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Thresholds of transformation: UNRISD sustainable development performance Indicators pilot testing - Synthesis report

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Working Paper 2022-1

Thresholds of Transformation

*UNRISD Sustainable Development
Performance Indicators Pilot Testing
—Synthesis Report*

Bill Baue with Ralph Thurm

Prepared for the UNRISD project on
Sustainable Development Performance Indicators

July 2022



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Abstract

This report **summarizes and synthesizes the outcomes of a pilot testing project** on a set of UNRISD-designed Sustainable Development Performance Indicators (SDPI) that are intended to gauge whether economic entities are on a pathway consistent with the transformative goals and vision of the 2030 Agenda for Sustainable Development. The SDPIs transcend existing indicators by assessing actual sustainability impacts against **normative, context-based thresholds** and **transformative change potential**. Participants in the pilot project included enterprises and organizations in the for-profit enterprise (FPE) and social and solidarity economy (SSE) sectors, as well as sustainability standard setters and framework providers such as the World Bank, World Benchmarking Alliance, and Impact Management Project. The findings and analysis of the project hold significant implications on two levels: (i) **implementability** (the extent to which the full suite of indicators can be implemented); and (ii) **transformativity** (the extent to which the indicators—and the performance measurement, management and reporting they entail—can serve as levers for more significant and necessary systems change). The pilot testing showed that implementing indicators that assess sustainability performance relative to context-based thresholds and transformative potential is both feasible and desired by economic entities, standard setters and framework providers.

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Acronyms

BPI	Biodiversity Performance Index
CBS	Context-Based Sustainability
CDP	Carbon Disclosure Project (Formerly)
CLAP	Corporate Lobbying Alignment Project
CO ₂	Carbon Dioxide
CREA	Corporate Racial Equity Alliance
CSES	Center for Social Entrepreneurship Studies
CSO	Center for Sustainable Organizations
EESG++	Economic, Environmental, Social, and Governance, Plus Thresholds and Transformation
ESG	Environment, Social, Governance
EY	Ernst & Young
FEI	Flourishing Enterprise Institute
FPE	For-Profit Enterprise
G2	Second Generation of Global Reporting Initiative Sustainability Reporting Guidelines
GAAP	Generally Accepted Accounting Principles
GAIA	Generally Accepted Integrated Accounting Principles
GCA	Global Commons Alliance
GHG	Greenhouse Gas
GIS	Geographic Information System
GPG	Gender Pay Gap
GRI	Global Reporting Initiative
GSEF	Global Social Economy Forum
GTAN	Global Thresholds & Allocations Network
I	Insufficient Information
IBRD	International Bank for Reconstruction and Development
ICA	International Cooperative Alliance
ICLEI	Local Governments for Sustainability
IDA	International Development Association
IFC	International Finance Corporation
IFRS	International Financial Reporting Standards
IIRC	International Integrated Reporting Council
IMP	Impact Management Project
ISAR	International Standards of Accounting and Reporting
JSE	Johannesburg Stock Exchange
LIFTS	Limits and Foundations Towards Sustainability Accounting Model
MDB	Multilateral Development Bank
NGO	Non-Governmental Organization
NVA	Net Value Added
OECD	Organization for Economic Co-operation and Development
PDI	Predistribution Initiative

PS	Preventable Surprises
PwC	PriceWaterhouse Coopers
r3.0	Redesign for Resilience & Regeneration
RACI	Argentine Network for International Cooperation
RCN	Resilient Cities Network
S	Sustainable
SASB	Sustainability Accounting Standards Board
SBTN	Science Based Targets Network
SCIS	Southern Centre for Inequality Studies
SDGs	Sustainable Development Goals
SDPI	Sustainable Development Performance Indicators
SEN	Solidarity Economy Network
SSE	Sustainable Stock Exchanges (UN)
SSEOE	Social and Solidarity Economy Organizations & Enterprise
TCFD	Taskforce on Climate-related Financial Disclosure
THRIVE	The Holistic Regenerative Innovative Value Entity
TIFD	Taskforce on Inequality-related Financial Disclosure
TNFD	Taskforce on Nature-related Financial Disclosure
U	Unsustainable
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNGP	United Nations Global Compact
UNRISD	United Nations Research Institute for Social Development
WBA	World Benchmarking Alliance
WEF	World Economic Forum

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Baue and Thurm also managed the SDPI Pilot Testing Project, along with **Mark McElroy** of the Center for Sustainable Organizations, who also provided the conceptual foundations and practical prototyping of many of the ideas that the SDPIs are predicated upon – it is quite literally true that this Project could never have happened without Mark’s seminal work.

The overall SDPI Project is managed by **Ilcheong Yi** of UNRISD, who also provided significant feedback on early drafts of the report, and finalized the report for publication. Ilcheong has worked tirelessly to advance this Project.

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The pilot testing organizations, who are listed in the text, deserve huge thanks for their patience and persistence in “kicking the tires” on the indicators. We give particular thanks to those whose feedback was quoted in this report, including **Kyle Cahill** of Manulife, **Jed Davis** of Cabot Creamery Cooperative, **Eun Sun Lee** of Gyeongsang National University, **Stephen Siemer** of Weleda, the Impact Transparency and Sustainability Unit of GLS Bank (**Jan Köpper**, **Laura Mervelskemper**, and **Sophia Orbach**) and the Impact Management Project team (**James Hicks**, **Isabella Martin**, **Jeremy Nicholls**, and **Olivia Prentice**).

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This report relied heavily on a number of “silent” partners whose ideas served as building blocks for SDPI. This report “starts at the very beginning,” paying tribute to **Hans Carl von Carlowitz**, who first conceived the idea of sustainability.

Donella Meadows and her *Limits to Growth* co-authors popularized the idea of thresholds perhaps more than any others ever, and Dana worked directly with Mark McElroy (who chaired her Sustainability Institute until her untimely death in 2001), triggering the distributive property of ideation into this Project. Her two essays, *Indicators and Information Systems for Sustainable Development* (1998) and *Leverage Points: Places to Intervene in a System* (1999), play instrumental roles in the intellectual scaffolding of the SDPI Project and this report in particular.

And finally, GRI Co-Founder **Allen White** has been called the “Godfather of Sustainability Context,” a role he has continued to play, including by delivering the Keynote Address at the 2019 SDPI Conference, when he coined the idea of “numeration” and “denomination” (riffing on McElroy’s Sustainability Quotient) that got picked up in the Three-Tiered Typology.

Executive Summary

While the concept of sustainability was introduced more than three centuries ago – in response to the emerging recognition of the unsustainability of industrializing economic activities – predominant human culture nevertheless staunchly refuses to abandon our unsustainable ways (von Carlowitz 1713). Economic entities, in particular, exemplify this irrational obstinance: two decades after the introduction of Sustainability Context, this mechanism for measuring sustainability performance vis-à-vis normative thresholds remains essentially unutilized – an ostrich strategy (“what we don’t know can’t hurt us”) that only hurtles humanity ever deeper into the path dependence of unsustainability (GRI 2002; Bjørn *et al* 2017).

Recognizing that even the United Nations Sustainable Development Goals (SDGs) generally lacked these normative thresholds (Baue & Thurm 2020), the United Nations Research Institute for Social Development (UNRISD) launched a four-year project on Sustainable Development Performance Indicators (SDPI) in late 2018. A 2019 Working Paper introduced a **Three-Tiered Typology of Sustainable Development Performance Indicators** (Baue 2019), predicated on the **Sustainability Quotient** ($S=A/N$) that determines **Sustainability Performance (S)** by assessing **Actual Impacts (A)** on the carrying capacities of the capitals in the numerator, in relation to **Normative Impacts (N)** on the carrying capacities of the capitals in the denominator (McElroy 2008). The Three-Tiered Typology is explained as follows:

- **Tier One: Incrementalist Numeration**
Numeration indicators focus on actual impacts, which include absolute indicators as well as “intensity” indicators that describe performance relative to a nonnormative counterpart (such as unit of production), and are therefore incrementalist by definition.
- **Tier Two: Contextualized Denomination**
Denomination indicators contextualize actual impacts against normative impacts. Also known as “Context-Based” indicators, denominator indicators take into account sustainability thresholds in ecological, social, and economic systems, as well as allocations of those thresholds to organizations and other sub-system entities such as sectors, portfolios, or bioregional habitats (McElroy 2008; McElroy & van Engelen 2012).
- **Tier Three: Activating Transformation**
Transformation indicators add transcontextual elements of implementation practices and policies (as well as more ephemeral emergence) to normative indicators in order to instantiate sufficient change within complex adaptive systems.

Working with its Expert Advisory Group, UNRISD developed a full set of 80+ SDPIs across these three tiers in 2020, and in 2021 collaborated with r3.0 (Redesign for Resilience & Regeneration) to pilot test these indicators with about two dozen For-Profit Enterprises (FPEs) and Social and Solidarity Economy Organizations and Enterprises (SSEOs) as well as other intermediary organizations (such as the World Bank, World Benchmarking Alliance, and Impact Management Project). **This report summarizes and synthesizes the findings of this pilot testing, and points toward future directions to scale out the use of these pioneering indicators (and the underlying thinking).**

The report documents both **Quantitative and Qualitative Results**. In general, the results carried significant implications on at least two levels:

- **Implementability**, or the degree to which the full suite of indicators is implementable by FPEs and SSEOs; and
- **Transformativity**, or bigger questions around the degree to which indicators – and the performance measurement, management, and reporting they entail – can serve as levers for more significant and necessary systems change.

The report looks at three key elements of **Quantitative Results**:

- 1) The heatmap scorecards – which assess full (3), partial (2), or (1) no data provided for each indicator – find that **data for almost all indicators were supplied by at least some piloting organizations, but that no piloting organizations were able to supply data for all indicators.**
- 2) The reasons why varied significantly, but one reason that the pilot testing project tracked was **claims of immateriality.**
- 3) The report also assessed performance on the **Hard Context indicators** (i.e. those that apply Sustainability Context via ecological, social or economic thresholds). On this front, one interesting result was **relatively flat findings of unsustainability performance on some indicators over 5-year periods, but improved sustainability performance over these years.** The pilot testing project did not generate sufficient information to attribute these results to specific causes, so we offer possible explanations.

Findings on the **Qualitative Results** clustered around seven areas:

- 1) The value of the indicators and the piloting process.

For example, GLS Bank found pilot testing participation to be “an incredibly exciting and enriching path, in which we have learned a lot,” and accordingly **GLS Bank integrated the SDPIs in its 2020 sustainability report in a way that “puts sustainability in a global context and proposes indicators for budgets (that is, thresholds or allocations) and for norms.”** (GLS Bank 2021)

Dr. Stefan Siemer, Head of Corporate Sustainability for the Weleda Group, said: **“The Weleda Board of Directors and the Weleda Management Board have now decided that, as part of the new corporate strategy, Weleda will develop an inclusive reporting framework by 2025—a framework that is Multi-Capital and Context-Oriented.”**

- 2) Urgings to elevate the importance of the Hard Context indicators.

Manulife Director of Global Sustainability Kyle Cahill characterized the predominance of peer pressure demand for incrementalist ESG (Environment, Social, Governance) as **“the disclosure tail wags the sustainability dog**, resulting in effort and strategic decision making focused on ESG data vs. putting resources toward efforts that result in a more beneficial impact – such as what the UNRISD SDPIs address.” He continued: **“So we need to elevate Context so that other organizations integrate it into their annual reporting calendar... Where and when do some of these Context-based metrics start to make their way into this cycle?”**

Cabot Creamery Cooperative Sustainability Director Jed Davis echoed these sentiments: “Cabot has been putting out Context for more than a decade to a deaf market that is demanding in-depth information that largely lacks Context.” Given the finite resources economic entities have to expend on performance assessment, Davis strongly advocates for wise prioritization: **“If we’re going to spend time on indicators, our time is best spent on Context-based indicators, so why not focus on the ~19 indicators that are Context-based?”**

- 3) Complaints on the work burden due to the broad scope of the indicators.

- 4) Encouragement to hone in on the indicators of true value.

Cahill of Manulife summarized that **“The UNRISD approach should *not* be, ‘more is better.’ It should really hone in on the indicators of true value.”**

SDPI Expert Advisory Group member Peter Utting proposed categories of “true value” indicators as those which **support the ability to analyse “i) hard context performance, ii) the trajectory**

of change, and iii) variations in performance via granular disclosure (e.g. showing variations by occupational hierarchy).”

- 5) Identification of missing indicators that should be added to the set.
- 6) General feedback on specific indicators.
- 7) Technical problems with the indicator manuals / data collection spreadsheet / pilot testing process.

The report then analyses the findings in the **Synthesis** section, which focused on five areas:

1) Universal Indicators

The Heatmap Scorecards revealed that **no** pilot test participants were able to provide data for **all** the indicators, and immateriality claims were made on almost **all** of the indicators. **Accordingly, the hypothesis of universal indicators was disproved by the pilot test.**

Davis of Cabot Creamery Coop said, “I can appreciate the desire for universality, **but materiality will always trump universality.** One way to integrate the desire for universality is to provide sector-based indicators that are broadly applicable to the sector as a starting point, **but still apply organization-specific context-based materiality.**”

2) Core Indicators: Hard Context

Strong support emerged for focusing primarily on Hard Context indicators.

Weighing in on the concern over “requesting too much data from the organizations,” Expert Advisory Group member Peter Utting suggested a solution: “**one option might be to prioritize hard contextualization...** we need to be able to use all the data gathered to provide an analysis of context-based performance.”

3) Materiality: Context-Based

Following directly on the previous two points, piloting organizations support the idea of determining which indicators are relevant to a given economic entity by applying Context-Based Materiality, which transcends the limited lens of traditional finance-oriented materiality by focusing instead on impacts that organizations have on vital capital resources that stakeholders also rely on for their wellbeing, which creates normative duties and obligations for organizations to manage their own impacts on these resources sustainably – in other words, making sure they both do not deplete and continually regenerate resources necessary for ongoing stakeholder wellbeing.

Davis of Cabot Creamery Coop asserted: **“Context-based materiality is fundamental – traditional materiality actually undermines a context-based approach to materiality.”**

4) SDPI Integration

The indicators are currently assessed in isolation, highlighting the need for a means to integrate performance assessment across indicators, which requires an approach that assesses the sustainability of impacts on vital capital resources in commensurate ways, without substituting capitals.

Davis of Cabot Creamery Coop, who has piloted the MultiCapital Scorecard, which integrates sustainability performance assessment across all the capitals – traditional financial capitals as well as natural, human, and social capitals (Baue 2020) – strongly supports this approach:

“Sustainability performance is totally analogous to financial capital measurement – profitability is a threshold that measures sustainability – but financial reporting on its own doesn’t have to deal with commensurability between impacts on other capitals. Environmental & social reporting doesn’t have that luxury – since these forms of reporting cross capitals, they have to contend with commensurability and the non-substitutability of different capitals, by definition.”

5) Scaling Up and Out

For the indicators to fulfil their transformative potential, they will need to scale up through widespread usage, and scale out via implementation by diverse players operating across a broad spectrum of intervention points in the marketplace.

In **Conclusion**, the UNRISD Sustainable Development Performance Indicators pilot test has shown that it is not impossible to implement indicators that assess performance relative to sustainability thresholds and transformation. Quite the opposite: implementing thresholds- and transformation-based performance indicators is altogether feasible! In fact, not only are such thresholds- and transformation-based performance indicators feasible to implement, but also, enterprises are *eager* to implement them.

Systems change research suggests that social tipping points can be triggered by significant minorities of a reference population (as little as 25%) with the proper combination of passionate commitment and ideas whose time has come (Centola *et al* 2018). This report documents evidence supporting the idea that the time for thresholds- and transformation-based measurement has come.

Jed Davis of Cabot Creamery Cooperative summed up this pilot testing project succinctly: **“The SDPI indicators are ground-breaking in a very positive way.”**

1. Introduction

Ideas arise when they are needed. Sustainability is just such an idea: it emerged hand-in-hand with the advent of unsustainability. Before, the very concept of sustainability was not needed, because human cultures had existed sustainably for millennia; the idea of sustainability only makes sense when its opposite is introduced as a real-world dynamic.

Specifically, the destruction of forests to meet demand for coal-coking. German mining administrator Hans Carl von Carlowitz coined the term “sustainability” in his 1713 monograph *Sylvicultura Oeconomica*, noting that timber harvesting (to feed coal-coking furnaces) outpaced natural rates of timber regeneration, pointing toward an eventual (and inevitable) collapse in timber yields: killing the goose that lays the golden eggs (von Carlowitz 1713).

Similarly, it is fascinating to note that the popularization of concepts such as “carrying capacity” and “overshoot and collapse” emerged precisely at the time that humanity, as a whole, transgressed our collective carrying capacity and entered into overshoot, where we have been ever since, continuing to erode the foundations of our viability as ecological and social collapses increase.

Specifically, the Club of Rome published *Limits to Growth* in 1972, after two years of intense research at the Massachusetts Institute of Technology using the World3 model to project the consequences of growth trends – namely, that continued material growth would overshoot earth’s carrying capacity (Meadows *et al* 1972). Subsequent research applying the Ecological Footprint method in the 1990s found that humanity actually entered into Earth Overshoot in 1970 – coinciding precisely with the conceptualization of globalized overshoot (Global Footprint Network n.d.).

While the concept of sustainability has been with us for more than three centuries, and evidence of our collective, globalized unsustainability has been with us for a half-century, we are still in the painfully slow process of collectively metabolizing and responding to this information.

One form of metabolization entails translating how to measure and manage the degree to which individual organizations (including business enterprises) contribute to – or detract from – the achievement of sustainability.

Here again, we have had the conceptual understanding of how to measure and manage organizational sustainability for two decades. But we have generally failed to act on this understanding.

In its second generation (G2) of *Sustainability Reporting Guidelines* in 2002, the Global Reporting Initiative (GRI) established the Sustainability Context Principle, which calls for organizations to measure and disclose their performance “in the context of the limits and demands placed on economic, environmental, or social resources at a macro-level” (Global Reporting Initiative 2002). In this succinct phrase, GRI provided the fundamental foundations for applying sustainability thresholds, and allocating responsibility for respecting them to the organizational level. Implementing the Sustainability Context Principle would require reporting organizations to assess their *actual* impacts in relation to sustainability norms, which would thereby provide meaningful measurement of organizational contributions to progress toward sustainable development more broadly.

However, because GRI failed to provide more specific guidance on how to actually apply the Sustainability Context Principle, sustainability reports effectively ignored it and still do to this day. A 2017 scientific study of 40,000+ sustainability reports found that only 5% even mention the existence of ecological thresholds, and only 31 of the 12,000 organizations issuing these reports (0.258%) actually applied these thresholds to corporate strategy or product design (Bjørn *et al* 2017).

In other words, sustainability is essentially absent from sustainability reports.

In the early days of the Sustainability Context Principle, it was argued that sufficient data on the thresholds did not exist, but that time has long since passed – there are now ample data on thresholds to enable application.

In the meanwhile – for the past three centuries, for the past half century, and for the past two decades – a status quo approach of neglect for the *existential necessity* to achieve sustainability has solidified and ossified. This status quo can be labelled in many different ways: late-stage capitalism, monocapitalism, ESG,¹ etc. (Lowrey 2017; Thomas & McElroy 2016; Kell 2018). Whatever you call it, the existing regime has actively opposed taking the steps necessary to achieve sustainability, whether explicitly (through overt rejection of sustainability) or, more insidiously, through predatory delay tactics (that may appear to embrace sustainability, but in reality, it is being postponed despite the imminent danger of passing tipping points)² (Steffen 2017; Steffen *et al* 2015).

