
Reporting 3.0 Platform

Blueprint Series 2016/2017

# Blueprint 3: Data

## Data integration, contextualization & activation for multicapital accounting

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## 1. ABOUT THE REPORTING 3.0 PLATFORM AND ITS THE BLUEPRINTS SERIES

*Continuous improvement is better*
*than delayed perfectionism.*
*– Mark Twain*

The Reporting 3.0 Platform was launched in 2012 to test a premise: that corporate disclosure plays a key role in influencing the trajectory of the global economy; so, if the economic design is inherently flawed and unsustainable, reporting (and its interrelated elements) can help resolve this dilemma. Furthermore, if reporting regimes are not fit-to-purpose, they too can be reformed so as to play their proper function in triggering a green, inclusive, and open global economy.

To explore this premise, Reporting 3.0 (R3) held three major international conferences through 2015, gathering a diversity of international experts from four continents and 15 countries.[1] In addition, R3 convened various Transition Labs and Regional Roundtables during that period. In the process, R3 curated a neutral, pre-competitive, global public good platform for diverse stakeholders to consider solutions that build off the foundations of existing standards, frameworks, and practices whereby the reporting field raises its level of ambition to play its rightful role in spurring a regenerative, distributive economy that promotes thriving for all humanity.

The platform thus performs an "open" research and development (R&D) think tank function where 'positive mavericks' – who work productively (not obstructively) toward positive change; challenge constraints, structural limitations, unconscious biases, and shadow agendas; think and act at systems levels; and seek transformative (on top of incremental) change – collaborate to co-create a new operating system that generates fit-to-purpose disclosure practices.

The third international conference in November 2015 represented a watershed, when the R3 community determined that the premise holds sufficient validity to warrant ongoing exploration and advocacy. Specifically, two determinations were made at the end of the conference:

- First, to better serve these interests and expand its global public good value, Reporting 3.0 spun off from its incubation under BSD Consulting to become the inaugural flagship program of "On-Commons," a newly-formed independent not-for-profit, registered under German law as gGmbH (gemeinnützige GmbH).

- Second, to shift into a more active "solutions-generation" mode, R3 decided to launch a work ecosystem consisting of four interdependent Blueprint Projects in the areas of *reporting*, *accounting*, *data*, *and new business models*.

### 1.1. FOUR BLUEPRINTS – ONE SYSTEMIC APPROACH

This four-pronged Blueprint design stems from the recognition that this quartet of areas are distinct yet interconnected and interrelated elements of the overall disclosure regime, thus each element warrants in-depth focus in its own right, following a standardized, systemic approach, before synthesizing the resulting findings into a single report. Further, this recognition stems from the following outcomes of the earlier R3 conference deliberations:

- **Purpose:** Sustainability and integral disclosure need a clearly defined "North Star" purpose.

The Reporting 3.0 community recognizes the absence of a clear end-goal in current sustainability and integrated reporting standards, frameworks and practices. As government leaders at the United Nations Conference on Sustainable Development (Rio+20) in 2012 proclaimed in *The Future We Want* Outcome Document, the "overarching goal" is the achievement of a green and inclusive economy in the context of sustainable development and poverty alleviation.[2] Yet current reporting generally lacks a direct connection to this purpose of creating a *green, inclusive, and open economy.* More frankly stated: no business can be truly sustainable in an unsustainable world; consequently, there will never be integral sustainability without a seamless connection to an economic system design whereby market mechanisms "do the right thing" through price signals and monetary incentivation, including subsidies and taxation.

- **Sustainability Context Gap:** While *The Future We Want* takes an overall macro perspective, sustainability reporting and integrated reporting focus on the micro-level, organization-specific perspective, thus creating a micro-macro gap between the UN goal and company reporting. The Global Reporting Initiative (GRI) advocates for closing this gap with its *Sustainability Context* Principle, which calls for "discussing the performance of the organization in the context of the limits and demands placed on environmental or social resources at the sector, local, regional, or global level." This addresses "the underlying question of … how an organization contributes … to the improvement or deterioration of economic, environmental and social conditions, developments and trends." However, "[r]eporting only on trends in individual performance (or the efficiency of the organization) fails to respond to this underlying question."[3] However, "to this day in the reporting world … Sustainability Context is incipient, uneven, and occasional," said GRI Co-Founder and Inaugural Chief Executive Allen White (a Reporting 3.0 Validator).[4] Today, sustainability and integrated reports describe company-specific incremental progress on issue-specific urgencies such as global warming, water shortages, biodiversity loss, human rights abuses and corruption; however, it is rare that companies account for their own proportionate contribution to these macro problems – and thus neither to their solutions.

