
<td><strong>T2</strong> (Sample Stability)</td>
<td>40</td>
<td>-50</td>
<td>60</td>
<td>-50</td>
</tr>
<tr>
<td><strong>T3</strong> (Sample Gain)</td>
<td>60</td>
<td>-30</td>
<td>100</td>
<td>-5</td>
</tr>
</tbody>
</table>

This table is a pedagogical and heuristic tool. The time-series indicate principal stocks and flows starting from a reference base state (T0) over three subsequent periods (T1–T3). For each time period, two types of services and two types of disservices need to be measured and aggregated.
The sustainability accounting ledger as a typology for the SDGs

We believe that this accounting approach also provides an illustrative typology for the 17 SDGs. We show below how one might map the core 16 SDGs onto the two stocks and the two sets of flows shown in Table 1, although such mapping must remain quite inexact because several of the goals span more than one of these components. The ledger itself could be directly associated with the final Goal 17 (“Revitalize the global partnership for sustainable development”).

- “Human well-being” can be associated with SDGs 1 (No poverty); 2 (Zero hunger); 3 (Good health and well-being); 4 (Quality education); 5 (Gender equality); 8 (Decent work and economic growth); 10 (Reduced inequalities; and 16 (Peace, justice, and strong institutions) – 8 SDGs.

- “Human services and disservices” can be associated with SDGs 9 (Industry, innovation, and infrastructure); 11 (Sustainable cities and communities); 12 (Responsible production & consumption); and 13 (Climate action) – 4 SDGs.

- “Ecosystem well-being” is related to SDGs 14 (Life below water) and 15 (Life on land) – 2 SDGs.

- “Ecosystem services and disservices” is related to SDGs 6 (Clean water and sanitation) and 7 (Affordable and clean energy) – 2 SDGs.

This typology reveals a cluster of at least 12 SDGs associated with anthropocentric interests. Correspondingly, only maximally 4 SDGs, a quarter at most, are associated with non-anthropocentric interests. We do, of course, understand that the “anthropo-centric” goals will directly affect environmental protection and conservation: the goals intersect. Nevertheless, the analysis can be a useful high-level perspective as we collectively strive for a balanced and complete sustainability accounting system. That balance should be mindful of both anthropocentric and non-anthropocentric value-systems.

Our vision is that reporting on the SDGs becomes integrative and simplified. Instead of reporting progress or decline on certain individual SDGs (which invites ideological spin by commission and omission), we would like media and politicians to use a consolidated tool. In analogy to reports of economic growth or recession (indicated by two consecutive periods of GDP decline), we would hope that the consolidated, highly aggregated tool would be used in the media and other channels to indicate progression or regression towards global sustainability. For instance, the COVID-19 pandemic has had dire consequences for the SDGs, setting back numerous goals and in some cases reversing years of progress. Our proposed metric would provide a simple and clear way to express that change to the public.
Conclusion

Despite the clear risks associated with oversimplification or over-aggregation, we need tools to discuss the progress towards SDGs internationally and publicly (not only among experts). Those accounting tools should be based on all available evidence: they should aggregate a lot of information. Pedagogical and heuristic tools, such as sustainability accounting ledger, can play a role in motivating the accounting community to work toward a clear, balanced tool that would help stakeholders find common ground for a global Earth measurement (Saner & Bordt, 2016), sustainability accounting, and policy decisions. If they foster debate—and if the debate in turn fosters support of fine-tuned sustainability accounting—then we are moving in the right direction. Everyone agrees that we must mobilize all knowledges to achieve justified decisions. As Gleeson-White (2015) claimed, maybe accountants will (help) save the planet.