This systemic and systematic resistance to achieving sustainability triggers a necessity to transform from the status quo, if humanity wishes to persist. In other words, sustainability and transformation go hand-in-hand, in the context of inherently unsustainable systems.

¹ ESG stands for “Environment, Social, Governance,” a term introduced by the United Nations in 2004 to expand the traditional purview of corporate and investor boards and executives to consider the impact of these areas on business performance.

² “Predatory delay is the blocking or slowing of needed change, in order to make money off unsustainable, unjust systems in the meantime.” (Steffen 2017) Cite Alex Steffen, also possibly tipping point research, such as possibly Rockstrom *et al* 2009

The risk of failing to achieve sustainability is existential: the evolutionary dynamics of natural selection take care of species that fail to adapt to their environments by extinguishing them. Or, more precisely, extinction is the natural outcome when species fail to sufficiently integrate with their environment. Of course, humanity in the Anthropocene is not only failing to integrate harmoniously with its environment; we are actively undermining the dynamic balance that our environment has maintained for the past ten thousand years of the Holocene, which has enabled ongoing viability for the human species.

All of which raises the question: what is to be done? This is the question the United Nations Research Institute for Social Development (UNRISD) asked itself after reviewing all of the existing “sustainability” indicators (including the Sustainable Development Goals indicators), and finding that none of them integrate sustainability thresholds holistically, nor do they provide means for assessing progress toward necessary transformations.³

So, in late 2018, UNRISD launched the Sustainable Development Performance Indicators (SDPI), managed by Senior Research Coordinator Ilcheong Yi, to develop a new set of indicators that assess performance on sustainability and transformation, in thresholds-based ways. To test feasibility, UNRISD invited economic entities throughout the world, ranging from large For-Profit Enterprises (FPEs) to smaller Social and Solidarity Economy Organizations & Enterprises (SSEOs), to pilot the indicators. This report contains the results of this Pilot test, which hold significant implications on at least two levels:

- **Implementability:** this report helps to answer the question of whether these indicators are indeed implementable by FPEs and SSEOs large and small, delving deeper into details around the value piloting organizations experienced, obstacles to implementation they encountered, and potential improvements they proposed;
- **Transformativity:** this report raises much bigger questions around the degree to which indicators – and the performance measurement, management, and reporting they entail – can serve as levers for more significant and necessary systems change.

Over a quarter century after serving as lead author of the *Limits to Growth* study, Donella Meadows famously proposed a set of 12 “leverage points,” or “places within a complex system (a corporation, an economy, a living body, a city, an ecosystem) where a small shift in one thing can produce big changes in everything” (Meadows 1999). She listed them in reverse order of effectiveness, with the most impactful levers listed last.

³ In this process of preparatory research, Ilcheong Yi, Senior Research Coordinator in charge of Social Dimensions of Sustainable Development Programme, UNRISD, Peter Utting, UNRISD Research Associate, Mark W. McElroy, Executive Director of Center for Sustainable Organizations, and Bill Baue, Senior Director of r3.0 played a central role.

First on her list (i.e. the least effective of the 12 leverage points) was “Constants, parameters, numbers (subsidies, taxes, standards)” – the category into which indicators would traditionally fall (Meadows 1999). However, thresholds- and transformation-based indicators arguably fall into another category altogether, as they are essentially *never* applied by traditional indicators, and therefore represent a wholly distinct mindset or paradigm.

Viewed through this lens, thresholds- and transformation-based indicators could be categorized as amongst the second most effective intervention placed on the list:

“The mindset or paradigm out of which the system — its goals, structure, rules, delays, parameters — arises.” (Meadows 1999)

It is our hope that this report plays a role in helping to usher in new mindsets committed to transforming from our current unsustainable paradigm to a new paradigm anchored in sustainability.

2. Sustainable Development Performance Indicators Project

In September 2018, UNRISD launched a four-year Sustainable Development Performance Indicators (SDPIs) Project funded by the Center for Social Entrepreneurship Studies (CSES)⁴ with the goal of identifying gaps in current sustainability indicators, and filling those gaps with new indicators. What drove UNRISD to launch the project was the fact that almost all existing indicators that purport to measure sustainability do not actually measure sustainability itself. Most measure an environmental, social, economic, or institutional impact, and perhaps incremental movement of that impact in a positive (desirable) or negative (undesirable) direction, by comparing performance to previous years, peers, or internally determined targets (Utting & O’Neill 2020).

Take, for example, the 231 unique indicators for tracking progress on the Sustainable Development Goals (SDGs). While elements of the Goals themselves identify sustainability thresholds (for example, “end poverty in all its forms everywhere” (SDG1); “end hunger” (SDG2); “achieve gender equality (SDG5); and “halt biodiversity loss (SDG15)), such thresholds are conspicuously absent from the indicators themselves -- where the “rubber meets the road.” The vast majority of these indicators are incrementalist; only a small handful identify a normative threshold by which to discern sustainable performance.

For example, Indicator 13.2.2 is: “total greenhouse gas emissions per year.” In 2016, total global greenhouse gas emissions stood at 49.36 billion tonnes of CO₂ equivalent (Ritchie & Roser n.d.). It is not possible to discern from this information alone if this amount is sustainable, or not.

Donella Meadows, lead author of the 1972 Club of Rome *Limits to Growth* report, pinpointed this very conundrum in a 1998 report on sustainability indicators (See also Figure 1):

[S]ustainability indicators should be related to **carrying capacity** or to **threshold of danger**... Tons of nutrient per year released into waterways **means nothing to people**. Amount released relative to the amount the waterways can absorb without becoming toxic or clogged **begins to carry a message** (Meadows 1998).

⁴ For more information on this Project, see its landing page on the UNRISD website: <https://www.unrisd.org/en/research/projects/sustainable-development-performance-indicators>

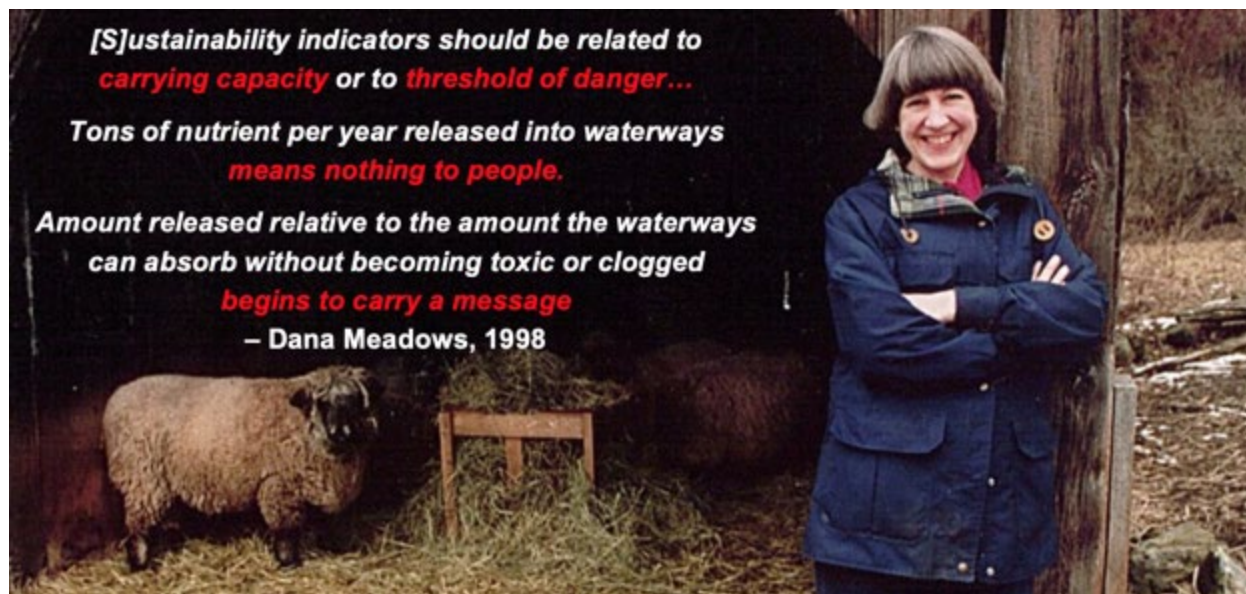


Figure 1. Donella Meadows on Sustainability Indicators. (Source: Meadows 1998)

In this sense, SDG Indicator 13.2.2 on annual greenhouse gas (GHG) emissions “means nothing to people.”

The very few SDG Indicators that “begin to carry a message” include Indicators 1.1.1 and 1.2.1, each of which reference the poverty line and thus provide a threshold against which performance can be assessed as sustainable (above the poverty line) or unsustainable (below the poverty line).⁵ (United Nations Statistics Division 2021)

And Indicator 6.4.2 compares “freshwater withdrawal as a proportion of available freshwater resources” (United Nations Statistics Division 2021). This Indicator is illustrative, as it encompasses the key, necessary elements of a sustainability indicator: specifically, the Sustainability Quotient, conceived in 2008 by Mark McElroy (who chaired the Board of Meadows’ Sustainability Institute until the time of her death in 2001) (McElroy 2008). The Quotient is “Sustainability = Actual Impacts (on the carrying capacities of vital capital resources) / Normative Impacts (on the carrying capacities of vital capital resources)”. See Figure 2.

⁵ SDG Indicator 1.1.1: “Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)”; SDG Indicator 1.2.1: “Proportion of population living below the national poverty line, by sex and age.”

Sustainability Quotient: $S = \frac{A}{N}$

Sustainability = $\frac{\text{Actual Impacts}^*}{\text{Normative Impacts}^*}$ (Numeration / Denomination)

**On the Carrying Capacities of Vital Capital Resources*

Figure 2. The Sustainability Quotient (McElroy 2008)

In the case of SDG Indicator 6.4.2, “freshwater withdrawal” is the *Actual Impact* and “available freshwater resources” is the *Norm*, with the “proportion” being the *Quotient*. So, sustainable use of water would be “freshwater withdrawals” that respect the threshold of “available freshwater resources” at the watershed level.

GRI Co-Founder Allen White summarized this succinctly in 2013 (see also Figure 3 below):

Sustainability requires contextualization within thresholds. That’s what sustainability is all about. Yet to this day, contextualization rarely appears in sustainability reports.”
(Baue 2013)

This terminology consciously echoes the notion of “Sustainability Context,” the Principle that GRI introduced in 2002 (in its second generation of *Sustainability Reporting Guidelines*) that calls for assessing the “performance of the organization in the context of the limits and demands placed on economic, environmental, or social resources at a macro-level” (Global Reporting Initiative 2002). Here, “limits and demands” are synonymous with “thresholds.”

More recently, in his Keynote Address at the UNRISD Conference “Measuring and Reporting Sustainability Performance: Are Corporations and SSE Organizations Meeting the SDG Challenge?” (UNRISD 2019), Dr. White explicitly framed his call to action in terms of the numerator and denominator of the Sustainability Quotient (See also Figure 3):

We need to move beyond incrementalist ‘numeration’ indicators & add ‘denomination’ indicators tied to upper (ecological ceilings) & lower (social foundations) thresholds.

Sustainability measurement without this context is simply not sustainability measurement (White 2019; Baue 2019b).



Figure 3. Allen White on Sustainability Context

Based on the consultation with Ilcheong Yi of UNRISD and Tatiana Krylova of the United Nations Conference on Trade and Development (UNCTAD), Bill Baue, in one of the working papers for the SDPI project, introduced a three-tiered typology of sustainability indicators, which built on UNCTAD’s *Guidance on Core Indicators for Entity Reporting on contribution towards implementation of the Sustainable Development Goals* and the Sustainability Quotient’s numerator and denominator (Baue 2019a). See Box 1.

Box 1. Three-Tiered Typology of Sustainable Development Performance Indicators

- **Tier One: Incrementalist Numeration**
 Numeration indicators focus on actual impacts, which include absolute indicators as well as “intensity” indicators that describe performance relative to a nonnormative counterpart (such as unit of production), and are therefore incrementalist by definition.

Examples: Actual GHG emissions, or GHG emissions per unit of revenue or unit of production; actual water consumption; actual wages paid, etc...
- **Tier Two: Contextualized Denomination**
 Denomination indicators contextualize actual impacts against normative impacts. Also known as “Context-Based” indicators, denominator indicators take into account

sustainability thresholds in ecological, social, and economic systems, as well as allocations of those thresholds to organizations and other sub-system entities such as sectors, portfolios, or bioregional habitats (McElroy 2008; McElroy & van Engelen 2012).

Examples: Actual GHGs relative to the proportionate share of GHGs to respect the carbon budget; actual water consumption relative to the annual renewable water at the watershed level; actual percentage of women board members relative to the percentage of women in the reference population.

Tier Three: *Activating Transformation*

Transformation indicators add transcontextual elements of implementation practices and policies (as well as more ephemeral emergence) to normative indicators in order to instantiate sufficient change within complex adaptive systems.

Examples: Living wages and Scope 3 GHG emissions represent Context-Based indicators (i.e. Tier Two indicators) that essentially represent “blind spots” that economic entities typically neglect, thus requiring transformation from the status quo.

Source: Baue 2019a

Based on this three-tiered typology of indicators in 2019, UNRISD worked with its Expert Advisory Group throughout 2020 to build out a set of Sustainable Development Performance Indicators aligned to these tiers.⁶

The goal of these virtual Workshops was to create a comprehensive, three-tiered set of Sustainable Development Performance Indicators, geared both toward FPEs and SSEOs. These indicator sets were bundled into two draft Manuals, one for FPEs and one for SSEOs.

2.1 Tier One: Incrementalist Numeration

The starting point for developing the indicators was to populate Tier One with an existing set of indicators, the “Core Indicators” developed by UNCTAD and International Standards of Accounting and Reporting (ISAR)⁷ in a multi-year process with governments, companies, investors, civil society, and other stakeholders (UNCTAD 2019). These Core Indicators comprise 33 indicators across four categories: economic, environmental, social, and institutional (also known as governance).

UNRISD adopted these indicators as the Tier One indicators due to the comprehensive engagement and consultation that went into their creation, including (significantly) with the governments of the UN member states⁸ that have statutory (and hence regulatory) jurisdiction over organizational

⁶ SDPI Expert Advisory Group Members: Tatiana Krylova; Mark McElroy; Marguerite (Margie) Mendell; Sonja Novkovic; Manpreet Singh; Peter Utting. See the Appendix 1 for full biographies.

⁷ See <https://isar.unctad.org/>

⁸ There are currently 193 member states in the UN system.

performance disclosure. Accordingly, this indicator set is viewed as the most universal and advanced set of indicators tracking incremental “numeration” performance (i.e. “actual impacts” in the Sustainability Quotient) that enterprises may be held accountable to in mandatory ways (predominantly in the future).⁹

2.2 Tier Two: Contextualized Denomination

Next, the SDPI Expert Advisory Group convened a series of virtual Workshops (building on foundation-setting Workshops in Geneva and Montreal in 2019) to develop a set of Tier Two Indicators, following the categories and impact areas established in the Tier One UNCTAD Core Indicators. The first step was to identify indicators with specific sustainability thresholds associated with them so as to provide a denominator for contextualizing sustainability performance in each case. These comprise areas where organizations have or should have impacts on vital capital resources that stakeholders (or rightsholders) rely on for their wellbeing, thereby entailing duties and obligations to manage their impacts in such a way as to not put the sufficiency of the capitals at risk (McElroy 2008). In other words, the organization must ensure that its impacts do not contribute to the deprivation of such resources for other stakeholders / rightsholders, whose own wellbeing is dependent upon having access to them in sufficient supply.¹⁰

For indicators that are not associated with a sustainability threshold, the Expert Advisory Group added contextualization through 5-year time-series disclosures. This form of contextualization, which is labelled *Soft Context* in this UNRISD project (and correspondingly, thresholds-based contextualization is labelled *Hard Context*), draws on the imperative identified in a further report in this project workstream:

Also key are time-series data that capture trends, as opposed to annual snapshots, and more granular reporting that can reveal significant variations in performance within corporate structures and value chains (Utting & O’Neill 2020).

These Tier Two Indicators comprise 19 measures of performance across four categories: economic, environmental, social, and institutional (also known as governance).

⁹ UNCTAD has conducted capacity building in Latin America (Guatemala, Colombia, Brazil) and Africa (Kenya, South Africa, Cameroon) that took on board its recommendations. However, no official regulation based on the UNCTAD Core Indicators has been developed yet.

¹⁰ To be clear, an organization itself is not responsible for *ensuring* the wellbeing of its stakeholders, but the organization *is* responsible for managing its impacts on the sufficiency of vital capital resources that these stakeholders / rightsholders rely on to support *their own* wellbeing. In order for this duty / obligation to exist, the organization must actually impact the vital capital resources in question, which requires a materiality assessment. For more on this approach to materiality, see McElroy 2019.

2.3 Tier Three: Activating Transformation

In these virtual Workshops, the Expert Working Group also built out Tier Three Indicators, which focus on what transformative change is (see Box 2) and how necessary transformation from the status quo is possible. Several of these indicators were identified in the report *Corporate Sustainability Accounting: What Can and Should Corporations Be Doing?*, published by UNRISD in 2020 (Utting & O'Neill 2020). The report tackles the question of “what is transformative change?” in a box that makes sense to reprint here. See Box 2.

Box 2. What is Transformative Change?

As the international community takes stock of the magnitude of the social and environmental challenge facing humanity and the planet, terms like transformational or transformative change have gained currency. But what exactly does “transformative” mean? For some, it is simply a label used to embellish piecemeal reforms or incremental improvements in performance. In the report, transformative change refers to structural changes that are necessary to transform entrenched patterns of production and consumption, as well as social relations and governance arrangements, that underpin social exclusion, inequality and planetary destruction. Without such changes, neither countries nor corporations can claim to be on a sustainable development pathway.

The UNRISD Flagship Report, *Policy Innovations for Transformative Change*, showed how public policies intended to promote social development often focus on social protection—for example, safety nets and social floors such as minimum wage guarantees and basic health services (UNRISD 2016). Similarly, environmental policy often focuses on doing a bit less environmental harm, or a bit more conservation. The focus, then, is often on fairly minimalist aspects of decent work, “targeting the poor” or environmental protection, rather than a more ambitious agenda to promote simultaneously human well-being, intergenerational equity and planetary regeneration. Yet it is these objectives that define the concept of sustainable development.

More often than not, policy reforms tackle the symptoms rather than the causes of unsustainable development, leaving the structures that generate the problems in the first place largely intact. Yet, it is the more comprehensive and ambitious approach that is required. A similar argument can be made both for corporations trying to improve their sustainability performance, and for much of the standards regime promoting corporate sustainability disclosure and reporting.

Source: Utting & O'Neill 2020

Seeing as transformative change is not addressed by status quo indicators, nor is it addressed by Tier One or Tier Two indicators, UNRISD asserted the need for Tier Three indicators, which address transformative change by filling in the blind spots of these other indicator sets.