- **Risk Management & Integral Materiality:** Material environmental, social and governance (ESG) information doesn't yet automatically link through to fiduciary duties, creating a disconnect from risk management due to shortcomings in this materiality determination. In consequence, now underscored by new research by the World Business Council for Sustainable Development (WBCSD) amongst its member companies, only 29% of the companies who outline material sustainability risks in sustainability reporting reflect the same information in their legal filings or disclosures.[5] While 89% of companies indicate that sustainability issues could have a financial impact on their business, 70% don't believe their risk management practices are adequately addressing those risks. This gaping gulf represents a stark reality check on the general failure of companies to link their sustainability efforts to their broader business disciplines and standard practices (such as Enterprise Risk Management). Attendees at Reporting 3.0 convenings consistently stressed the need for convergence of risk management, governance and remuneration with integral material sustainability, based on sound contextualization and proper impact assessments.

- **Collaboration & Ambition:** Reporting 3.0 convenings revealed broad perception of lagging collaboration and plateauing amibition levels amongst reporting and accounting standard setters, data analysts and information system architects, and new business model intrapreneurs and entrepreneurs, which are falling short on clarifying purpose, implementing sufficient success measurement, and achieving scalability at rates needed to be "on target" for ensuring the sustainability of the human race. That is what the four Blueprints aim to address collectively in order to align with the disclosure needs for a green, inclusive & open economy designed for regenerative and distributive capitalism.

- **Integral Blueprints:** The emergence of a third generation of "integral reporting" (after the first generation of financial reporting and the second generation of sustainability and integrated reporting) requires a fluid exchange of learning in all four areas described by the below Blueprint design. We also believe there needs to be a revolving process to update the Blueprints about every 3 years, given the speed of developments in all areas related to this set of recommendations.