Given that development of indicators on social and institutional impacts lag development in the economic and environmental realms, the Tier Three indicator set is weighted more toward these former, less developed impact areas. Tier Three also continues the practice in Tier Two of applying

Hard Context indicators -- particularly those that are less developed, such as **Scope 3 Greenhouse Gas (GHG) Emissions** (III.B.1.1.) and **Water Use** (III.B.1.2.) in the environmental realm, and **Living Wage Gaps** (III.C.1.2.), **Gender Equality Pay Gaps** (III.C.2.1.), and **Gender Equality Hiring and Promotion Gaps** (III.C.2.2.) in the social realm. Many of these *Hard Context* indicators also apply the *Soft Context* time-series approach.

Finally, Tier Three also contains an indicator for applying **Context-Based Triple Bottom Line Performance Accounting** (III.D.2.1.), a comprehensive indicator that tracks holistic implementation of this transformational practice that is also tracked on an indicator-by-indicator basis in both Tier Two and Tier Three. In general, the guidance in the Manuals is intended to be sufficient for FPEs and SSEOEs to implement the Hard Context performance assessments themselves, so that they could independently determine the sustainability or unsustainability of their performance.

One indicator, **Water Use** in Tier Three (III.B.1.2.) required an innovative methodology using state-of-the-art technology. To identify open source data sources and develop a readily implementable methodology, UNRISD collaborated with experts (Mark McElroy, the Center for Sustainable Organizations; Xuantong Wang, Texas Tech University; James Hopeward, University of South Australia; and Paul Sutton, University of Denver) and created a water indicator based on the spatio-temporal analysis of the water availability and consumption within a GIS extracts Population, Precipitation, Evapotranspiration, and GDP within circles of 10, 50, 100, 200, and 300 km centred on the facility (For a fuller explanation of the methodology, see Appendix 2 and Wang *et al* 2022).

These Tier Three Indicators comprise 27 indicators for FPEs and SSEOEs and 6 additional indicators for SSEOEs. In addition, SDPI acknowledges the diversity of SSEOEs and the manner in which they assess and meet social and environmental objectives, by allowing them to suggest their own indicators measuring the performance corresponding with those measured by 33 Tier Three indicators.

The development process resulted in the creation of 46 additional indicators (19 in Tier Two and 27 in Tier Three for FPEs plus an additional 6 in Tier Three for SSEOEs) beyond the 33 pre-existing Tier One Indicators for a total of 85 indicators. See Box 3 for a full list of the Indicators.

Box 3. Full List of Sustainable Development Performance Indicators (SDPIs)

TIER ONE

A. Economic area

- I.A.1. Revenue and/or (net) value added
 - I.A.1.1. Revenue (see example below)
 - I.A.1.2. Value added
 - I.A.1.3. Net value added
- I.A.2. Payments to the Government
 - I.A.2.1. Taxes and other payments to the Government
- I.A.3. New Investment/expenditures
 - I.A.3.1. Green investment
 - I.A.3.2. Community investment
 - I.A.3.3. Total expenditures on research and development
- I.A.4. Local supplier/purchasing programs
 - I.A.4.1. Percentage of local procurement

B. Environmental area

- I.B.1. Sustainable use of water
 - I.B.1.1. Water recycling and reuse
 - I.B.1.2. Water use efficiency
 - I.B.1.3. Water stress
- I.B.2. Waste management
 - I.B.2.1. Reduction of waste generation
 - I.B.2.2. Waste reused, re-manufactured and recycled
 - I.B.2.3. Hazardous waste
- I.B.3. Greenhouse gas emissions
 - I.B.3.1. Greenhouse gas emissions (scope 1)
 - I.B.3.2. Greenhouse gas emissions (scope 2)
- I.B.4. Ozone depleting substances and chemicals
 - I.B.4.1. Ozone-depleting substances and chemicals
- I.B.5. Energy consumption
 - I.B.5.1. Renewable energy
 - I.B.5.2. Energy efficiency

C. Social area

- I.C.1. Gender equality
 - I.C.1.1. Proportion of women in managerial positions
 - I.C.2. Human capital
 - I.C.2.1. Average hours of training per year per employee
 - I.C.2.2. Expenditure on employee training per year per employee
- Employee wages and benefits as a proportion of revenue, with breakdown by employment type and gender

- I.C.3. Employee health and safety
 - I.C.3.1. Expenditures on employee health and safety as a proportion of revenue
 - I.C.3.2. Frequency/incident of rates of occupational injuries
- I.C.4. Coverage by collective agreements
 - I.C.4.1. Percentage of employees covered by collective agreements

D. Institutional area

- I.D.1. Corporate governance disclosure
 - I.D.1.1. Number of board meetings and attendance rate
 - I.D.1.2. Number and percentage of women board members
 - I.D.1.3. Board members by age range
 - I.D.1.4. Number of meetings of audit committee and attendance rate
- Compensation: total compensation per board member (both executive and non-executive directors)
- I.D.2. Anti-corruption practices
 - I.D.2.1. Amount of fines paid or payable due to settlements
 - I.D.2.2. Average hours of training on anti-corruption issues per year per employee

TIER TWO

A. Economic area

Net Value Added (corresponds with Revenue, Value Added and Net Value-Added indicators in Tier 1)

- II.A.2.1. 5-Year Tax Gap
- II.A.3.1. 5-year Trend of Green Investment
- II.A.3.2. 5-year Trend of Community Investment
- 5-year Trend and Sustainability Alignment of Relative Expenditure on Research and Development
- II.A.4.1. 5-year Trend of Percentage of Local Procurement

B. Environmental area

- II.B.2.1. 5-year trend on solid waste
- II.B.2.3. 5-year trend of hazardous waste treatment
- II.B.3.1. Greenhouse gas emissions

C. Social area

- II.C.1.1. 5-year average gender diversity: Entry-level hiring and promotion
- II.C.3.1. 5-year average incident Rates of Occupational Injuries
- II.C.4.1. 5-year union density and collective bargaining coverage

D. Institutional area

- II.D.1.1. 5-year trend for the number of board meetings and attendance rate
- II.D.1.2. 5-year average percentage of women board members
- II.D.1.3. 5-year trend on board members by age range

- II.D.1.4. 5-year trend for the number of meetings of audit committee and attendance rate
- 5-year trend on total compensation per board member (both executive and non-executive directors)
- II.D.2.1. 5-year trend in amount of corruption-related fines paid or payable due to settlements
- II.D.2.2. 5-year trend on average number of hours training on anti-corruption

TIER THREE – For-Profit Enterprises (FPEs)

A. Economic area

- III.A.1. Corporate taxation
- III.A.1.1. Tax gap and fiscal disclosure

B. Environmental area

- III.B.1. Environment
- III.B.1.1. Greenhouse gas emissions (scope 3)
- III.B.1.2. Water use
- III.B.1.3. Circular economy

C. Social area

- III.C.1. Fair remuneration
- III.C.1.1. CEO-Worker pay ratio
- III.C.1.2. 5-Year living wage gap
- III.C.1.3. Distribution of surplus/profits
- III.C.2. Gender equality
- III.C.2.1. Gender pay gap – Equality of remuneration
- III.C.2.2. Gender diversity: Hiring and Promotion at different occupational levels
- III.C.2.3. Dependent care – caregiving support programmes
- III.C.4. Labour rights
- III.C.4.1. Union density and collective rights bargaining coverage
- III.C.4.2. Harassment and discrimination at the workplace
- III.C.4.3. Access to remedy
- III.C.4.4. Discrimination in hiring and promotion
- III.C.4.5. Worker empowerment
- III.C.4.6. Contingent and subcontracted workers
- III.C.5. Employment, training and work integration
- III.C.5.1. Hiring of vulnerable groups
- III.C.5.2. Long-term work contracts
- III.C.5.3. Employee turnover rate
- III.C.6. Responsible and ethical sourcing
- III.C.6.1. Responsible and ethical sourcing

D. Institutional area

- III.D.1. Corporate political influence
- III.D.1.1. Corporate political influence: Policies, programme and practices
- III.D.2. Performance accounting
- III.D.2.1. Context-based triple bottom line accounting
- III.D.3. Fines and settlements
- III.D.3.1. Amount of Total Fines Paid or Payable Due to Settlements
- III.D.4. Information sharing
- III.D.4.1. Public Sharing of Information and Knowledge
- III.D.5. Democratic governance
- III.D.5.1. Term limits for Board of Directors
- III.D.5.2. Participative Decision-making (employees)
- III.D.6. Resilience
- III.D.6.1. Resilience

● TIER THREE – Social & Solidarity Economy Organizations & Enterprises (SSEOs)

Additional Indicators (beyond Tier Three Indicators for FPEs)

- III.C.4.4. Training of vulnerable groups
- III.C.4.5. Work integration
- III.D.5.2. Five-year trend in attendance at annual general meetings
- III.D.5.3. Democratic elections
- III.D.5.4. Legitimation of management
- III.D.5.5. Stakeholder participation

Looking at the full indicator set as a whole, it becomes clear that SDPI transcends existing ESG practice in a number of dimensions. First, Tier One Indicators replicate the UNCTAD Core Indicators, which cover four areas: Economic, Environmental, Social, and Institutional (or Governance). These areas cover the same terrain as ESG (Environmental, Social, Governance), but obviously add a fourth dimension: Economic. So SDPI follows in the footsteps of the UNCTAD Core Indicators in covering EESG, not just ESG.

Furthermore, ESG as a field of practice generally takes an **“outside-in” approach**, assessing the impacts and risks the external world imposes on the enterprise in these three areas, as a means of assessing “enterprise value”; ESG generally does not concern itself with an **“inside-out” approach** that assesses the impacts and risks the enterprise imposes on the external world, which would be necessary to assess “system value”. See Figure 4.

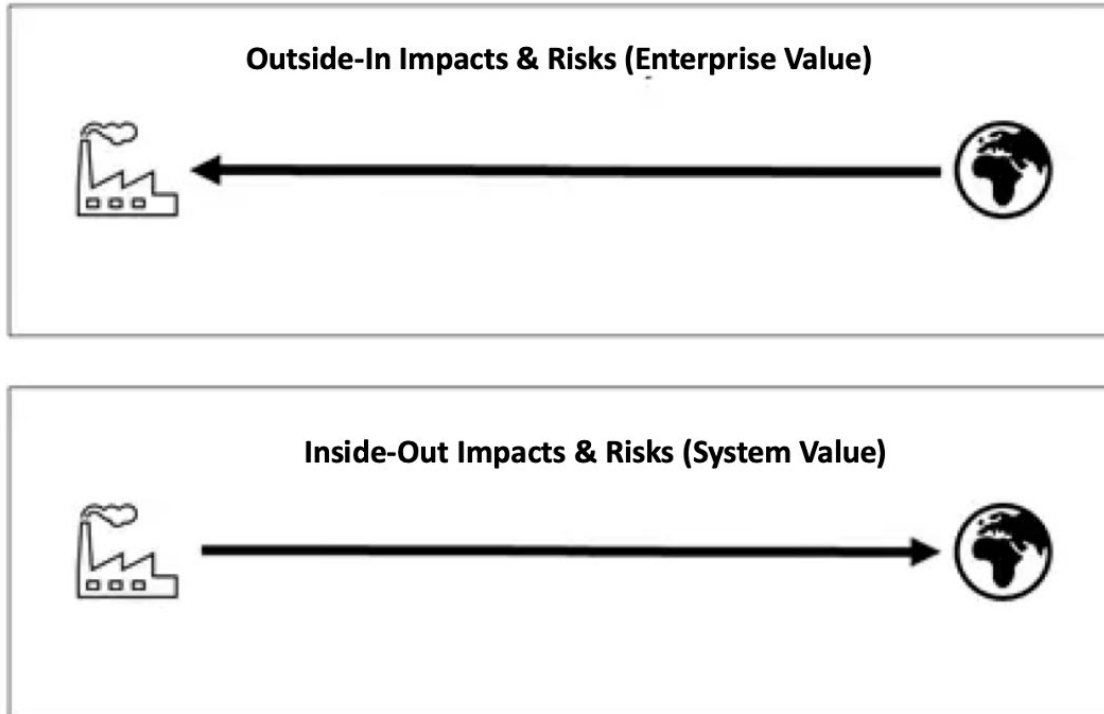


Figure 4. Outside-In Versus Inside-Out Impacts & Risks (Source: Baue & Thurm 2022; Adapted from Täger 2021)

Moreover, ESG (as well as UNCTAD’s Core Indicators – SDPI’s Tier One) is inherently incrementalist in nature, and therefore cannot effectively measure progress related to sustainable development, or sustainability more broadly. As Global Reporting Initiative Co-Founder Allen White says:

“Incrementalism alone, at the end of the day, [is] insufficient... ESG does not, by nature, carry a true sustainability gene... Sustainability requires contextualization within thresholds. That’s what sustainability is all about.” (Baue 2013a; Baue 2013b)

So even expanding the scope of ESG to EESG is insufficient, as it retains its incrementalism, devoid as it is of thresholds. Tiers Two and Three of the SDPI add these thresholds in the denominator of the Sustainability Quotient, thus linking the EESG scope directly to sustainable development, or more precisely, sustainability performance assessment. As well, SDPI’s Tier Three adds transformation to the mix, another element unaddressed by ESG, a doctrine that fits comfortably within the existing late-stage capitalist economic paradigm that is predicated on extraction and colonization. With these vitally important additional dimensions in mind, the SDPI framework can be characterized most accurately as “EESG++” – namely, Economic, Environmental, Social, and Governance, plus thresholds and transformation.

UNRISD bundled the full set of indicators into two draft Manuals, one geared to FPEs and one geared to SSEOEs. The Manuals include introductory contextualization and explanation, followed by a compilation of all indicators, with the following elements for each:

- Definition
- Contextualization (Hard Context or Soft Context or neither)
- Measurement methodology (including Equations where relevant)
- Potential sources of information
- Relevance to the SDGs

3. *Thresholds of Transformation* Indicator Piloting Project

In late 2020, UNRISD implemented a pilot test of the SDPIs for FPEs and SSEOEs. r3.0, a not-for-profit organization focused on “Redesign for Resilience & Regeneration,” assumed the role of the implementing agency of the pilot test. After broad outreach and promotion in the late fall, 23 organizations participated in the pilot test. Out of 23 organizations, 16 organizations provided data on indicators. Two organizations provided comments on the indicators. See Box 4 for a listing of the participating organizations. (Some participants have elected not to appear on this page).

The pilot test commenced in January 2021 with a series of four Training Sessions of three-and-a-half hours each, run by r3.0 and UNRISD with support from the Center for Sustainable Organizations. These Sessions introduced the foundational concepts that undergird the SDPI project, such as the Sustainability Context Principle, the Sustainability Quotient, thresholds and allocations, and necessary transformations. The Training Sessions also introduced the SDPI set of indicators, with sessions on each of the four areas (economic, environmental, social, and institutional) while focusing in particular on Tiers Two and Three, which represent new thinking and practice.

The piloting organizations then embarked on a journey of testing the indicators by implementing them to assess their organizational performance. To enable this, UNRISD created an in-depth Questionnaire, which took the form of an excel spreadsheet with a User Guide and then a series of tabs configured to receive quantitative data entry for each indicator across the three Tiers, as well as tabs for qualitative feedback on the indicators and the piloting process.

The qualitative component of the Questionnaire sought to “harvest feedback on how implementation of the indicators went for you during the project timeline. We are asking you to answer these 7 questions, to the degree that this feedback is relevant, for each indicator.” These questions / prompts included:

- Alignment (to other indicator frameworks, such as the Global Reporting Initiative)
- Challenges
- (Im)materiality
- Missing indicator(s)
- Value to your understanding
- Benefits
- Biggest learning

Of the 23 piloting organizations, 6 FPEs, 8 SSEOEs, and 2 other organizations completed the Questionnaire, while the remaining organizations engaged by other means, including through interviews on their experiences.

Box 4. SDPI Pilot test Participants



Anglo American
(provision of data)



Cabot Creamery Co-operative
(provision of comments)



City of Kitchener
(provision of data)



DoBrain
(provision of data)



Donggubat
(provision of data)



Elecom
(provision of data)



FAGOR Ederlan Group (MONDRAGON)
(provision of data)



GLS Bank
(provision of data)



GVK Society



iCOOP
(provision of data)



Impact Management Project
(provision of comments)



Indian Farm Forestry Development Cooperative
(provision of data)



Laboral Kutxa (MONDRAGON)
(provision of data)



Manulife
(provision of comments)



Refocus



Sancor Seguros



SAOS
(provision of data)



SK Hynix
(provision of data)



Vancity
(provision of data)



Weleda
(provision of data)



World Bank
(provision of data)



World Benchmarking Alliance
(provision of comments)



YASSASREE
(provision of data)

Throughout the piloting phase, r3.0 hosted virtual “Office Hours” via Zoom for one hour every other week during the months of March through May of 2021, providing an open opportunity for piloting organizations to bring questions and challenges for troubleshooting and shared learning. r3.0 recorded these sessions, and also maintained a spreadsheet of questions and issues raised as well as logging summaries of the responses it provided, enabling pilot test participants who were unable to attend the Office Hours in real time to efficiently access detailed information to support their work.

At the end of the pilot period, piloting organizations submitted their Questionnaires for assessment. r3.0 developed an assessment methodology consisting of several elements, including a Heatmap identifying the degree to which organizations responded to each indicator (1: no data provided; 2: some (but not all) data provided; 3: all necessary data provided)¹¹. See Figure 5.

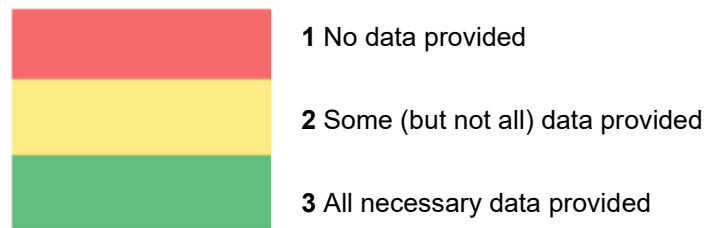


Figure 5. Heatmap Scoring Legend

r3.0 “scored” pilot organizations on their responses on all indicators in all three tiers. See Figure 6 for an example of the Heatmap Scorecards.