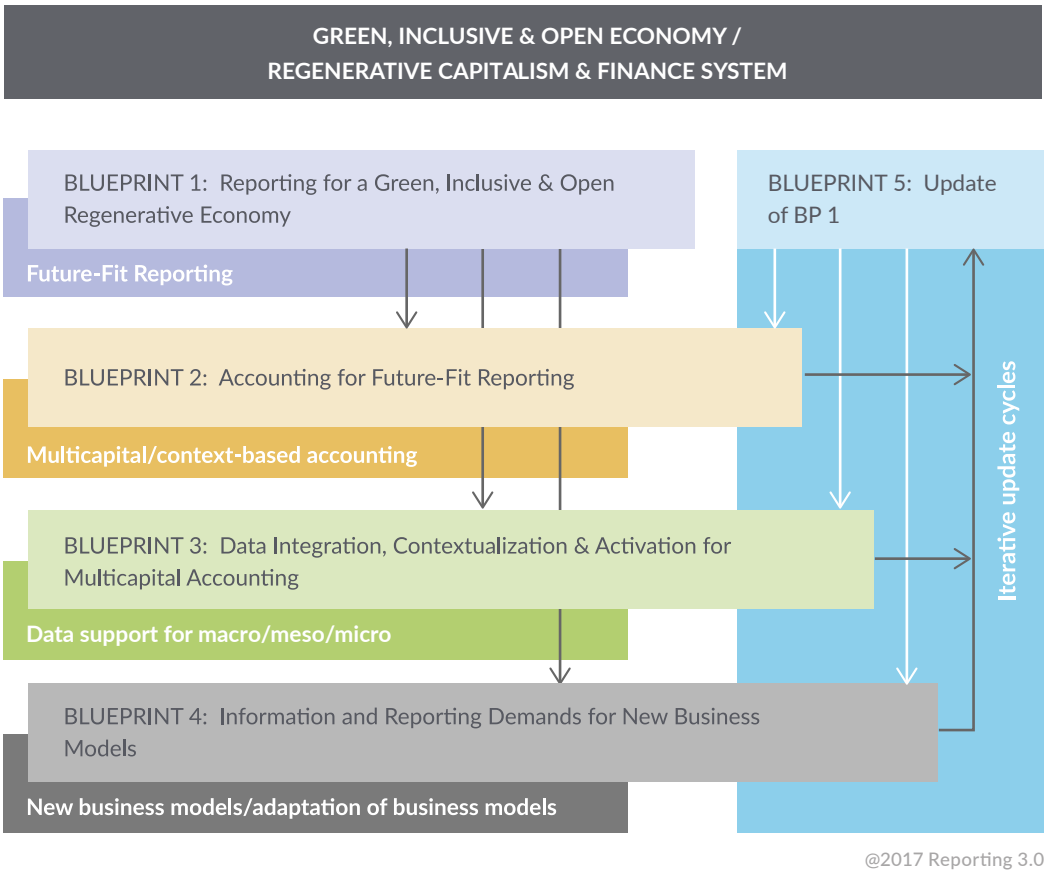



**Figure 1:** The Reporting 3.0 Blueprint Ecosystem

## 1.2. PRE-COMPETITIVE, COLLABORATIVE, MULTI-STAKEHOLDER, GLOBAL PUBLIC GOOD

*Don't compete! Create! Find out what everyone*
*else is doing and then don't do it!*
*– Joel Weldon*

Reporting 3.0 does not seek to create yet another reporting or accounting standard, data analytics product or new business model canvas. We are building on the strong shoulders of the existing reporting, accounting and data infrastructure as well as existing ideas around future business modeling. We simply believe that **the combination of these siloed pockets of expertise isn't yet working towards the end-goal of necessary systems change at sufficient pace.** As a consequence, humanity remains on a blind flight. These 55 years after Rachel Carson's book *Silent Spring*, 45 years after *Limits to Growth*, 30 years

after the *Brundtland Report* and 25 years after the first Rio Conference, it is still **impossible to properly assess whether a company is sustainable or not.** We therefore aim to boost cross-fertilization of these four as-yet distinct markets through crowd-sourced and well curated collaboration. So far, we see the **Reporting 3.0 Platform as the only pre-competitive and open global public good community with this holistic ambition.** Through our conferences and discussions, we know that there's isn't yet a curriculum that also offers this needed breadth between micro, meso, and macro aspects, cross-cutting economic theory, social and environmental education as well behavioral science. It is these lacks – of language, of forums to meet, and of sheer awareness of the magnitude of the urgency for global change – that holds colleagues back from even addressing what Reporting 3.0 aims to achieve. Institutional inertia, even in the seemingly forward-looking realms of ESG and corporate "sustainability," create blockages to progress, triggering the emergence of positive maverick stances and actions from those who share the understanding that incremental change is necessary but insufficient. Reporting 3.0 aims to make a real difference here.

Reporting 3.0 offers flexible engagement opportunities via Sponsor Partners, Working Group Partners, Validation Partners, Pilot Project & Beta Testing Partners, Advocation Partners, and through various public engagement opportunities such as virtual dialogues, events and public comment periods. We aim to update the Blueprints every three years and dissiminate them as a package to the constituencies that work with us and our target audiences. We hope to stimulate market reaction accordingly, so that the Blueprint recommendations will effect positive change of multiple actors while also catalzing necessary systems change.

## 1.3. AUDIENCES

The Blueprint ecosystem addresses four major areas that represent a baseline of the minimum necessary ambition to achieve a sustainable economy (much less a thriving society). These four areas attract the following audiences:

- **Reporting:** Reporting standards setters, reporters, governments (including statistics offices), NGOs, academics, and financial markets players (including investors as well as credit and sustainability rating agencies);
- **Accounting:** Accounting standard setters, accountants, CFOs, controllers; academics in accounting and controlling;
- **Data:** reporting standard setters, companies, CIOs, investors, software and analytics firms, data science experts, academics;
- **New Business Models:** Circular, sharing and collaborative economy entrepreneurs, business model designers, investors, NGOs, new business model initiatives, corporate intrapreneurs, funders, venture capitalists, academics.

We believe that **without these four areas in combination, breakthrough thinking and action will not emerge.** As an outcome, the new 'common ground' disclosure has to aim for a seamless information flow beteween corporations and their related supply and demand chains / cycles (micro level), industries, regions and habitats (meso), and nation states and global social and environmental ecosystems (macro).

We expect to address the outcomes of the Reporting 3.0 Blueprint deliberations to these actors in one major dissemination rollout after the completion of all four Blueprint Projects; but for now, **the main Blueprint chapters address the primary parties that need to contribute to breakthroughs in disclosure by actively applying our recommendations.** These are reporting standard setters; governments, legislators and multilateral organizations; corporations; and finally, investors and other stakeholders.

Of course, we invite all other constituencies (e.g. NGOs, academics, data scientists and statisticians, economists, consultants, etc...) to use the recommendations to inform their own practices. They are also invited to contribute to the outcome of the Blueprints and support the dissemination of their outcomes.