¹¹ The heat map scores reflect the performance of the 6 FPEs and 8 SSEOs

Tier one

1.A.1.1	Revenue	2
1.A.1.2	Value added	3
1.A.1.3	Net value added (NVA)	3
1.A.2.1	Taxes and other payments to the government	3
1.A.3.1	Green investment	3
1.A.3.2	Community investment	3
1.A.3.3	Total expenditures on research and development	1
1.A.4.1	Percentage of local procurement	3
1.B.1.1	Water recycling and reuse	1
1.B.1.2	Water use efficiency	3
1.B.1.3	Water stress	3
1.B.2.1	Reduction of waste generation	3
1.B.2.2	Waste reused, re-manufactured and recycled	3
1.B.2.3	Hazardous waste	3
1.B.3.1	Greenhouse gas emissions (scope 1)	3
1.B.3.2	Greenhouse gas emissions (scope 2)	3
1.B.4.1	Ozone-depleting substances and chemicals	1
1.B.5.1	Renewable Energy	3
1.B.5.2	Energy efficiency	3
1.C.1.1	Proportion of women in managerial positions	3
1.C.2.1	Average hours of training per year per employee	1
1.C.2.2	Expenditure on employee training per year per employee	3

1.C.2.3	Employee wages and benefits as a proportion of revenue, with breakdown by employment type and gender	3
1.C.3.1	Expenditures on employee health and safety as a proportion of revenue	3
1.C.3.2	Frequency/incidence of rates of occupational injuries	3
1.C.4.1	Percentage of employees covered by collective agreements	3
1.D.1.1	Number of board meetings and attendance rate	3
1.D.1.2	Number and percentage of women board members	3
1.D.1.3	Board members by age range	3
1.D.1.4	Number of meetings of audit committee and attendance rate	3
1.D.1.5	Compensation: total compensation per board member (both executive and non-executive directors)	3
1.D.2.1	Amount of fines paid or payable due to settlements	1
1.D.2.2	Average hours of training on anti-corruption issues per year per employee	1

Tier two

2.A.1.3	Five-year trend in net value added	3
2.A.2.1	Five-year trend in tax gap (for top 3 countries by revenue)	3
2.A.3.1	Five-year trend in green investment	3
2.A.3.2	Five-year trend in community investment	3
2.A.3.3	Five-year trend in sustainability alignment with relative expenditure on research and development	1
2.A.4.1	Five-year trend in percentage of local procurement	3
2.B.2.1	Five-year trend in solid waste kg.	2
2.B.2.3	Five-year trend in hazardous waste treatment	3
2.B.3.1	Five-year trend in greenhouse gas emissions	3
2.C.1.1	Five-year trend in gender equality: proportion of women in managerial positions	3
2.C.3.2	Five-year trend in frequency rates of occupational injuries	1

2.C.4.1	Five-year trend in union density and collective bargaining coverage	2
2.D.1.1	Five-year trend in number of board meetings and attendance rate	2
2.D.1.2	Five-year trend in percentage of women board members	3
2.D.1.3	Five-year trend in board members by age range	3
2.D.1.4	Five-year trend in the number of meetings of audit committee and attendance rate	3
2.D.1.5	Five-year trend in average compensation per board member (both executive and non-executive members)	3
2.D.2.1	Five-year trend in amount of corruption-related fines paid or payable due to settlements	3
2.D.2.2	Five-year trend in number of hours training on anti-corruption	1

Tier three

3.A.1.1	Fiscal disclosure	3
3.B.1.1	Greenhouse gas emissions	3
3.B.1.2	Water use	3
3.B.1.3	Circular economy: life cycle assessment	1
3.C.1.1	CEO-worker pay ratio	3
3.C.1.2	Five-year living wage gap	1
3.C.1.3	Distribution of surplus/profits	3
3.C.2.1	Gender pay gap: equality of remuneration	2
3.C.2.2	Gender diversity: hiring and promotion at different occupational levels	3
3.C.2.3	Dependent care: caregiving support programmes	2
3.C.3.1	Harassment and discrimination at the workplace	3
3.C.3.2	Access to remedy	3
3.C.3.3	Discrimination in hiring and promotion	3
3.C.3.4	Worker participation	3
3.C.3.5	Contingent and subcontracted workers	2
3.C.4.1	Hiring of vulnerable groups	3

3.C.4.2	Long-term work contracts	3
3.C.4.3	Employee turnover rate	3
3.C.4.4	Training of vulnerable groups	2
3.C.4.5	Work integration	1
3.C.5.1	Responsible and ethical sourcing	3
3.D.1.1	Corporate political influence: policies, programmes and practices	3
3.D.2.1	Context-based triple bottom line accounting	3
3.D.3.1	Amount of total fines paid or payable due to settlements	3
3.D.4.1	Public sharing of information and knowledge	3
3.D.5.1	Term limits for board of directors	3
3.D.5.2	Five-year trend in attendance at annual general meetings	2
3.D.5.3	Democratic elections	3
3.D.5.4	Legitimation of management	3
3.D.5.5	Stakeholder participation	3
3.D.6.1	Resilience	3

Figure 6. Sample Heatmap Scorecards

The Questionnaire assessment methodology also compiled the Hard Context Performance Scorecards, recording whether the performance was sustainable (S) or unsustainable (U), or whether there was insufficient information (I) to make a performance determination. See Figure 7 for an example of the Hard Context Performance Scorecards.

Tier two

#	Description	5-year results (S=sustainable; U=unsustainable; I=insufficient information)				
		t	t-1	t-2	t-3	t-4
II.A.2.1.	Five-Year Trend: Tax Gap	I	I	I	I	I
II.B.2.1.	Five-Year Trend: Solid Waste	I	I	I	I	I
II.B.2.3.	Five-Year Trend: Hazardous Waste	I	I	I	I	I
II.B.3.1.	Five-Year Trend: GHGs (Scope 1 & 2)	U	U	U	U	U
II.C.1.1.	Five-Year Trend: Gender Equality in Managerial Positions	S	S	S	S	S
II.C.3.2.	Five Year Trend: Occupational Injuries	I	I	I	I	I
II.D.1.2.	Five Year Trend: Women Board Members	S	S	S	S	S
II.D.2.1.	Five Year Trend: Corruption-Related Fines	S	S	S	S	S

Tier three

#	Description	5-year results (S=sustainable; U=unsustainable; I=insufficient information)				
		t	t-1	t-2	t-3	t-4
III.B.1.1.	GHG Emissions (Scope 3)	U				
III.B.1.2.	Water use	S				
III.C.1.1.	CEO-Worker Pay Ratio	S				
III.C.1.2.	Five Year Trend: Living Wage Gap	I	I	I	I	I
III.C.2.1.	Gender Equality: Gender Pay Gap (No. 1) for Overall	U	U	U	U	U
	Gender Equality: Gender Pay Gap (No. 2) for Sr. Management	I	I	I	I	I
	Gender Equality: Gender Pay Gap (No. 2) for Management	I	I	I	I	I
	Gender Equality: Gender Pay Gap (No. 2) for Non-Management	I	I	I	I	I
III.C.2.2.	Gender Equality: Hiring & Promotion (No. 1) for Overall (year t only)	U				
	Gender Equality: Hiring & Promotion (No. 2) for Sr. Management	I	U	U	U	U
	Gender Equality: Hiring & Promotion (No. 2) for Management	I	U	U	U	U
	Gender Equality: Hiring & Promotion (No. 2) for Non-Management	I	U	U	U	U
III.C.2.3.	Dependent Care	U				
III.D.2.1.	Performance Accounting: Context-based TBL	U				
III.D.3.1.	Fines & Settlements	S				

Figure 7. Sample Hard Context Performance Scorecards

Each piloting company that submitted a Questionnaire received a Report back from r3.0 summarizing the key messages of its feedback (including obstacles it faced), along with an assessment of its results on these scorecards, and finally, suggested next steps.

4. Pilot Test Aggregate Findings and Analysis

The findings of this pilot test fall into the two primary categories represented in the Questionnaire: quantitative and qualitative. The quantitative results are reflected in the Heatmap Scorecards and Hard Context Performance Scorecards, compiled at the aggregate level for discerning overall trends. The qualitative results were harvested not only from the qualitative feedback tabs in the Questionnaires, but also in the Office Hours sessions and the Interviews with pilot test participants.

4.1 Quantitative Results

The quantitative results of the pilot test are compiled across three primary angles: first, the Heatmap Scorecards, which reflect the degree to which pilot test participants provided data on the indicators; second, the Hard Context Performance Scorecards which demonstrate the degree to which the indicators are capable of discerning sustainability performance from the inputted data; and finally, an assessment of the degree to which pilot test participants found the indicators material to their business models -- or not.

4.1.1 Heatmap Scorecards

A full listing of Heatmap Scorecards across all indicators is included in Figure 8, to provide a foundation for analysis of the implications of the Heatmap Scorecards as they pertain to the relative value of each of the indicators, and the different Tiers and types of indicators within the full SDPI set.

Tier one

#	Description	Average
1.A.1.1	Revenue	2.5
1.A.1.2	Value added	2.8
1.A.1.3	Net value added (NVA)	3
1.A.2.1	Taxes and other payments to the government	2.9
1.A.3.1	Green investment	2.3
1.A.3.2	Community investment	2.7
1.A.3.3	Total expenditures on research and development	2.6
1.A.4.1	Percentage of local procurement	2.5
1.B.1.1	Water recycling and reuse	2.2
1.B.1.2	Water use efficiency	2.3
1.B.1.3	Water stress	1.9
1.B.2.1	Reduction of waste generation	2.1
1.B.2.2	Waste reused, re-manufactured and recycled	2.1
1.B.2.3	Hazardous waste	2.5
1.B.3.1	Greenhouse gas emissions (scope 1)	2.5
1.B.3.2	Greenhouse gas emissions (scope 2)	2.7
1.B.4.1	Ozone-depleting substances and chemicals	2.2
1.B.5.1	Renewable Energy	2.5
1.B.5.2	Energy efficiency	2.5
1.C.1.1	Proportion of women in managerial positions	2.9
1.C.2.1	Average hours of training per year per employee	2.5
1.C.2.2	Expenditure on employee training per year per employee	2.8
1.C.2.3	Employee wages and benefits as a proportion of revenue, with breakdown	2.8
1.C.3.1	Expenditures on employee health and safety as a proportion of revenue	2.4
1.C.3.2	Frequency/incidence of rates of occupational injuries	2.8
1.C.4.1	Percentage of employees covered by collective agreements	2.9
1.D.1.1	Number of board meetings and attendance rate	2.8
1.D.1.2	Number and percentage of women board members	3
1.D.1.3	Board members by age range	3
1.D.1.4	Number of meetings of audit committee and attendance rate	2.7
1.D.1.5	Compensation: total compensation per board member (both executive and	2.8
1.D.2.1	Amount of fines paid or payable due to settlements	2.8
1.D.2.2	Average hours of training on anti-corruption issues per year per employee	2.5
Average		2.6

Tier two

#	Description	Average
2.A.1.3	Five-year trend in net value added	2.8
2.A.2.1	Five-year trend in tax gap (for top 3 countries by revenue)	2.3
2.A.3.1	Five-year trend in green investment	2.2
2.A.3.2	Five-year trend in community investment	2.7
2.A.3.3	Five-year trend in sustainability alignment with relative expenditure on	1.9
2.A.4.1	Five-year trend in percentage of local procurement	2.3
2.B.2.1	Five-year trend in solid waste kg.	2.2
2.B.2.3	Five-year trend in hazardous waste treatment	2.2
2.B.3.1	Five-year trend in greenhouse gas emissions	2.3
2.C.1.1	Five-year trend in gender equality: proportion of women in managerial	3
2.C.3.2	Five-year trend in frequency rates of occupational injuries	2.5
2.C.4.1	Five-year trend in union density and collective bargaining coverage	2.4
2.D.1.1	Five-year trend in number of board meetings and attendance rate	2.7
2.D.1.2	Five-year trend in percentage of women board members	2.9
2.D.1.3	Five-year trend in board members by age range	2.8
2.D.1.4	Five-year trend in the number of meetings of audit committee and	2.7
2.D.1.5	Five-year trend in average compensation per board member (both	2.6
2.D.2.1	Five-year trend in amount of corruption-related fines paid or payable due to	3
2.D.2.2	Five-year trend in number of hours training on anti-corruption	2.4
Average		2.5

Tier three (for-profit enterprises)

#	Description	Average
3.A.1.1.	Fiscal disclosure	2.5
3.B.1.1.	Greenhouse gas emissions	2
3.B.1.2.	Water use	2
3.B.1.3.	Circular economy: life cycle assessment	1
3.C.1.1.	CEO-worker pay ratio	2.3
3.C.1.2.	Five-year living wage gap	2.3
3.C.1.3.	Distribution of surplus/profits	2.3
3.C.2.1.	Gender pay gap: equality of remuneration	2
3.C.2.2.	Gender diversity: hiring and promotion at different occupational levels	2.5
3.C.2.3.	Dependent care: caregiving support programmes	2.5
3.C.3.1.	Harassment and discrimination at the workplace	3
3.C.3.2.	Access to remedy	3
3.C.3.3.	Discrimination in hiring and promotion	3
3.C.3.4.	Worker participation	3
3.C.3.5.	Contingent and subcontracted workers	2
3.C.4.1.	Hiring of vulnerable groups	2
3.C.4.2.	Long-term work contracts	2.3
3.C.4.3.	Employee turnover rate	3
3.C.5.1.	Responsible and ethical sourcing	2.3
3.D.1.1.	Corporate political influence: policies, programmes and practices	2
3.D.2.1.	Context-based triple bottom line accounting	2.5
3.D.3.1.	Amount of total fines paid or payable due to settlements	3
3.D.4.1.	Public sharing of information and knowledge	2.5
3.D.5.1.	Term limits for board of directors	2.5
3.D.6.1.	Resilience	3
Average		2.4

Tier three (social and solidarity economy organizations & enterprises)

#	Description	Average
3.A.1.1	Fiscal disclosure	2.7
3.B.1.1	Greenhouse gas emissions	2
3.B.1.2	Water use	2.1
3.B.1.3	Circular economy: life cycle assessment	1.2
3.C.1.1	CEO-worker pay ratio	2.6
3.C.1.2	Five-year living wage gap	2
3.C.1.3	Distribution of surplus/profits	2.3
3.C.2.1	Gender pay gap: equality of remuneration	2.3
3.C.2.2	Gender diversity: hiring and promotion at different occupational levels	2.6
3.C.2.3	Dependent care: caregiving support programmes	2.2
3.C.3.1	Harassment and discrimination at the workplace	3
3.C.3.2	Access to remedy	3
3.C.3.3	Discrimination in hiring and promotion	3
3.C.3.4	Worker participation	3
3.C.3.5	Contingent and subcontracted workers	2.4
3.C.4.1	Hiring of vulnerable groups	2.6
3.C.4.2	Long-term work contracts	2.7
3.C.4.3	Employee turnover rate	2.8
3.C.4.4	Training of vulnerable groups	2.6
3.C.4.5	Work integration	2.3
3.C.5.1	Responsible and ethical sourcing	2.8
3.D.1.1	Corporate political influence: policies, programmes and practices	2.4
3.D.2.1	Context-based triple bottom line accounting	2.3
3.D.3.1	Amount of total fines paid or payable due to settlements	2.3
3.D.4.1	Public sharing of information and knowledge	2.6
3.D.5.1	Term limits for board of directors	2.6
3.D.5.2	Five-year trend in attendance at annual general meetings	2.4
3.D.5.3	Democratic elections	3
3.D.5.4	Legitimation of management	2.9
3.D.5.5	Stakeholder participation	3
3.D.6.1	Resilience	2.8
Average		2.5

Figure 8. Heatmap Scorecards for Tiers One, Two, Three for FPEs and Three for SSEOs

The Heatmap Scorecards represent the degree to which companies provided data for each indicator, thus acting as a proxy for the feasibility of piloting organizations to implement the indicator. The Heatmap Scorecards can be interpreted as the barometer of the implementability of the indicators, identifying the indicators that organizations are currently willing and able to disclose.

However, while organizations fell short in providing data for some of the indicators, this does not mean that those indicators with less data provided are not “ready for market”. Being aspirational, these indicators can encourage companies to continue to “push the envelope”. The question of why the pilot organizations failed to provide comprehensive data, nevertheless, is worth being investigated to improve the usability of indicators.

There are multiple reasons why piloting organizations opted against providing data, including (but are not limited to) the following:

- Indicator is not tracked / measured;
- Indicator is tracked, but data was not accessible;
- Data is sensitive / proprietary;
- Difficulty interpreting instructions in the Manual / Questionnaire;
- Indicator considered immaterial to the business model.

One way to interpret these results is to focus first on the extremes: instances where **all** piloting organizations provided data (i.e. average scores of 3), and instances where **no** piloting organizations provided data (i.e. average scores of 1).

On the former front, there are 9 Indicators (3 in Tier One; 2 in Tier Two; and 4 in Tier Three) where **all** piloting organizations (FPEs and SSEOEs) provided complete data, and an additional 2 SSEOE-specific indicators where **all** SSEOEs provided complete data. See Figure 9 for a full list of these indicators:

#	Description	Average
TIER ONE		
1.A.1.3	Net value added (NVA)	3
1.D.1.2	Number and percentage of women board members	3
1.D.1.3	Board members by age range	3
Tier TWO		
2.C.1.1	Five-year trend in gender equality: proportion of women in managerial positions	3
2.D.2.1	Five-year trend in amount of corruption-related fines paid or payable due to settlements	3
TIER THREE		
3.C.3.1.	Harassment and discrimination at the workplace	3
3.C.3.2.	Access to remedy	3
3.C.3.3.	Discrimination in hiring and promotion	3
3.C.3.4.	Worker participation	3
3.C.4.3.	Employee turnover rate	3
3.D.3.1.	Amount of total fines paid or payable due to settlements	3
3.D.6.1.	Resilience	3
TIER THREE -- SSEOE		
3.D.5.3	Democratic elections	3
3.D.5.5	Stakeholder participation	3

Figure 9. Indicators with Heatmap Scores of 3 (Full Data) for All Pilot test participants

Based solely on the criterion of “reportability” (i.e. feasibility to disclose), these indicators clearly “passed” this pilot test.

On the other end of the spectrum, there was only one indicator that **no** FPEs provided information on, and only one SSEOE provided information. See Figure 10 below.

#	Description	Average
3.B.1.3.	Circular economy: life cycle assessment	1.2

Figure 10. Indicators with Heatmap Scores of 1 (No Data) for Most All Pilot test participants

Of course, the average Heatmap Score for the lion's share of indicators falls between these extremes, with an overall average across the three tiers of 2.5. One way to integrate this information into the assessment of the indicator sets is to set a "threshold" average score, below which to focus consideration of dropping indicators from the overall set. If this "threshold" were set at 2.5 (approximately the average score), there would be 32 indicators that scored lower to consider; if we lower the threshold to 2.2, there would be 11 indicators that scored lower to consider.

However, eliminating indicators solely based on Heatmap scores could be considered arbitrary, so it seems that the Heatmap Scorecards serve best to provide a first layer criterion to integrate with other criteria for consideration around indicator inclusion and exclusion.

4.1.2 Immateriality Claims

There is an inherent dynamic tension between broad, generic sets of indicators, and indicators that are material to a specific organization's business model and impacts on the world. Accordingly, the Questionnaire included a category on materiality, asking pilot organizations to identify indicators that are immaterial to their circumstances. See Figure 11 for a full listing of Immateriality Claims for all indicators.

Tier one

#	Description	Immaterial Claims
1.A.1.1	Revenue	1
1.A.1.2	Value added	1
1.A.1.3	Net value added (NVA)	1
1.A.2.1	Taxes and other payments to the government	3
1.A.3.1	Green investment	2
1.A.3.2	Community investment	2
1.A.3.3	Total expenditures on research and development	1
1.A.4.1	Percentage of local procurement	2
1.B.1.1	Water recycling and reuse	4
1.B.1.2	Water use efficiency	2
1.B.1.3	Water stress	1
1.B.2.1	Reduction of waste generation	1
1.B.2.2	Waste reused, re-manufactured and recycled	1
1.B.2.3	Hazardous waste	2
1.B.3.1	Greenhouse gas emissions (scope 1)	1
1.B.3.2	Greenhouse gas emissions (scope 2)	3
1.B.4.1	Ozone-depleting substances and chemicals	5
1.B.5.1	Renewable Energy	3
1.B.5.2	Energy efficiency	2
1.C.1.1	Proportion of women in managerial positions	1
1.C.2.1	Average hours of training per year per employee	2
1.C.2.2	Expenditure on employee training per year per employee	3
1.C.2.3	Employee wages and benefits as a proportion of revenue, with breakdown by employment type and gender	3
1.C.3.1	Expenditures on employee health and safety as a proportion of revenue	2
1.C.3.2	Frequency/incidence of rates of occupational injuries	2
1.C.4.1	Percentage of employees covered by collective agreements	2
1.D.1.1	Number of board meetings and attendance rate	3
1.D.1.2	Number and percentage of women board members	2
1.D.1.3	Board members by age range	2
1.D.1.4	Number of meetings of audit committee and attendance rate	2
1.D.1.5	Compensation: total compensation per board member (both executive and non-executive directors)	3
1.D.2.1	Amount of fines paid or payable due to settlements	2
1.D.2.2	Average hours of training on anti-corruption issues per year per employee	1

Tier two

#	Description	Immaterial Claims
2.A.1.3	Five-year trend in net value added	1
2.A.2.1	Five-year trend in tax gap (for top 3 countries by revenue)	3
2.A.3.1	Five-year trend in green investment	2
2.A.3.2	Five-year trend in community investment	2
2.A.3.3	Five-year trend in sustainability alignment with relative expenditure on research and development	1
2.A.4.1	Five-year trend in percentage of local procurement	2
2.B.2.1	Five-year trend in solid waste kg.	1
2.B.2.3	Five-year trend in hazardous waste treatment	2
2.B.3.1	Five-year trend in greenhouse gas emissions	2
2.C.1.1	Five-year trend in gender equality: proportion of women in managerial positions	1
2.C.3.2	Five-year trend in frequency rates of occupational injuries	2
2.C.4.1	Five-year trend in union density and collective bargaining coverage	3
2.D.1.1	Five-year trend in number of board meetings and attendance rate	1
2.D.1.2	Five-year trend in percentage of women board members	2
2.D.1.3	Five-year trend in board members by age range	2
2.D.1.4	Five-year trend in the number of meetings of audit committee and attendance rate	1
2.D.1.5	Five-year trend in average compensation per board member (both executive and non-executive members)	1
2.D.2.1	Five-year trend in amount of corruption-related fines paid or payable due to settlements	1
2.D.2.2	Five-year trend in number of hours training on anti-corruption	0

Tier three

#	Description	Immaterial Claims
3.A.1.1	Fiscal disclosure	2
3.B.1.1	Greenhouse gas emissions	1
3.B.1.2	Water use	3
3.B.1.3	Circular economy: life cycle assessment	2
3.C.1.1	CEO-worker pay ratio	2
3.C.1.2	Five-year living wage gap	2
3.C.1.3	Distribution of surplus/profits	3
3.C.2.1	Gender pay gap: equality of remuneration	3
3.C.2.2	Gender diversity: hiring and promotion at different occupational levels	2
3.C.2.3	Dependent care: caregiving support programmes	2
3.C.3.1	Harassment and discrimination at the workplace	1
3.C.3.2	Access to remedy	0
3.C.3.3	Discrimination in hiring and promotion	0
3.C.3.4	Worker participation	0
3.C.3.5	Contingent and subcontracted workers	3
3.C.4.1	Hiring of vulnerable groups	1
3.C.4.2	Long-term work contracts	1
3.C.4.3	Employee turnover rate	3
3.C.4.4	Training of vulnerable groups	0
3.C.4.5	Work integration	0
3.C.5.1	Responsible and ethical sourcing	1
3.D.1.1	Corporate political influence: policies, programmes and practices	3
3.D.2.1	Context-based triple bottom line accounting	3
3.D.3.1	Amount of total fines paid or payable due to settlements	3
3.D.4.1	Public sharing of information and knowledge	1
3.D.5.1	Term limits for board of directors	2
3.D.5.2	Five-year trend in attendance at annual general meetings	1
3.D.5.3	Democratic elections	1
3.D.5.4	Legitimation of management	1
3.D.5.5	Stakeholder participation	1
3.D.6.1	Resilience	0

Figure 11. Immateriality Claims in Tiers One, Two, and Three

Eight of the piloting organizations provided feedback on materiality, and five did not provide any input on materiality one way or the other. Amongst these 13 organizations, responses varied very widely:

- **Zero:** Two enterprises provided qualitative responses on materiality, but did not actually make any claims of immateriality;
- **Very Few:** Three enterprises made very few immateriality claims – **one, three, and seven**, respectively;
- **Very Many:** Three enterprises made *significant* numbers of immateriality claims – **28, 42, and 65**, respectively.

There are two primary dynamics to consider for the high level of immateriality claims: many of these claims are likely legitimately immaterial; at the same time, however, they may also represent

a misunderstanding of Context-Based Materiality, which is established by determining an enterprise’s duties and obligations to stakeholders to manage its impacts on vital capitals in ways that can/should affect these stakeholders’ well-being (McElroy 2019). In the latter case, there may be some (or even many) immateriality claims that would not withstand this scrutiny. For example, it stretches credibility to claim that the gender pay gap is “immaterial”. Be that as it may, for the purposes of this pilot test, what’s of interest are the *claims* of immateriality by the pilot test participants – in other words, what’s relevant is the enterprises’ own determinations of immateriality, and by extension the perceived relevance of those indicators to the organizations.

For the purposes of assessing the value of these indicators, it is vital to assess the immateriality claims as they pertain to specific indicators. First considering instances of *no* immateriality claims, there were 7 indicators with this universal assertion of materiality. See Figure 12 for the listing.

#	Description	Immaterial Claims
2.D.2.2	Five-year trend in number of hours training on anti-corruption	0
3.C.3.2	Access to remedy	0
3.C.3.3	Discrimination in hiring and promotion	0
3.C.3.4	Worker participation	0
3.C.4.4	Training of vulnerable groups	0
3.C.4.5	Work integration	0
3.D.6.1	Resilience	0

Figure 12. Indicators with No Immateriality Claims

Cross-referencing this against the highest Heatmap Scores (of 3, where all pilot organizations provided data), we find three instances of overlap:

- Access to remedy (3.C.3.2);
- Discrimination in hiring and promotion (3.C.3.3); and
- Worker participation (3.C.3.4).

These indicators are thus the clear candidates for inclusion in a final SDPI set. However, an indicator set composed exclusively of these indicators would clearly be incomplete.

On the other end of the spectrum, there was one indicator with 5 immateriality claims (Ozone-depleting substances and chemicals – 1.B.4.1), and another one indicator with 4 immateriality claims (Water recycling and reuse – 1.B.1.1), and 17 indicators with 3 immateriality claims (See Figure 13 for a listing of these).

#	Description	Immaterial Claims
TIER ONE		
1.A.2.1	Taxes and other payments to the government	3
1.B.3.2	Greenhouse gas emissions (scope 2)	3
1.B.5.1	Renewable Energy	3
1.C.2.2	Expenditure on employee training per year per employee	3
1.C.2.3	Employee wages and benefits as a proportion of revenue, with breakdown by employment type and gender	3
1.D.1.1	Number of board meetings and attendance rate	3
1.D.1.5	Compensation: total compensation per board member (both executive and non-executive directors)	3
TIER TWO		
2.A.2.1	Five-year trend in tax gap (for top 3 countries by revenue)	3
2.C.4.1	Five-year trend in union density and collective bargaining coverage	3
TIER THREE		
3.B.1.2	Water use	3
3.C.1.3	Distribution of surplus/profits	3
3.C.2.1	Gender pay gap: equality of remuneration	3
3.C.3.5	Contingent and subcontracted workers	3
3.C.4.3	Employee turnover rate	3
3.D.1.1	Corporate political influence: policies, programmes and practices	3
3.D.2.1	Context-based triple bottom line accounting	3
3.D.3.1	Amount of total fines paid or payable due to settlements	3

Figure 13. Indicators with 3 Immateriality Claims

Cross-referencing this against the lowest Heatmap Scores (where pilot companies did not provide data) does not yield overlaps, which ‘monkey wrenches’ the goal of identifying indicators to exclude based on data lapses that coincide with immateriality claims.

In sum, it is clear that (im)materiality claims should play a key role in determining which indicators to leave in and which indicators to leave out of the SDPI set. However, (im)materiality claims cannot serve as the sole input for such decision-making; rather, (im)materiality claims must triangulate with other key factors, including (but not limited to) Heatmap scoring.

4.1.3 Hard Context Performance Scorecards

Hard Context Indicators exist in Tiers Two and Three, so we will analyse results for each Tier separately. The Hard Context Performance Scorecards show if pilot organizations perform *sustainably* (S) or *unsustainably* (U), or if they provided *insufficient information* (I).

From the indicator piloting perspective, the most relevant information is whether pilot organizations were able to provide sufficient information to make a sustainability determination, or if they were unable to provide sufficient information; the actual determination of sustainable or unsustainable performance is less relevant to the indicator piloting. (Post-pilot, of course, the *most* relevant output of Sustainable Development Performance Indicators is the *sustainable* or *unsustainable* determination).

In Tier Two, pilot test participants were more hard-pressed to provide sufficient information for the Economic (A) and Environmental (B) indicators, than they were for the Social (C) and Institutional (D) indicators, as illustrated in Figure 14 below.

#	Description	Year t			Year t-1			Year t-2			Year t-3			Year t-4		
		S	U	I	S	U	I	S	U	I	S	U	I	S	U	I
II.A.2.1.	Five-Year Trend: Tax Gap	1	0	11	1	0	10	1	1	10	1	1	10	1	1	10
II.B.2.1.	Five-Year Trend: Solid Waste	1	1	10	2	1	9	1	1	10	1	1	10	1	1	10
II.B.2.3.	Five-Year Trend: Hazardous Waste	4	1	8	4	0	8	4	0	8	3	0	9	3	0	9
II.B.3.1.	Five-Year Trend: GHGs (Scope 1 & 2)	0	7	5	0	7	5	0	6	6	0	6	6	0	6	6
II.C.1.1.	Five-Year Trend: Gender Equality in Managerial Positions	6	6	0	4	8	0	3	9	0	2	10	0	3	8	1
II.C.3.2.	Five Year Trend: Occupational Injuries	9	1	2	8	2	2	9	1	2	9	0	3	8	0	4
II.D.1.2.	Five Year Trend: Women Board Members	4	8	0	4	8	0	4	7	1	4	7	1	3	7	2
II.D.2.1.	Five Year Trend: Corruption-Related Fines	12	0	0	12	0	0	12	0	0	11	1	0	10	1	1
Sums	Over all indicators	37 of 96	24 of 96	36 of 96	35 of 96	26 of 96	34 of 96	34 of 96	25 of 96	37 of 96	31 of 96	26 of 96	39 of 96	29 of 96	24 of 96	43 of 96
Total	Percentages	39%	25%	38%	36%	27%	35%	35%	26%	39%	32%	27%	40%	30%	25%	45%

Figure 14. Five-Year Performance Scorecard for Tier Two Hard Context Indicators

Plotting overall performance averages over five years for the full pilot group, an interesting dynamic emerges: unsustainable performance remained relatively consistent across this time span (from 25% to 27%); but when pilot enterprises generally provided more information as the years passed (from 45% in Year t-4 to 35% in Year t-1), sustainable performance gradually and consistently rose (from 30% in Year t-4 to 39% in Year t). This rising sustainable performance even persisted through the slight dip in disclosure from the second year (Year t-1) to the first year (Year t). See Figure 15 below.

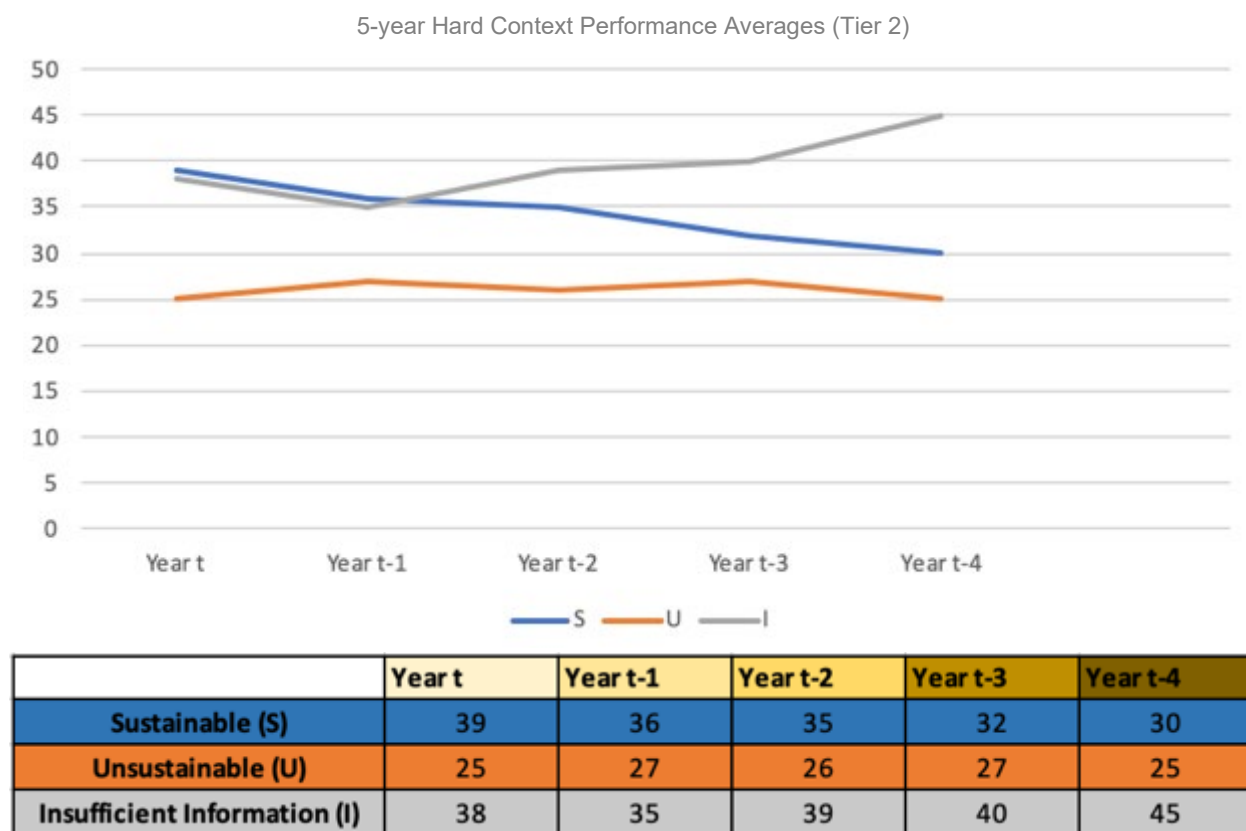


Figure 15: Five-Year Performance Percentage Averages for Tier Two Hard Context Indicators in Aggregate

4.1.3.1 Tier Three Hard Context

When it comes to Hard Context Indicators, Tier Three differs from Tier Two, in that the former contains Hard Context indicators that call for data covering a single year *as well as* other indicators that call for data covering 5-year periods (the latter, as we have just seen, *only* contains 5-year Hard Context indicators).

4.1.3.1.1 Tier Three Hard Context: One Year Results

The One Year results mirror one dynamic from Tier Two, in that pilot test participants generally were harder pressed to provide sufficient data on the two Environmental (B) indicators (there are no Economic Hard Context indicators in Tier Three), and found it easier (relatively speaking) to provide data on two Social (C) indicators and two Institutional (D) indicators. And generally speaking, For-Profit Enterprises (FPEs) were less encumbered in terms of providing information than Social & Solidarity Economy Organizations & Enterprises (SSEOEs): FPEs provided insufficient information in only 4 instances overall, and provided sufficient information in more than three times as many instances (14); SSEOEs, on the other hand, provided insufficient information in 23 instances, and provided sufficient information in only 31 instances. See Figure 16 below. This makes a certain amount of sense, in that one would expect FPEs to be better resourced than SSEOEs (though *overall* data provision trends in this pilot suggest that SSEOEs did a *better* job providing data than FPEs, particularly on Tier Three as a whole, considering all indicators instead of just Hard Context indicators).

#	Description	1-Year Results FPE			1-Year Results SSE			1-Year Results ALL		
		S	U	I	S	U	I	S	U	I
III.B.1.1.	GHG Emissions (Scope 3)	0	1	2	0	5	4	0	6	6
III.B.1.2.	Water use	1	1	1	0	0	9	1	1	10
III.C.1.1.	CEO-Worker Pay Ratio	2	1	0	6	1	2	8	2	2
III.C.2.3.	Dependent Care	1	2	0	1	5	3	2	7	3
III.D.2.1.	Performance Accounting: Context-based TBL	1	1	1	0	7	2	1	8	3
III.D.3.1.	Fines & Settlements	3	0	0	5	1	3	8	1	3
	Total 1-year results	8	6	4	12	19	23	20	25	27

Figure 16. Tier Three Hard Context One Year Results

The Five-Year indicators are focused on two elements in the Social (C) area: Living Wages and Gender Equality. Here, pilot test participants experienced the same kinds of challenges providing sufficient information as with the Economic (A) and Environmental (B) areas in Tier Two (Five Year) and Tier Three One Hard Context Indicators.

4.1.3.1.2 Tier Three Hard Context: Five Year Results

The Hard Context indicators in Tier Three that call for five-year time-series snapshots are limited to only one of the four areas: Social (C). Accordingly, we cannot compare Tier Two cross-area dynamics (which found information insufficiencies higher in the Economic (A) and Environmental (B) areas than in the Social (C) and Institutional (D) areas) with such dynamics in Tier Three, given that it covers only one area (Social / C).

#	Description	Year t			Year t-1			Year t-2			Year t-3			Year t-4		
		S	U	I	S	U	I	S	U	I	S	U	I	S	U	I
III.C.1.2.	Five Year Trend: Living Wage Gap	5	1	6	4	0	8	3	0	9	3	0	9	2	1	9
III.C.2.1.	Gender Equality: Gender Pay Gap (No. 1)	3	6	3	1	5	6	1	5	6	0	6	6	0	4	8
	Gender Equality: Gender Pay Gap (No. 2)	2	3	7	2	2	8	1	3	8	1	3	8	1	1	10
III.C.2.2.	Gender Equality: Hiring & Promotion (No. 2)	1	2	9	1	8	3	1	7	4	1	6	5	1	6	5
Sums	Over all indicators	11 of 48	12 of 48	25 of 48	8 of 48	15 of 48	25 of 48	6 of 48	15 of 48	27 of 48	5 of 48	15 of 48	28 of 48	4 of 48	12 of 48	32 of 48
Total	Percentages	23%	25%	52%	17%	31%	52%	13%	31%	56%	10%	31%	58%	8%	25%	67%

Figure 17. Tier Three Hard Context Five Year Results

Interestingly, the five-year results for Hard Context Performance Averages in Tier Three replicated a similar dynamic as those in Tier Two when it comes to sustainable versus unsustainable performance in relation to information insufficiencies. Specifically, Unsustainable Performance (U) remained relatively “flat” over the time period, starting at 25% in year t-4 and bumping up to 31% in the middle years, before returning back to 25% in year t. During that same period, however, Sustainable Performance (S) consistently rose, from 8% in year t-4 to 23% in year t, while Insufficient Information (I) consistently fell, from 67% in year t-4 to 52% in year t.