## REPORTING 3.0 BLUEPRINT ECOSYSTEM

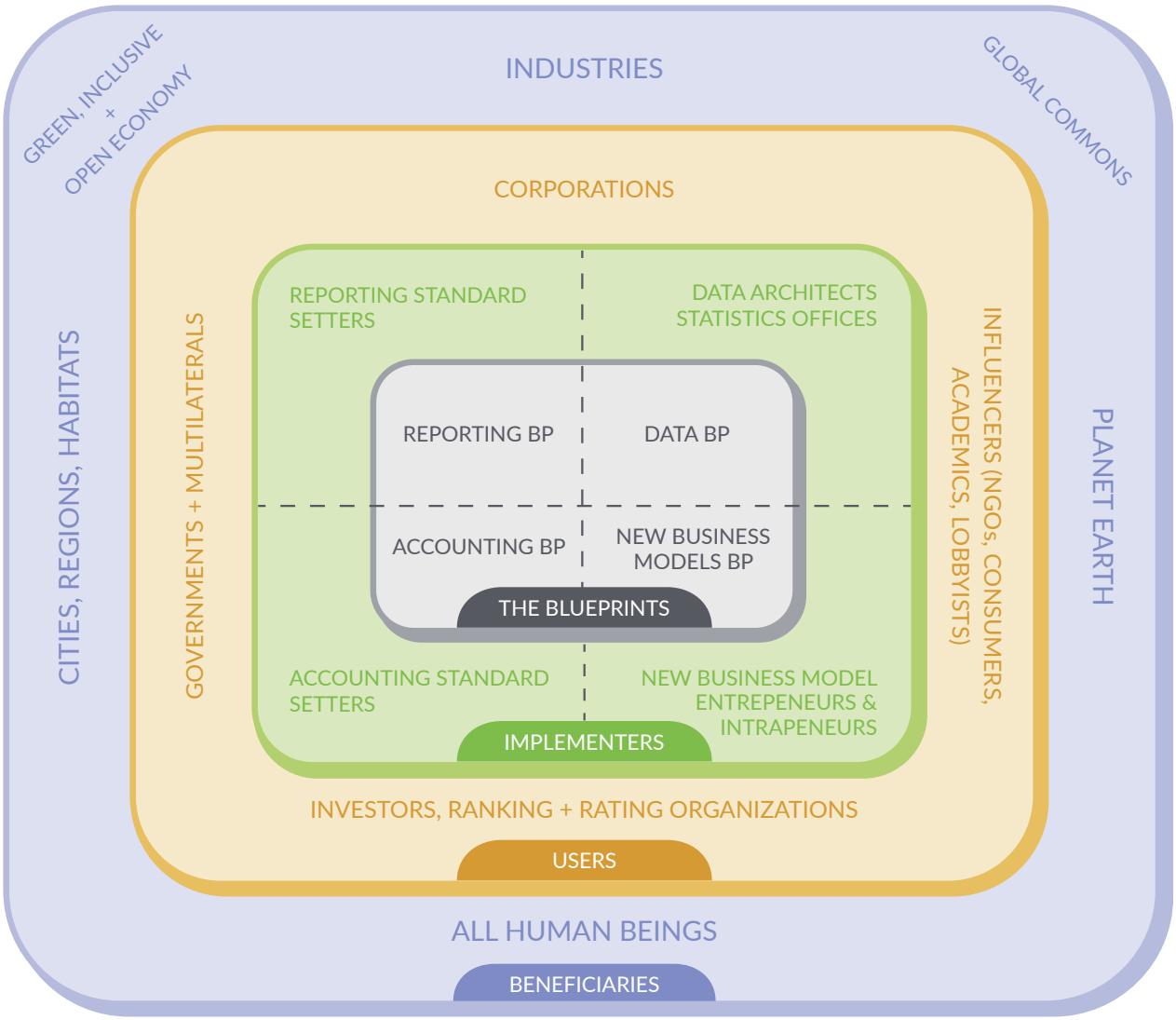





**Figure 2:** The implementers, users and beneficiaries of the Reporting 3.0 Blueprints in order to serve the Commons and a 'life-enhancing' green, inclusive and open economy.

## 1.4. LINK TO THE ECONOMIC SYSTEM THINKING

*The question is how to make the human race concur in its own survival?*
*– Bertrand Russell*

Failures of economic system thinking, ecological system thinking and education system thinking are the main reasons for the failure of sustainability. We coin the term **"triple-e-failure"** to describe this triumvirate of shortfalls. Sustainability, in the way it is applied in corporations, in standard setting, in data collection and information systems, in business model creation, is only a redux version of what it was originally meant to be. The shift from the original three-pronged focus on people, planet and *prosperity* to people planet and *profit*, totally lost the prioritization on overall well-being through inter- and intragenerational equity. This shift in emphasis has enabled the "fatal" incrementalism that creates the "illusion of progress" while failing to truly solve global challenges, subordinated as it is to status quo economic system thinking.