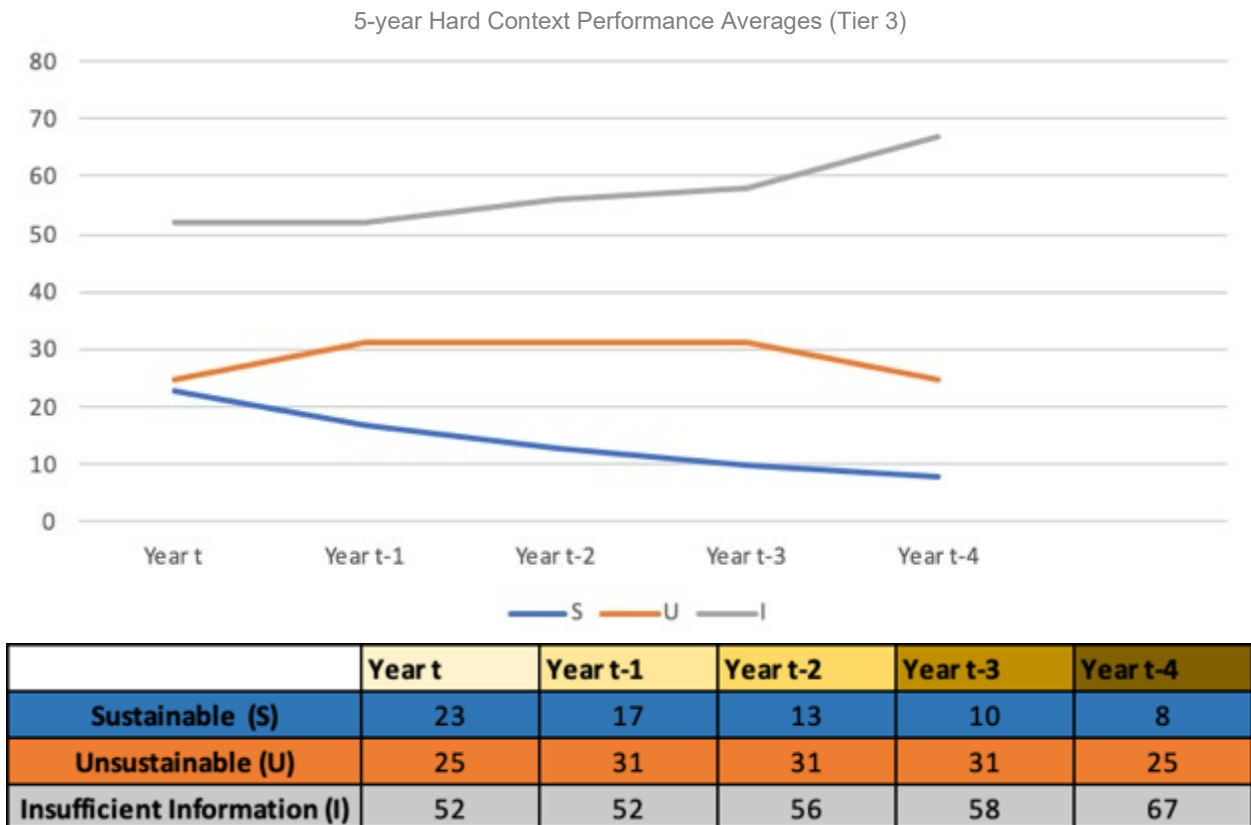


Figure 18. Five-Year Performance Percentage Averages for Tier Three Hard Context Indicators in Aggregate

So here again, we find a rise in Sustainable Performance coupled with a rise in information sufficiency. While disclosure of sustainability performance can lead to revealing both sustainable and unsustainable performance, organizations tend to perform better when disclosing their sustainability performance since greater awareness of indicators can certainly prompt management to improve the indicators' performance.

Nevertheless, this relationship between a sustainability performance assessment, and a disclosure performance assessment (or a disclosure performance dynamic) does not apply in the case of this pilot testing since the 5 year-trend analysis was done retrospectively.

4.2 Qualitative Results

The SDPI pilot test garnered qualitative feedback primarily through the Questionnaire (as explained earlier), as well as through the Office Hours and the Interviews with pilot test participants, in addition to other less formalized avenues. One primary objective of the qualitative feedback was to assess the value of the process for the pilot test participants, as well as – of course – the value of the Indicators themselves.

4.2.1 Value of Indicators / Piloting Process

GLS Bank, which was founded in 1974 as the first social-ecological bank in Germany, supports a variety of projects and businesses through its banking services, from organic farms and health food stores to nursing homes, independent schools and kindergartens, and projects for the unemployed. GLS provided extensive feedback on the pilot test, summarized in Box 5 below.

Box 5. GLS Bank Pilot Testing Feedback

At GLS Bank, which has pilot tested the SDPIs, sustainability reporting is getting a substantial overhaul as a result of lessons learned through participation in the project. According to the bank's Impact Transparency and Sustainability Unit, "this was an incredibly exciting and enriching path, in which we have learned a lot".

In its [2020 sustainability report](#), GLS Bank describes how the SDPI perspective has shaped the bank's "learning journey", and its report, substantially (GLS Bank 2021). The perspective puts sustainability in a global context and proposes indicators for budgets (that is, thresholds or allocations) and for norms. Budgets apply to everything with an ecological boundary that must not be exceeded. So, for example, reducing my CO2 emissions is not itself sustainable. It only becomes sustainable if I know that I am not exceeding my share of the remaining global CO2 budget, to achieve the 1.5°C target. Norms are also used to define a framework of societal foundations, e.g. access to education and social justice. The sustainability report examines the bank's impacts on different capitals (which it calls "values")—human beings, nature, relationships, knowledge, money, and attitudes and opinions—taking budgets as well as ideal states into consideration.

GLS Bank has set its performance objectives for wage range, gender pay gap, and water consumption in line with the context-based approach and specific targets set out in the SDPIs.

An [unadjusted gender pay gap](#) (GPG) of a maximum of 3 percent, and a [wage range](#) between the highest and lowest salary of 30:1 are considered sustainable within the framework of the SDPIs and have been adopted by GLS Bank as its targets (GLS Bank n.d.(a); GLS Bank n.d.(b)). In Germany, the unadjusted GPG is 21 percent, which means

that women earn an average of 21 percent less than men. In the financial sector, this difference is even more pronounced, at 28 percent. For GLS Bank, the unadjusted GPG is 13.7 percent. Here GLS Bank acknowledges that "Even though we are thus on the right track in an industry and national comparison, we have a need for further action taking into account the international ideal state...of 3 percent." GLS Bank already performs well regarding wage range, with a ratio of 8.2:1.

According to the SDPIs, net resource consumption shall not exceed the facility-specific fair and proportionate allocation of locally available renewable resources. The sustainability targets or thresholds that the bank has defined for its water consumption, for example, are aligned with this sustainability criterion, based on hydrological knowledge of what the maximum allowable water consumption should be in order to avoid endangering natural resources (ecosystems and species). As part of its SDPI piloting, GLS Bank assessed the [sustainability of its water use](#) at its headquarters (GLS Bank n.d.(c)), finding that it was well within the sustainability threshold in 2020 while recognizing "But we also know that in 2020 only a few people have worked in the bank. The majority worked mobile from home, which could not be taken into account in the calculation."

It is striking that pilot test participants who only partially completed the pilot testing nevertheless reported experiencing significant value from their participation in the pilot test. Dr. Stefan Siemer, Head of Corporate Sustainability for the Weleda Group, said:

“We were unable to complete the [pilot testing] questionnaire to the extent that this initiative merited. It is therefore a matter close to my heart to explain why this is not a failure for us. On the contrary: this is a central, highly relevant impact of our participation in this pilot. The more we have understood the basic logic of this project, the stronger our intention has grown to work more deeply and broadly in this direction. The Weleda Board of Directors and the Weleda Management Board have now decided that, as part of the new corporate strategy, Weleda will develop an inclusive reporting framework by 2025—a framework that is Multi-Capital and Context-Oriented.”

4.2.2 Elevating Context

Another enterprise that committed to pilot the indicators, Manulife, ended up prioritizing existing commitments to focus on incrementalist ESG data provision. Manulife Director of Global Sustainability Kyle Cahill said:

“ESG disclosure and related benchmarks are largely a leadership and stakeholder demand - often because peers are doing it too. So sometimes, **the disclosure tail wags the sustainability dog**, resulting in effort and strategic decision making focused on ESG data vs. putting resources toward efforts that result in a more beneficial impact – such as what the UNRISD SDPIs address.”

He continued:

“Context is not an expectation in the marketplace. So we need to elevate Context so that other organizations integrate it into their annual reporting calendar... Where and when do some of these Context-based metrics start to make their way into this cycle? How do you get additional perspectives into the mix of information?”

Another large Multinational Corporation, Anglo American, when filling in the “Challenges” column of the Qualitative section of the Questionnaire Spreadsheet on indicator III.D.2.1. that calls for evidence of applying Context-based triple bottom line accounting, noted: **“This is a complete gap.”**

The support for Context-Based Sustainability (CBS) is not specific to the larger FPEs, but also applies to smaller SSEOs. Cabot Creamery Cooperative has played a key role in helping to pioneer CBS for over 10 years (McElroy 2012a, 2012b). Cabot Sustainability Director Jed Davis, an emeritus Fellow of the Donella Meadows Leadership Fellows Program, reflected on the irony that the market values uncontextualized information that Meadows characterized as “meaningless to people,” while failing to value contextualized information that carries a message, according to Meadows:

“Cabot has been putting out Context for more than a decade to a deaf market that is demanding in-depth information that largely lacks Context.”

Given the finite resources economic entities have to expend on performance assessment, Davis strongly advocates for wise prioritization:

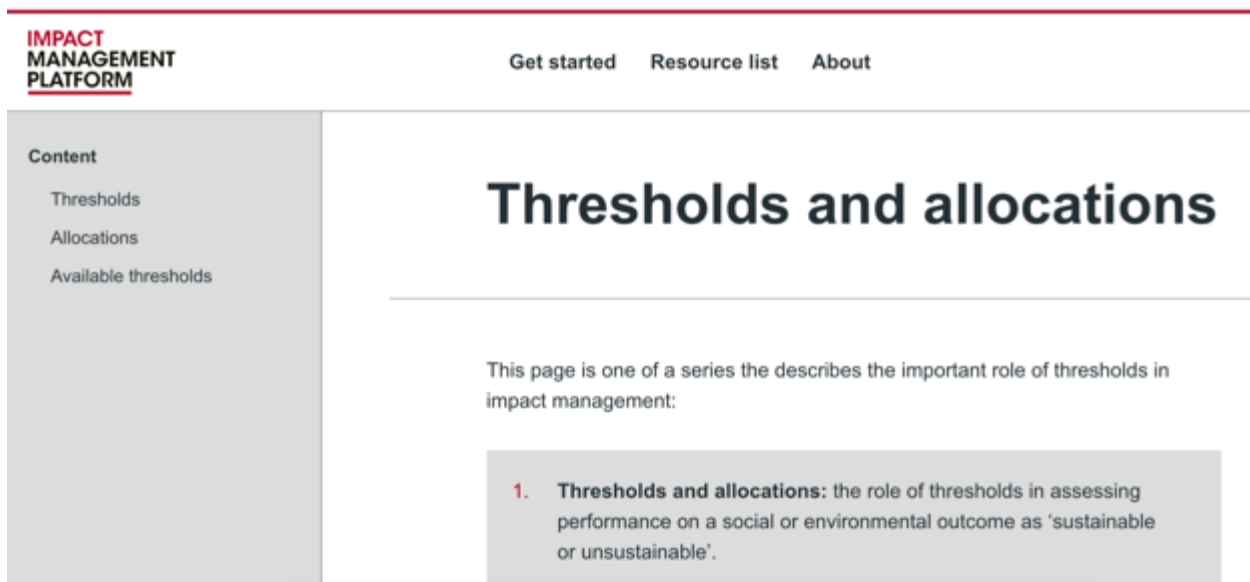
“If we’re going to spend time on indicators, our time is best spent on Context-based indicators, so why not focus on the ~19 indicators that are Context-based?”

The Impact Management Project (IMP), which participated in the pilot test primarily as a learning opportunity (as it is not an enterprise that tracks its performance through these kinds of indicators), may hold one of the keys to elevating the profile of Sustainability Context, and thus filling this “complete gap.”

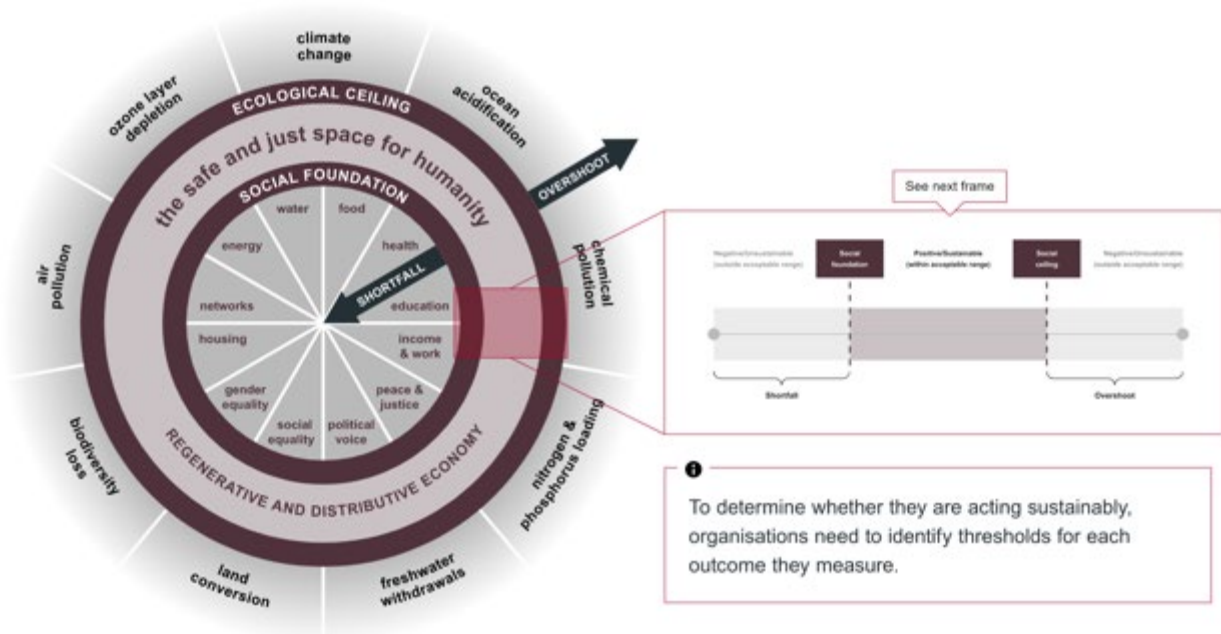
IMP was a time-bound initiative (that sunsetted at the end of 2021) that was established in 2016 as a “forum for building global consensus on how to measure, assess and report impacts on people and the natural environment” (IMP n.d.(a)). IMP facilitated a “Structured Network” (IMP n.d.(b)) comprised of all the major sustainability reporting standard setters and frameworks, such as the Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC), Sustainability Accounting Standards Board (SASB), as well as key multilaterals such as the Organization for Economic Co-operation and Development (OECD) and several United Nations

agencies – United Nations Environment Programme (UNEP) and United Nations Global Compact (UNGC).

In the Post-Project Interview, IMP reported back that the Training Sessions provided the deepest value – they characterized them as a "baptism by fire" into Capital Theory and Thresholds & Allocations.¹² IMP utilized this learning – as well as direct engagement with r3.0 and the Center for Sustainable Organizations (CSO) – to integrate thresholds & allocations into the core of the framework of the Impact Management Platform, the entity that emerged in late 2021 as the self-governing vessel through which the IMP Structured Network will continue its collaborative work (after the sunseting of the Impact Management Project). The Impact Management Platform's website, unveiled at the organization's launch in November 2021, features a Landing Page devoted to *Thresholds & Allocations*, concepts that are deeply integrated into its *Core concepts explained* video and *Organizational Actions Wheel* (Impact Management Platform n.d.(c); n.d.(a); n.d.(b)). See Figure 19.



¹² For an introductory summary of these topics, see *Thresholds, Allocations and the Carrying Capacities of Capitals* (McElroy 2022)



Source: Donut Economics, CC BY-SA 4.0, via Wikimedia Commons



Source: Impact Management Platform

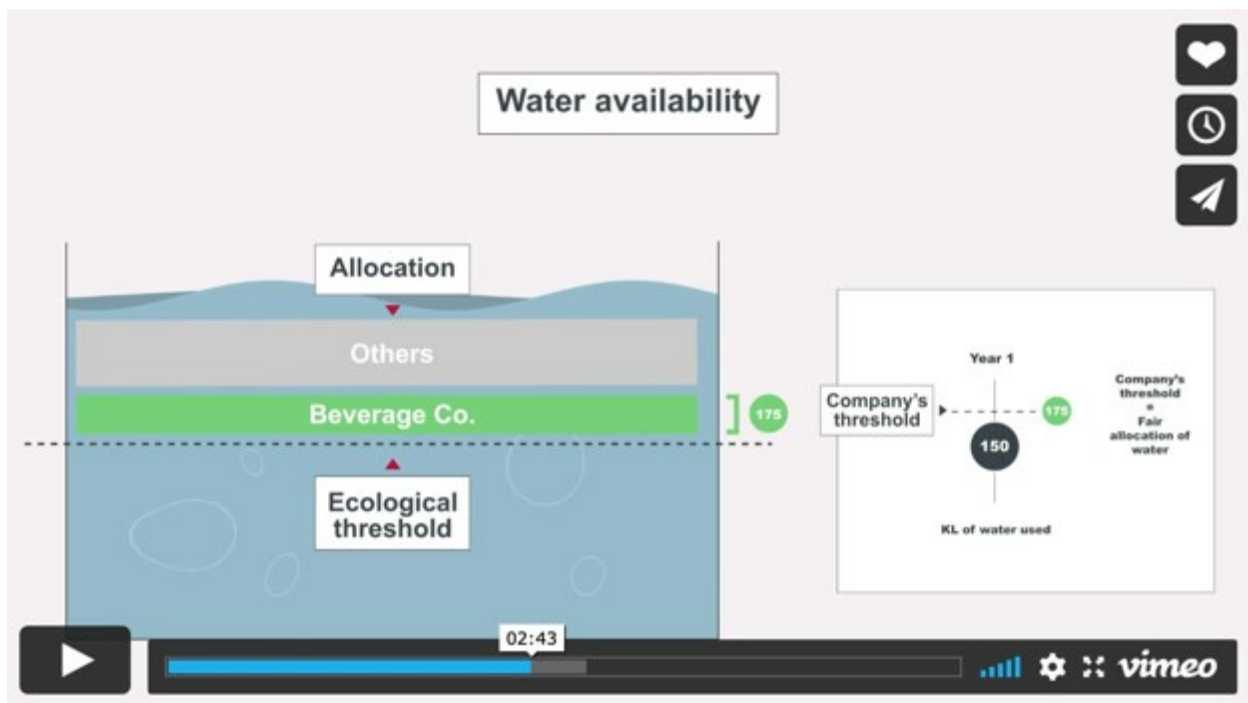


Figure 19. *Impact Management Platform Thresholds & Allocations Landing Page and Core Concepts Explained Video* (Source: Impact Management Platform n.d.(c); n.d.(a))

Given that the Impact Management Platform comprises *all* the major sustainability reporting frameworks and standard setters as well as key influencers, and the IMP guidance is intended to set an “authoritative basis” for standard setting, it seems reasonable to expect that IMP’s embrace of Thresholds & Allocations, which are underpinning concepts of the SDPI, will prompt integration of these fundamental concepts into sustainability standards and frameworks going forward.

And if the major sustainability standards and frameworks continue to neglect Thresholds & Allocations, the IMP stance provides a basis for challenging these standard setters for dereliction of duty.

4.2.3 Work Burden / Scope of Indicators

With a set of 80+ indicators, a few questions immediately arises: How many indicators are needed? How many indicators are “enough”? How many indicators are “too much”? And are so many of the same indicators really material to all organizations?

Eun Sun Lee of Gyeongsang National University, who provided support to several of the Korean enterprises that piloted the indicators, addressed these issues squarely in her written feedback on the Project:

Social enterprises in Korea are legally obligated to report their social performance twice a year and are preparing a social value performance measurement report limited to applicants. Therefore, I thought that writing the SDPI report would not be difficult for

SSEOs in Korea. However, contrary to expectations, there was great difficulty in reporting. The most serious difficulty was reporting the performance in terms of [the] amount [of] indicators in the four areas of economy, environment, society, and [institution].

“Overall, I felt that the SDPI indicators fit [a] big [Western] company just right. There were several indicators that [puzzled] even the representatives and officers of the companies that participated in the test... First of all, small businesses are pretty challeng[ed] to [provide data for all the indicators]. I had to have several meetings with the company's manager and representative. It took quite a long time, even though we worked together while looking at its internal data. **In Donggubat, eight office workers spent three days on this task to fill out the SDPI questionnaires only, but they couldn't even do half of it, so we had to work together for almost a month.**”

While the assumption was that the indicators fit large Western companies better than they fit smaller enterprises, the results demonstrate that even the small SSEOs scored better on the Heatmaps (that gauge the degree of data provision) than even the largest pilot test participants, in general. Many of the SSEOs received external support to conduct the pilot testing – for example, Eun Sun Lee who supported a handful of the Korean companies, and Oier Imaz Alias of Mondragon University supporting the two Mondragon cooperatives.

This external support makes sense in a piloting context, but the indicators need to be implementable by internal staff in general (even if some implementing enterprises may continue opting to access additional external support). So it is safe to say that *all* piloting organizations were significantly challenged to provide *all* the data requested.

On the question of internal capacity, two of the key piloting organizations proved unable to complete the Questionnaire Spreadsheet due to internal capacity issues. At Manulife, the team member who had allocated time to respond to the Questionnaire got promoted to a position with pre-existing expectations to provide data in response to external requests (such as the Dow Jones Sustainability Index and CDP) – a dynamic already addressed above. Cabot Creamery Cooperative experienced transitions in the internal team that coincided with the piloting period: the team-member tasked with filling out the pilot Questionnaire transitioned out of the cooperative just before the beginning of the piloting period, and a replacement was not secured during the piloting period.

These instances of personnel transience provide key feedback, as they represent not only specific instances, but also broader trends that can be expected to apply in general. Sustainability teams at enterprises large and small are typically overburdened and under-resourced (in terms of both financial budget *and* human resources). As well, these teams are typically *already* saddled with data provisioning expectations, first and foremost for the enterprise's own sustainability reports (with their annual cycles), as well as data requests from external parties, such as raters, rankers,

benchmarkers, analysts, and even academic researchers. As Cahill of Manulife notes, there is currently little market demand for the kind of contextualized data the SDPIs provide, and perhaps more importantly, there is no time remaining in sustainability teams' calendars to provide these additional data requests. **Accordingly, the SDPIs will be most successful if they radically minimize the additional burden on enterprises.**

Ideally, the pilot test would have identified specific indicators that challenged piloting enterprises to provide data, or that a critical mass of participants considered immaterial. However, as noted above, no such patterns emerged from the results: the challenges pilot test participants faced were generally specific to the participants, with low Heatmap scores and immateriality claims scattered throughout the indicator sets.

While the results may not have provided clear guidance on *which* indicators to cull, the participant feedback made it clear that the size of the indicator set was overwhelming, and so some culling is imperative.

Cahill of Manulife summarized his stance on this issue succinctly and emphatically:

“The UNRISD approach should *not* be, ‘more is better.’ It should really hone in on the indicators of true value.”

4.2.4 Indicators of True Value

What indicators are of *true value*?

One of the Expert Advisory Group, Peter Utting, weighed in on this question, in the specific context of questionnaire fatigue:

I'm concerned that we are requesting too much data from the organizations given the five-year reporting criterion... If it is an issue, then **one option might be to prioritize hard contextualization, i.e. current annual data needed to calculate performance relative to a sustainability norm.** Subsequent (perhaps secondary) to this, it's of interest to know the trajectory of progress (or otherwise)... Please recall that in the [*Corporate Sustainability Accounting*] report Kelly and I did, we were critical of CSR reports that only present 1, 2, or 3 years data, arguing that 5, 10 or 20 years data was needed to gauge progress over time.

Utting stated that the key is to support the ability to analyse “i) hard context performance, ii) the trajectory of change, and iii) variations in performance via granular disclosure (e.g. showing variations by occupational hierarchy).”

We will return to this line of consideration in the Synthesis section below.

4.2.5 Missing Indicators

The most visible gap identified in the UNRISD indicator set spotlighted biodiversity: several pilot test participants, including Anglo American, Cabot Creamery Cooperative, GLS Bank, and Weleda expressed explicit interest in biodiversity indicator – in particular, a Hard Context indicator, given that biodiversity is one of the nine Planetary Boundaries that define ecological sustainability thresholds.¹³ See Figure 20.

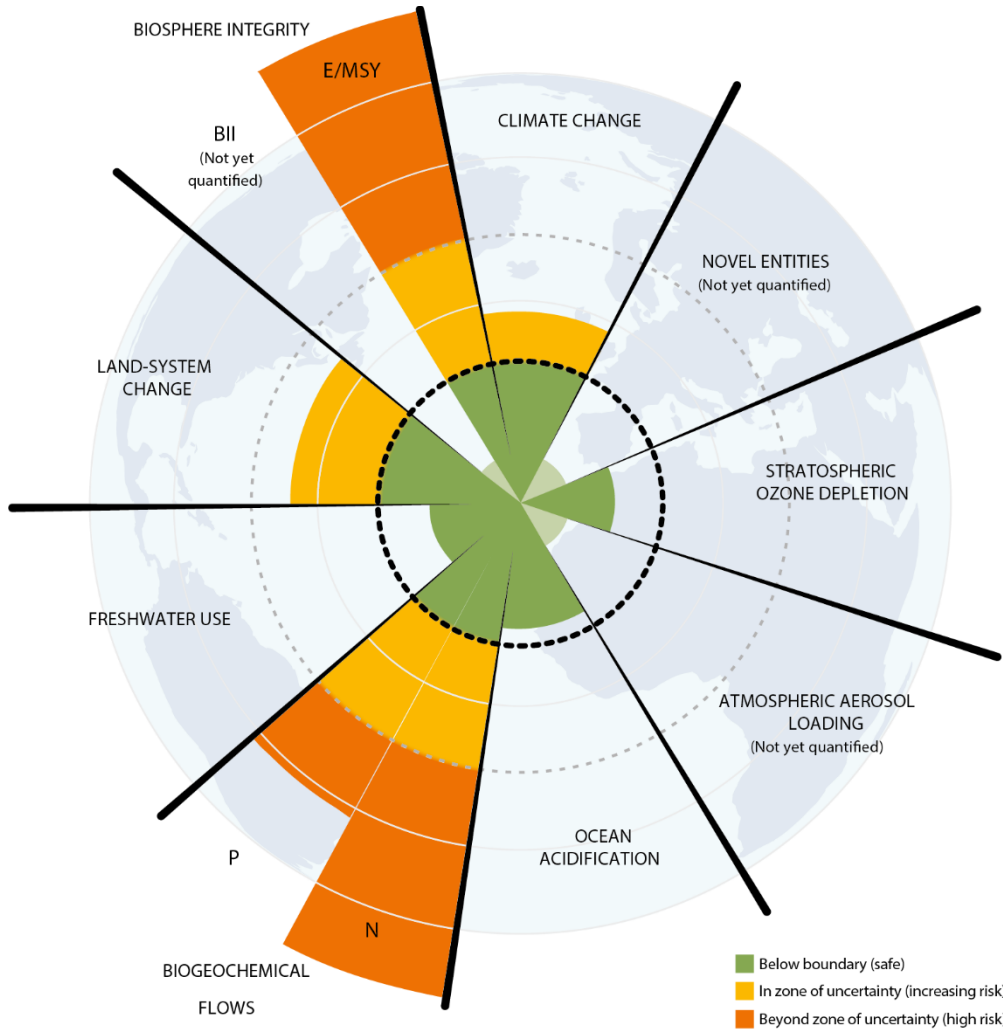


Figure 20. *Planetary Boundaries* (Source: Stockholm Resilience Centre. n.d.)

In the Office Hours, Project Manager Ilcheong Yi of UNRISD explained that “UNCTAD is considering integrating biodiversity into its Core Indicators that serve as the foundation for this project's Tier One indicators. As of now, UNRISD determined that it is premature to include a biodiversity indicator in the set of indicators being piloted due to the lack of robust theories and methodologies.”

¹³ Stockholm Resilience Centre. Planetary boundaries. <https://www.stockholmresilience.org/research/planetary-boundaries.html>

At the same time, piloting enterprise Cabot Creamery Cooperative was concurrently prototyping a Biodiversity Performance Index (BPI), a Composite of 10 indicators that directly impact biodiversity developed by Mark McElroy of the Center for Sustainable Organizations (who served on the SDPI Expert Advisory Group and directly supported the pilot test) and Andy Whitman of Manomet (McElroy & Whitman 2021). While there are literally hundreds of biodiversity indicators, the BPI provides the only biodiversity indicators that are threshold-based. See Figure 21 for the 10 indicators of the BPI, with sample scores included.

Biodiversity Performance Index (BPI)							
Biodiversity Areas of Impact	Sub-Areas of Impact and Their Individual Context-Based Metrics			Individual Metric Scores¹	Biodiversity Performance Scores²		
Habitat Loss	Abiotic Impacts	<i>Air</i>			1.20	50%	
		<i>Land (Cover)</i>			0.10		
		<i>Water</i>	<i>Quantity</i>		1.35		1.18
			<i>Quality</i>		1.00		
	Ecosystem Impacts	<i>Climate System</i>			1.65		
		<i>Terrestrial</i>			0.95		
		<i>Freshwater</i>			1.25		
		<i>Marine</i>			0.34		
Non-Native Species	Non-Native Species Introduction			1.10	0%		
Harvesting/Predation	Harvesting/Predation			0.00	100%		
¹ All scores of ≤ 1.0 signify conformance to sustainability norms. ² Proportion of individual scores that conform to sustainability norms.				Overall BPI Score²	50%		

Figure 21. Biodiversity Performance Index (BPI) with sample scores included (Source: McElroy & Whitman 2021)

While the BPI covers several of the Planetary Boundaries that are relevant to biodiversity, it also leaves some of them (that are not relevant to biodiversity) uncovered, so it stands to reason that UNRISD should consider covering *all* of the Planetary Boundaries.

Another category of missing indicators includes the issue of racial equity, which the SDPI set did not address at all. The SDPI set *does* address equity issues pertaining to gender, which set conceptual and structural foundations for indicators addressing other dimensions of social equity. During the pilot test period, an independent initiative approached CSO and r3.0 about a distinct area of impact, racial equity, that is *not* covered by the SDPI set of indicators. The Corporate Racial Equity Alliance (CREA) is now developing a set of Performance Standards that include indicators that would fill this gap, with r3.0 and CSO providing support to formulate the indicators to embed

contextual thresholds & allocations, and generally embrace a Context-based approach consistent with the SDPIs (CREA n.d.). It stands to reason that these indicators can be integrated into the SDPI set in the future.

A significant amount of feedback focused on the fact that the indicators, as formulated, did not apply well to sector-specific needs. The most vocal proponents of sector-specific indicators included the World Bank, which advocated for indicators customized to the circumstances of multilateral development banks (MDBs), whose structures and circumstances differ significantly from the private, for-profit enterprises targeted with the SDPI set of indicators. As well, Anglo American noted a number of times that the specific circumstances in the mining sector are sufficiently unique to warrant indicators oriented toward these circumstances.

This dynamic highlights the inherent tension between universal indicators, which are intended to cover *all* instances, and indicators that are specific to the material impacts of specific organizations and enterprises.

This pilot test followed the former approach, setting forth a set of universal indicators that were expected to apply to all organizations. However, the Heatmap Scorecards revealed that **no** pilot test participants were able to provide data for **all** the indicators, and immateriality claims were made on almost **all** of the indicators. **Accordingly, the hypothesis of universal indicators was disproved by the pilot test.**

On the latter approach, UNRISD published a working paper on Context-Based Materiality, which advances the case for making materiality determinations based on the duties and obligations organizations owe to stakeholders to sustainably manage impacts on vital capital resources they rely on for their wellbeing (McElroy 2019). Given that the results of the pilot test disprove the universal indicator hypothesis, it seems that a Context-Based Materiality approach is the stronger option.

Of course, these approaches are not mutually exclusive: it makes perfect sense to establish a universe of indicators, from which organizations can customize indicator sets that align with their Context-Based Materiality determinations. Furthermore, subsets of indicators can be customized to the sector level, inclusive of the indicators that generally align with the material impacts of said sectors.

iCOOP proposed indicators specific to its realm of food production, with a specific recommendation on “indicators according to social purpose: Production of healthy food with minimal food additives.” The “formula” it proposed:

Number of additives used by the company/number of additives used in the industry

Of course, this indicator could also be articulated in Hard Context terms by defining a normative threshold for the number of additives, instead of comparing company levels to industry levels.

Finally, Anglo American provided feedback that “multinationals should report by gender” on occupational injuries, even though it currently does not collect data by gender.

4.2.6 Indicator Feedback

On the question of gender, Vancity questioned the threshold of a minimum of 40% women in the indicator on Five-year trend in percentage of women board members (II.D.1.2). Vancity asked:

“Is it really any more sustainable to have a Board of 100% women than it is to have one of 100% other genders? Is it not better to have a top limit on [the] number of women?”

This was illuminating, as the SDPI Manuals do not suggest a goal of 100% representation of either sex / gender. The Manuals include a footnote that quotes a Directive of the European Parliament and the Council on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures that states:

“The proposed objective of 40% for the minimum share of both sexes is in line with the targets currently under discussion and set out in a number of EU Member States/EEA countries. This figure is situated between the minimum of the 'critical mass' of 30%, which has been found necessary in order to have a sustainable impact on board performance and full gender parity (50%).” (European Parliament 2012)

A number of pilot test participants commented on the request to provide data on net value added (NVA). These were primarily financial institutions of diverse kinds, from Laboral Kuxta, a Mondragon cooperative, to GLS Bank, a social-ecological bank to the World Bank, a Multilateral Development Bank (MDB), which typically does not track NVA. The World Bank responded:

“These Economic metrics are going to require specific language for MDBs/public sector [institutions] since revenue/value added and NVA are not accounted for in the [same] way as for private sector [institutions]. We report on this data based off of MDI [minority depository institution] definition (IBRD [International Bank for Reconstruction and Development] and IDA's [International Development Association] net revenue combined).”

4.2.7 Technical Problems

There are a host of technical issues that are to be expected in a piloting process, such as inadvertent inaccuracies or unclear instructions in the Draft Manuals and the Questionnaire Spreadsheet, as well as discrepancies between guidance in the Draft Manuals and input fields in the Questionnaire Spreadsheet. These technical issues clearly need to be resolved before these materials are ready for publication and broad dissemination for use.

As well, there are ways to leverage technology to resolve some of the challenges experienced by pilot test participants. For example, the indicators call for inputting the same information in multiple places. To reduce questionnaire fatigue, the Questionnaire Spreadsheet can be further developed to embed programming to populate the cells automatically with data that is replicated in multiple places, and formulae can be entered such that calculations are made automatically.

These improvements are key elements of the transition from a *piloting* process to a more formalized release and dissemination process. What's more, the role of a multilateral such as the United Nations in general, and UNRISD specifically in this instance, is to provide general specification, open-source resources. From there, independent actors in the marketplace can step in to further develop and build out products and services to support broader implementation and scaling.

5. Synthesis

5.1 Universal Indicators?

The first question a pilot test must ask is whether it demonstrated the feasibility of implementation – or not. The ideal outcome of this SDPI pilot test would be that *all* pilot test participants were able to implement *all* of the indicators, across the three tiers. Of course, nobody ever expects a pilot study to prove *full* feasibility – one fully expects that the implementation attempt reveals obstacles and impediments, which raises the question: are these roadblocks that can be removed, or are they dead end signposts?

The Heatmap Scorecards and Immateriality Claims provide data from which to draw conclusions about implementation feasibility and scope. The Heatmap Scorecards revealed only one indicator that **no** enterprises were able to provide data for; but it also identified only a handful of indicators that **all** enterprises were able to provide data for. In other words, all pilot test participants were only able to provide data for a subset of the indicators – but that was a *different* subset for each participant. **So the pilot test demonstrated the unfeasibility of a single set of *universal* indicators.**

Likewise, the Immateriality Claims fell short of delivering unanimous sentiment: two indicators garnered Immateriality Claims from a minority (four and five respectively) of pilot test participants. This outcome falls far short of a mandate.

In the end, the pilot test participants neither endorsed a universal set of indicators, nor did they cohere around a single alternative set – their qualms spanned a wide spectrum. Add to this the Qualitative Feedback, which found that the full set of indicators was onerous to complete, reinforcing the need to reduce the portfolio of indicators. Quoting Cahill of Manulife again:

“The UNRISD approach should *not* be, ‘more is better.’ It should really hone in on the indicators of true value.”

Davis of Cabot Creamery Coop weighed in on the question of universality in the context of other key aspects of sustainability performance assessment.

“I can appreciate the desire for universality, but materiality will always trump universality. **One way to integrate the desire for universality is to provide sector-based indicators that are broadly applicable to the sector as a starting point, but still apply organization-specific context-based materiality.**”

5.2 Core Indicators: Hard Context

But again, how do we define “indicators of true value”? What’s needed is a logic for selecting which indicators are truly valuable. Expert Advisory Group member Peter Utting provided just

such a logic; after reiterating “I’m concerned that we are requesting too much data from the organizations,” he suggested a solution:

one option might be to prioritize hard contextualization... we need to be able to use all the data gathered to provide an analysis of context-based performance.”

There are 19 Hard Context indicators across Tier Two and Tier Three, which makes for a coherent and logical set of indicators that is a quarter the size of the full SDPI set currently.

Davis of Cabot Creamery Coop pointed out that the Tiers actually roll up together in ways that add value while reducing burden:

“Tier 1 is essentially where you gather the numerators, that you then add denominators to in Tiers 2 & 3, so couldn’t Tier 1 just be the numerators for Tiers 2 & 3 Context-Based Indicators?”