However, **capitalism, if focused on the right outcomes through the right incentives, can generally support a green, inclusive & open economy.** Regenerative capitalism, a concept promoted most visibly by John Fullerton of the Capital Institute (who keynoted the 2015 Reporting 3.0 Conference), provides a solution geared toward financial market transformation. Overall, the main ingredients of the necessary readjustment for creating a new level playing field globally include:

- An adjustment of cost calculation by internalizing a full spectrum of externalized costs into cost accounting;
- The addition of benefit accounting;
- The translation into pricing; and
- An adjusted tax regime that burdens resource use while liberating tax on labor.

In sum, achieving sustainability requires ambitious scalability by incentivizing leaders and nurturing comprehensive followership through this new level playing field. This is one of the blunt truths we need to understand. Reporting 3.0 is therefore taking those necessities into account in the design of the Blueprints. They are integral parts of the "North Star"[6] understanding.

## 1.5. LEADERSHIP & RESPONSIBILITY OF THE CORPORATE SECTOR

*You cannot escape the responsibility of tomorrow by evading it today!*
*– Abraham Lincoln*

At Reporting 3.0, we see a necessary interplay between the macro, meso and micro levels, organized both through the "push" of international policy, regulation and implementation standards, as well as the "pull" of fit-to-purpose innovation in new business models and governance systems aligned to the thriving, climate-resilient economy and society currently envisioned to emerge by mid-century. The existing economic system design has so far not enabled the emergence of true sustainability, but instead actively acts against a green, inclusive & open economy by neglecting the needs to a) serve the well-being of every global citizen; b) work within the cycles of nature; and c) align financial systems to serve the goals of a regenerative and distributive real economy. But very importantly, all that interplay needs leadership, and we think the corporate sector shows promise of supplying such leadership from enlightened boards and CEOs (incited by informed institutional investors) who recognize that future value creation requires significant **transformation at the individual business model (micro), industy (meso), and economic system (macro) levels.**

According to Reporting 3.0 Parter Organizational Capital Partners, "[f]orty years of strategic leadership, cognitive capacity, and crystallized intelligence research has identified that less than five percent of the world's adult population has the critical thinking capacity to perform complex work and investment decision making at the higher levels of innovation and systems thinking complexity [that] is required for conceptualizing and implementing new business and economic models."[7] So the trick is to identify leaders with the cognitive capacities to think in inter-generational terms.

Leaders will understand that they will need to take action to advise of the overall economic system conditions, defining the necessary level playing field, in order to scale up sustainable policy making, technological changes and financing mechanisms. For their own organizations, the real challenge is how to become sustainable beyond reducing negative impact and how to excel through transformation capabilities that allow the organization to lead. **Leadership excellence and organizational transformation capabilities are necessary ingredients of being "future ready." So far, reporting standards don't have any disclosure available for investors and other stakeholders to show where an organization stands on its pathway to be future ready.** These are additional ingredients and new reporting elements that need coverage in an interplay between purpose, success measurement and scalability of any organization.

## 1.6. THE REPORTING 3.0 INTEGRAL DESIGN THINKING

*Where is the life we have lost in living?*
*Where is the wisdom we have lost in knowledge?*
*Where is the knowledge we have lost in information?*
*– T.S. Eliot*

In sum, Reporting 3.0 aims to make an impact through the four Blueprints that make up the design ecosystem of fit-to-purpose disclosure for a green, inclusive and open economy. **Figure 3** summarizes the basic assumptions, the consequences, outcomes and impacts of our design thinking: achieving integral thinking in all sorts of organizations through a new level of transparency currently unknown; integral materiality deliberations that take a systems approach to assess and prioritize, integral data systems that allow for a seamless flow of information from the micro to the meso to the macro level; and finally integral business model creation that benefits from such new disclosures.

# REPORTING 3.0 BLUEPRINT IMPACT ASSESSMENT

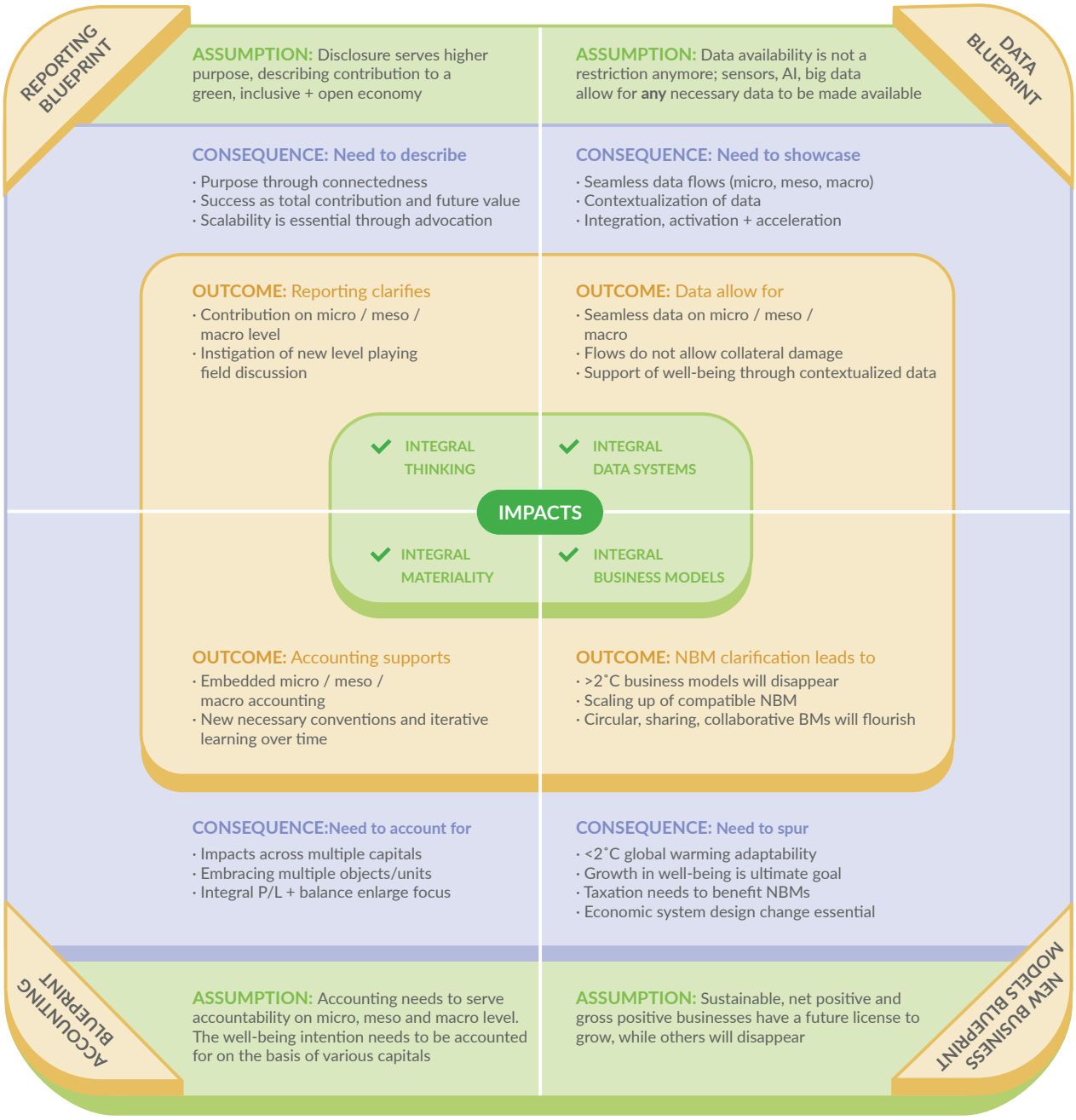





**Figure 3:** the integral design thinking of Reporting 3.0

## 2. EXECUTIVE SUMMARY

Data plays a vital role in driving change – but it can also cement a broken status quo, or worse yet, entrench incremental change when transformative change is needed (creating the "illusion of progress," to quote Reporting 3.0 Steering Board Member Brendan LeBlanc of Ernst & Young.) The *quality* of change, therefore, is driven less by quantification itself, and more by the intermediation of mathematical models and algorithmic metrics as well as the design of data flow architecture and information systems, exposing the resulting information not only to imperatives of ethical inter-action but also to pure dumb human fallibility.

Consequently, the Reporting 3.0 *Data Blueprint* focuses not so much on the data itself, nor even on attention-grabbing technical applications that process data (such as artificial intelligence (AI), big data, blockchain, etc...), but rather on the nature and structure of the metrics that perform interpretive analysis, transforming raw data into insightful information, decision-useful intelligence, and actionable knowledge. Toward this end, the R3 *Data Blueprint* proposes a general specification for data architecture and information systems to accurately measure progress toward financial, economic, social and environmental sustainability via dynamic interlinkages between the individual company (micro), industry (meso), and systems (macro) levels in order to spur the emergence of a truly green, regenerative, inclusive, and open global economy.