Utting also proposed a logic for choosing which indicators might augment the Hard Context indicators:

Subsequent (perhaps secondary) to this, it’s of interest to know the trajectory of progress (or otherwise)... Please recall that in the [*Corporate Sustainability Accounting*] report Kelly and I did, we were critical of CSR reports that only present 1, 2, or 3 years data, arguing that 5, 10 or 20 years data was needed to gauge progress over time.

Accordingly, he proposed a secondary priority of indicators that assess “the trajectory of change” – there are a number of “soft context” indicators (particularly in Tier Two) that do just this. And finally, Utting stressed the need to enable analysis of “variations in performance via granular disclosure (e.g. showing variations by occupational hierarchy).”

In sum, to solve the questionnaire fatigue dilemma of *too many* indicators, the SDPI approach could adopt a streamline approach across three intersecting axes (to enable visual orientation to Utting’s tri-pronged proposal):

- **Horizontal:** Hard Context to gauge performance relative to sustainability thresholds across material impacts;
- **Temporal:** Soft Context time-series snapshots to gauge progression (or regression) across years;
- **Vertical:** Hierarchical cross-sectioning to gauge performance differentiation up and down the corporate ladder (and other deep dives across different key dimensions).

5.3 Materiality: Context-Based

This triangular logic could provide the foundation of indicators, from which economic entities, be they FPEs or SSEOs, could perform a Context-Based Materiality analysis, to determine which specific indicators cover areas where they owe stakeholders duties and obligations to manage their impacts to respect the ongoing sufficiency of vital capital resources. Of course, if an enterprise simply does not impact an area covered by a certain indicator, then it is quite literally impossible for them to apply that indicator.

Davis of Cabot Creamery Coop captured this idea in his feedback:

“What if UNRISD looked at the indicators as an à la carte menu of indicators: If this topic is material to your organization, then here’s the best numerator (and denominator)?”

Davis framed this comment in the broader picture of the foundational importance of Context underpinning materiality:

“Context-based materiality is fundamental – traditional materiality actually undermines a context-based approach to materiality.”

Context-Based Materiality is a radically different interpretation of materiality than current predominant interpretations of (financial) materiality, which focus on the data needs of “reasonable” investors (and other providers of financial capital) for informed decision-making. Incrementalist interpretations of materiality simply seek to expand the scope of traditional financial materiality, for example by throwing environmental, social, and governance considerations into the mix, or adding stakeholders to the scope of decision-makers needing information.

The problem is that these definitions all hinge on a fiction: the notion of a “reasonable” investor. Such a monolith does not exist – what do exist are multifarious *different* investors and stakeholders, all of whom have reasonable information needs that vary from one to another. Context-Based Materiality solves this dilemma by focusing instead on *impacts* that organizations undeniably have on vital capital resources – as well as should or should not have – that stakeholders also rely on for their wellbeing, which creates normative duties and obligations for organizations to manage their own impacts on these resources sustainably – in other words, making sure they both do not deplete and continually regenerate resources necessary for ongoing stakeholder wellbeing. For this reason, some prefer to call stakeholders “rightsholders” instead, as this labelling draws attention to the natural rights to resources necessary for continued living and the duties organizations have to respect them.

Context-Based Materiality thus creates more clarity by focusing on issues that are fundamentally more important than the information needs of investors. Yes, many enterprises rely on financial capital from investors, but they rely on a much broader set of rightsholders for their license to

operate. The relationship of duties and obligations thus functions on a much deeper, foundational level, because irresponsible action by enterprises puts lives – and, indeed, life itself – at risk.

The Hard Context Performance Scorecards demonstrated that pilot test participants were generally quite capable of providing sufficient levels of information necessary for making sustainable performance determinations (i.e. applying the Sustainability Quotient). The primary challenge to sufficient information availability involved multi-year periods, where insufficient information plagued earlier years. In general, organizations tend to perform better when disclosing their sustainability performance since greater awareness of indicators can certainly prompt management to improve the indicators' performance.

5.4 SDPI Integration

From a disclosure perspective, the SDPI set (as currently constructed) amounts to a collection of discrete indicators with performance measures isolated from one another. In other words, the SDPIs *only* enable performance assessment on an indicator-by-indicator basis; they do *not* enable integrated performance assessment across the body of indicators, which would provide a holistic picture of organizational performance. Thus, developing an integrated accounting mechanism is a natural next step for UNRISD to take with the SDPI project.

A prototype for integrating the SDPIs has been proposed. This prototype is applied to the Hard Context Indicators, chosen because of the way it makes it possible to quantitatively combine scores obtained from indicators that are otherwise expressed in incompatible ways due to their use of different scales and different units of measurement (i.e. in a way that creates commensurability between indicators).¹⁴

Moreover, impacts on diverse capitals are incommensurable in another way: they cannot be added or subtracted from one another, nor substituted for one another in cases where there may be a shortage of one and a surplus of another.¹⁵ This is one of the dead ends of the Impact Valuation trend that seeks to monetize impacts on diverse capitals as a means of integrating performance assessment. This, however, introduces inaccuracies into the equation: just because currency is a fungible commodity, it does *not* mean that the assignment of a monetary value to an impact on a vital capital resource makes the underlying resource itself fungible or substitutable with other capitals.

A sustainable impact on worker wages (i.e. providing a living wage to *all* workers) cannot be swapped in to compensate for an unsustainable impact on water use (i.e. using up more than one's fair share of available water in a watershed, thus putting the sustainability of water resources in

¹⁴ See, for example, *Reference Model for Generally Accepted Integrated Accounting (GAIA) Principles*: <https://www.sustainableorganizations.org/GAIA-Principles.pdf> (p. 8).

¹⁵ *Ibid.*

that watershed at risk for *all* other users who rely on that water for their wellbeing). It's apples and oranges.

However, what *is* commensurable is the binary property of *sustainable* as compared to *unsustainable* performance. *This* can be compared across indicators, but only when they are expressed in commensurate terms – e.g., when sustainable performance on living wages is commensurate with sustainable performance on water use. Accordingly, this mechanism can be used to truly *integrate* performance assessment across the diversity of SDPIs, but only when the integrating framework is designed accordingly.

Davis of Cabot Creamery Coop, who has piloted the MultiCapital Scorecard, which integrates sustainability performance assessment across all the capitals – traditional financial capitals as well as natural, human, and social capitals (Baue 2020) – strongly supports this approach:

“Sustainability performance is totally analogous to financial capital measurement – profitability is a threshold that measures sustainability – but financial reporting on its own doesn’t have to deal with commensurability between impacts on other capitals. Environmental & social reporting doesn’t have that luxury – since these forms of reporting cross capitals, they have to contend with commensurability and the non-substitutability of different capitals, by definition.”

5.5 Scaling Up and Out

Finally, the SDPIs carry significant implications for the broader field, from a multiplicity of angles. This was demonstrated clearly through the participation of the Impact Management Project in the SDPI pilot test, which undergirded IMP’s embrace of – and advocacy for – thresholds and allocations, in the high-profile case of the launch of the Impact Management Platform (which subsumed the Impact Management Project). Given that the Platform’s membership includes *all* of the major sustainability standard setters and framework providers, this development carries significant implications for the field *writ large*.

Specifically, the embrace of thresholds & allocations at the level of a *platform* of standard setters translates into an expectation that the standard setters and framework providers *themselves* must embrace thresholds & allocations thereby fuelling the further proliferation of thresholds & allocations and Context-Based accounting across all organizations applying these various standards.

This is just one of many ways that the influence of the SDPIs can scale up and scale out. What follows is an enumeration of the many other vectors through which these indicators can scale.

6. Conclusion

The UNRISD Sustainable Development Performance Indicators pilot test has shown that it is not impossible to implement indicators that assess performance relative to sustainability thresholds and transformation. Quite the opposite: implementing thresholds- and transformation-based performance indicators is altogether feasible!

In fact, not only are such thresholds- and transformation-based performance indicators feasible to implement, but also, enterprises are *eager* to implement them. Case in point: GLS Bank has *already* included many of the SDPIs in their *2021 Sustainability Report*; Weleda has secured a five-year commitment from its Board to support the implementation of Context-Based Indicators; and Mondragon University is hosting learning sessions for the two Mondragon cooperatives that participated in the pilot test (Laboral Kuxta and Fagor Elderlan), to share their experience with all other Mondragon cooperatives to support them to adopt the SDPIs.

None of the obstacles pilot test participants experienced were insurmountable. Obstacles with the indicators themselves typically pertained to data availability, or perception of immateriality; external obstacles tended to involve a lack of bandwidth due to existing commitments to fulfill demands for disclosure on incrementalist performance measures that provide much less value – in Dana Meadows’ words, these enterprises are devoting time to disclosures that “mean nothing to people,” depriving them of the time to disclose information that “begins to carry a message.”

The SDPIs also enter the marketplace of ideas and commerce right at the moment when these markets have simultaneously recognized the limitations of existing incrementalist measurement regimes (per the *Bloomberg Businessweek* article, “The ESG Mirage”) and the necessity for embracing next-generation thresholds-based measurement (per the Impact Management Project’s prominent embrace of thresholds & allocations). (Simpson *et al* 2021)

This dual dynamic sets the foundation for broad uptake and scaling of the Sustainable Development Performance Indicators, and similar thresholds- and transformation-based approaches. This report sets forth a full spectrum of leverage vectors whereby the SDPIs (and akin thinking) can scale broadly. Systems change research suggests that social tipping points can be triggered by significant minorities of a reference population (as little as 25%) with the proper combination of passionate commitment and ideas whose times have come (Centola *et al* 2018).

This report documents evidence supporting the idea that the time for thresholds- and transformation-based measurement has come.

Jed Davis of Cabot Creamery Cooperative summed up this piloting project succinctly:

“The SDPI indicators are ground-breaking in a very positive way.”

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Appendixes

9.1 Appendix 1: SDPI Expert Advisory Group Members

- **Tatiana Krylova:** Tatiana Krylova is the Head of Enterprise Branch, Division on Investment and Enterprise Development at the United Nations Conference on Trade and Development (UNCTAD). Her duties among others include supervision and coordination of activities of the United Nations Intergovernmental Working Group on International Accounting and Reporting Standards (ISAR) to assist developing countries and economies in transition to meet international requirements in the area of accounting and reporting. In this regard she leads UNCTAD's work on formulating and implementation of the Accounting Development Tool (ADT), preparing a guidance on core SDG indicators for entity reporting intended to serve as a tool to assist governments to assess the private sector contribution to the implementation of the Sustainable Development Goals, developing metadata guidance for the SDG indicator 12.6.1 in cooperation with UN Environment, as well as other activities related to corporate financial and non-financial reporting with a view to achieve better quality and international comparability of such reports based on international standards, benchmarks and good practices. Before joining the United Nations in 2000, she was a partner at KPMG in Moscow where she was in charge of the Methodology department that advised Russian government and companies on transition to IAS/IFRS. She was also a consultant to the World Bank, OECD, EBRD, and other international organizations on accounting and finance issues.
- **Mark McElroy** is the founder and executive director of the Center for Sustainable Organizations in Vermont and is particularly well known for his development of Context-Based Sustainability (CBS), an approach to sustainability measurement, management, and reporting in which performance is seen as a function of what an organization's impacts are on vital capitals. Dr. McElroy is co-creator of the MultiCapital Scorecard, a context-based, open-source triple bottom line performance accounting method. He is also a long-time veteran of management consulting, having spent much of his career at Price Waterhouse, KPMG Peat Marwick, and IBM Consulting. More recently, he created and led Deloitte Consulting's Center for Sustainability Performance in Boston, MA, a think-tank dedicated to the study of sustainability measurement, management, and reporting. Dr. McElroy earned his Ph.D. in Economics and Business from the University

of Groningen in the Netherlands in 2008, where in his dissertation he developed Context-Based Sustainability and the Social Footprint Method. He is a co-author of two books on sustainability accounting and is widely published in such journals as *Sustainability Accounting, Management and Policy Journal*, *The World Financial Review*, *Harvard Business Review*, and many others.

- **Marguerite (Margie) Mendell** is Professor Emerita at the School of Community and Public Affairs (SCPA) at Concordia University, and Co-Founder of the Karl Polanyi Institute of Political Economy established at Concordia University in 1988 as the repository of the entire Karl Polanyi Archive. She earned her PhD in Economics from McGill University in 1983. Her research focuses on the social economy in Quebec and internationally, social finance and impact investing, social innovation, the commons, economic democracy, and the work of Karl Polanyi, whose influence continues to grow today. Most recently she has been working on the social impact of artificial intelligence. Margie Mendell contributes to an international dialogue on innovative economic initiatives to reduce inequality and develop new collective forms of wealth creation through her participation at scholarly conferences and international meetings of the OECD, the European Commission, the Global Social Economy Forum (GSEF) and civil society gatherings. She also participates in consultations in Canada (federal, provincial, municipal) and abroad on issues related to social finance and impact investing and the social and solidarity economy.

- **Sonja Novkovic** is a Professor of Economics and Academic Director of the International Centre for Co-operative Management at Saint Mary's University in Halifax, Canada. She served as Chair of the International Cooperative Alliance's Research Committee (2013-2021), and was past president of the International Association for the Economics of Participation (IAFEP). She received her Ph.D. from McGill University. Her research interests are in the field of economic democracy, including labour-managed and cooperative firms, social economy, and comparative economic systems. Her collaborative edited volumes include *Cooperativism and Local Development in Cuba: An Agenda for Democratic Transformation* (Brill Publishers, 2018); *Co-operatives and the World of Work* (Routledge, 2020); *Co-operative Governance Fit to Build Resilience in the Face of Complexity* (ICA, Brussels, 2015); *Co-operatives for Sustainable Communities: Tools to Measure Co-operative Impact and Performance* (University of Saskatchewan Press, 2015); and *Co-operatives in a Post-Growth Era* (Zed books 2014).

- **Manpreet Singh:** Manpreet is currently a Senior Statistician in the Department of Statistics at the International Labour Organization in Geneva. He is currently involved in various statistical projects related to measuring decent work in Global Value Chains, development of a manual on implementation of the guidelines concerning statistics of cooperatives and development of a Work-related Income Manual. He is an active participant in several international committees and working groups related to development of new and innovative statistical methods, including innovative ways of collecting, analysing and disseminating statistics for informed decision making in measuring an economy, society and environment that are becoming more complex. Prior to joining the ILO, he worked in a number of senior roles in his 20 years at the Australian Bureau of Statistics (Australia). He has extensive experience in establishment and household-based surveys and National Accounts having worked as a technical and methodological leader. Mr Singh holds a Master's Degree in Economics from the University of Western Australian (Australia) and has authored several conference and academic articles.
- **Peter Utting** joined the United Nations Research Institute for Social Development (UNRISD) in 1992, where he later became Deputy Director and coordinated research projects on the social effects of the global financial crisis, corporate social and environmental responsibility, new forms of business regulation, and social and solidarity economy (SSE), topics on which he has published extensively. He was responsible for overseeing the preparation of several of the Institute's flagship reports, including *States of Disarray: The Social Effects of Globalization* and *Visible Hands: Taking Responsibility for Social Development*. In 2013, he co-founded the United Nations Inter-Agency Task Force on Social and Solidarity Economy. Prior to joining UNRISD, Peter worked for 12 years in Central America on a range of development and environment issues. Peter has a PhD and other degrees in Sociology and Development Studies. After his retirement from the United Nations in 2014, Peter has worked with the International Labour Organization (ILO) and is currently an UNRISD Senior Research Associate.

9.2 Appendix 2: Context-Based Water Use Method

There are 4 ‘water allocations’ based on ‘Gross Withdrawals’ (GW), ‘Consumptive Use’ (C), GDP, and Population

$$W_{facility(GW,GDP)} = Q_{GW,max} \left(\frac{GDP_{facility}}{GDP_{region}} \right) \quad \& \quad W_{facility(C,GDP)} = Q_{C,max} \left(\frac{GDP_{facility}}{GDP_{region}} \right)$$

$$W_{facility(GW,POP)} = Q_{GW,max} \left(\frac{POP_{facility}}{POP_{region}} \right) \quad \& \quad W_{facility(C,POP)} = Q_{C,max} \left(\frac{POP_{facility}}{POP_{region}} \right)$$

These allocations represent the ‘maximum sustainable water use’ for the facility based on each cell in the 2x2 matrix of attributes (GW vs Con, and GDP vs Pop).

$Q_{gw,max}$ is akin to our ‘Water For Economy’ in the circular region surrounding the facility based on Gross withdrawals.

$Q_{C,max}$ is akin to our ‘Water for Economy’ in the circular region surrounding the facility based on consumptive use.

Both of these numbers are derived from the precipitation and evaporation data for the circular region surrounding the facility.

We ‘extract’ these numbers for circular regions of 10, 50, 100, 200, and 300 km surrounding the facility location.

By performing this calculation at several ‘scales’ we gain insight as to the ‘context’ sensitive nature of the metric.

We believe that in most cases the metric will remain relatively constant across these scales (See sustainability metrics as a function of ‘radius of region’ for a sample facility below).

The formulas below explain how we calculate $Q_{gw,max}$ & $Q_{C,max}$

Water use category	Water available for economic use	Facility-level indicator, $\leq 1 =$ sustainable
Gross withdrawals		
Consumptive use		

The ‘sustainability’ indicator uses the allocation relative to the *Actual* water use of the facility where $W_{facility,gross}$ and $W_{facility,con}$ are the *actual* gross and consumptive use of the facility, respectively.

Note: The sustainability metric based on population is ‘zero’ (e.g. very sustainable) because The facilities ‘consumptive use’ is zero (Gross volume consumed = Gross Volume Discharged)

Input Data for sample facility

Facility GPS XXXXXX,
 Coordinate XXXXXX

<i>For each water source location</i>	<i>GPS coordinates</i>	
	<i>Gross volume consumed</i>	4219 m3
<i>For each wastewater discharge location</i>	<i>GPS coordinates</i>	XXXXXX, XXXXXX
	<i>Gross volume discharged</i>	4219 m3
<i>Net water consumed</i>		4219 m3
<i>Facility gross margins (using 1.A.1.2 Value Added in USD)</i>		22654808.67

We use these water datasets: Precipitation and Evapotranspiration
 From here: FLDAS <https://ldas.gsfc.nasa.gov/fldas> (~10 km x 10km cells)

A GDP Dataset developed by Tony Wang described here:
<https://www.mdpi.com/2220-9964/8/12/580>

And a population dataset (The Global Human Settlement Layer)
<https://ghsl.jrc.ec.europa.eu/>

The table below summarizes the data we need from the facility and what we will extract and derive.

<i>GIS extracted</i>					
Region Radius	10 km	50 km	100 km	200 km	300 km
Population (Persons)					
GDP (\$1,000s)					
Precip (m ³)					
Evap (m ³)					
$Q_{(GW,max)}$ (m ³)					
$Q_{(C,max)}$ (m ³)					
<i>Facility Provided</i>					
Pop Facility					
GW Facility (m ³)	4,219				
GD Facility (m ³)	4,219				
Con Use Facility (m ³)	0				
Latitude Facility	51.4818111				
Longitude Facility	7.2196635				

Allocations	Ideal Region Radius
W (facility (GW,GDP))	
W (facility (C,GDP))	
W (facility (GW, POP))	
W (facility (GW, POP))	