Drawing on the work of former World Bank Senior Economist and Ecological Economics Co-Founder Herman Daly and *Limits to Growth* Co-Author and Sustainability Institute Founder Donella Meadows, the *Data Blueprint* advances a general specification based on three primary dimensions necessary for building out a data infrastructure that fulfills the potential of triggering transformative systems change.

- **Integration** of the multiple capitals (natural, human, social, built, and financial) to optimize positive synergies (and mute / eradicate negative interaction) between and amongst them, to better support the creation of financial, societal (shared), and system value (to employ a recently coined term.)[8] In Daly's and Meadows' terms, this integration links the "ultimate means" of natural capital through the intermediate means and ends of human, social, built, and financial capital, all the way through the "ultimate ends" of well-being.

- **Contextualization** of organization-level impacts on the multiple capitals within the carrying capacities of those capitals at the systems level, either a virtuous (regenerative) or vicious (degenerative) cycle. Context-Based Sustainability (an implementation mechanism of the Principle of Sustainability Context) calls for identifying thresholds separating sustainability from unsustainability, as well as assessing allocations of fair-share contributions to maintaining the overall sufficiency of vital capital resources and cycles.

- **Activation** of responses when the sustainability of any capitals – and hence the potential for biota well-being and human fulfillment – is placed at significant risk. Data without engagement falls short of its potential; "activated" data fulfills its potential of driving the change signaled by integrated, contextualized data. The key to activation is evidence-based advocacy by context-driven stakeholders.[9] And activated data also catalyzes "acceleration" to scale up change to trigger tipping points of systems change. Indeed, properly contextualized data embeds a gap analysis to signal the magnitude of unsustainability and hence the pace and scale of reform needed to achieve sustainability.

Given that current practices and information systems in corporate finance and sustainability fall far short of this general specification, the *Data Blueprint* appeals to the urgings of Meadows "press cou-

rageously" and "shake" power structures that are not creating well-being, and of Global Reporting Initiative Co-Founder (and Reporting 3.0 Validator) Allen White that it is "time for aggressive movement" on "Context in light of the ecological and social perils that lie ahead." These exhortations exemplify the profile of **Positive Mavericks**, a term coined by Preventable Surprises Founding CEO Raj Thamotheram, a Reporting 3.0 Partner, to describe those who work productively (not obstructively) toward positive change; challenge constraints, structural limitations, unconscious biases, and shadow agendas; think and act at systems levels; and seek transformative (on top of incremental) change.

Throughout this report, the *Data Blueprint* cites examples of shortcomings and gaps in need of filling, as well as emerging best practices that exemplify approaches to data integration and contextualization that serve multicapital accounting. And each of the 3 primary chapters (on **Integration, Contextualization,** and **Activation**) ends with a series of Recommendations for relevant constituencies such as reporters, standard-setters, governments and intermediaries, and investors and other stakeholders, framed at 3 maturity levels from educate to advocate to accelerate. Key Recommendations of the *Data Blueprint* include:

| | |
|---|---|
| Educate | Integrate multiple capitals in data architecture to liberate them from silos and place them in dynamic relationship with each other, enabling detection of synergies; And to free the economy from the shackles of monocapitalism. |
| Advocate | All standard setters and companies should apply a context-based approach to reporting, allocating fair share impacts on common capital resources within the thresholds of the capitals' carrying capacities. |
| Accelerate | Design information systems that integrate data from different areas of impact to enable tracking of how interventions in different areas of impact synergies and cross-pollinate, allowing for detection of both desirable and undesirable feedback loops. |

Following the release and publication of this *Data Blueprint* report, Reporting 3.0 is launching its **Beta Testing Program** to pilot Recommendations from the *Blueprint*. This report profiles a few of these pilot projects.

## 3. INTRODUCTION: NUMBERS, DAMNED NUMBERS, AND NUMBERS THAT MATTER

*It is quality rather than quantity that matters.*[10]
*— Seneca the Younger*

*The focus [of a holistic society and economic system] would be on quality, not quantity, and yet quantity sufficient for the physical needs of all would not be lacking.*[11]
*— Donella Meadows*

1.5 million YouTube views. That's how popular a nonprofit donation pitch video was, according to a 2013 *Harvard Business Review* article.[12] Success, right? Seemingly so – until contextualizing that data point to another two: donation sign-ups (eight) and actual donations (zero). #Fail. Or as the *HBR* authors state:

> There is a difference between numbers, and numbers that matter. This is what separates data from metrics.[13]

We're drowning in data: big data. "To put things into perspective, 1 Exabyte (1018) of data is created on the internet daily, amounting to roughly the equivalent of data in 250 million DVDs," wrote Alissa Lorentz of Augify in *Wired*, contextualizing her point. "Humankind produces in two days the same amount of data it took from the dawn of civilization until 2003 to generate, and as the Internet of Things become a reality and more physical objects become connected to the internet, we will enter the Brontobyte (1027) Era," she added, concluding: "Clearly, data and knowledge are not the same thing."[14]

Such an onslaught widens the gap between numbers, and numbers that matter – requiring smart metrics to transform the data into insightful information, decision-useful intelligence, and actionable knowledge. "Big Data has limited value if not paired with its younger and more intelligent sibling, Context. For organizations and businesses to survive today, they have to contextualize their data," wrote Lorentz. "Contextualization is crucial in transforming senseless data into real information – information that can be used as actionable insights that enable intelligent corporate decision-making."

So, *quantity* alone is inadequate – *big data can be dumb* data. And not all context is created equal – metrics can be mathematically right but morally wrong, or simply irrelevant. *Quality* counts!

Take the case described by Harvard Mathematics PhD Cathy O'Neil. During her stint through 2011 as a hedge fund "quant" – quantitative analyst – she increasingly "started to see 'creepy, weaponized' mathematical models being deployed, largely against people who were already struggling," she explains in a *New Yorker* profile of her book *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*.[15]

Her point: while raw data may be relatively agnostic, contextualized data isn't: it swings to and fro at the whims of both conscious manipulation and unconscious bias. As Mark Twain said, riffing off British Prime Minister Benjamin Disraeli: "There are three kinds of lies: lies, damned lies, and statistics." Translating this into the terms of our inquiry here:

> There are three kinds of numbers: numbers, damned numbers, and numbers that matter.

Note that we are conscious of shifting the original meaning in the Disraeli / Twain quote, which ends pessimistically conflating data and deception. Flipping this on its head, the Reporting 3.0 formulation exhibits cautious faith that quantification *can* serve ethical ends – when employing ethical and accurate interpretive filters. So, while Disraeli's statistics lie, our last category of numbers tell truths that matter – because the state of our world demands as much.

## 3.1. THE CURRENT STATE OF CORPORATE DATA & REPORTING: THE ILLUSION OF PROGRESS

*The only thing more dangerous than no progress is the illusion of progress.*[16]
*– Reporting 3.0 Steering Board Member Brendan LeBlanc of EY*

The current state of corporate data and reporting creates the illusion of progress when it comes to financial, economic, environmental, and social sustainability. In other words, it falls into the middle category of our formulation – *damned numbers* – which well-meaningly (or insidiously) send inaccurate signals on *bona fide* sustainability. We're drowning in *damned* data on incremental progress, but parched for data that contextualizes corporate progress vis-à-vis thresholds dividing sustainability from unsustainability in all dimensions – data that *truly* matters, in other words

Choosing an example at random from 3BL Media's ReportAlert feed, the ABInBev 2016 *Better World* Report discusses its water goals (see Figure 4). These data perfectly exemplify *damned numbers*:


**Figure 4:** 2017 Environmental Goals: Our Progress in 2016, ABInBev, 2016 Better World Report[17]

The statistic "100%" sounds impressive – until scrutinized. This comprehensive-sounding number applies to decidedly indeterminate actions – *reduce*, *improve*, *engage in watershed protection measures* – without providing information on *how much* water risk reduction and water management improvement and watershed protection measures are needed to achieve sustainability. And the comprehensiveness suggested by the "100%" statistic also masks the partial nature of covering *key* barley regions and key areas in various countries. What about *non-key* barley regions (or hops regions) and non-key regions in the listed countries (or in countries other than those listed) – are the rightsholders[18] in those regions / countries any less entitled to secure and sufficient freshwater supplies?

What does this performance *really* mean, in the context of the sustainability of the water cycle and freshwater supplies that all rightsholders in all impacted watersheds rely on for their well-being across ABInBev's value chain? It's impossible to tell, because the company doesn't say. Instead, it includes *damned numbers*, somewhat akin to knowing the percentage of the 15m YouTube video viewers who came from states west of the Mississippi in the opening example.

Former EMC Corporate Sustainability Officer (CSO) Kathrin Winkler recently penned a message to her fellow CSOs and corporate sustainability professionals on sufficient levels of ambition. When questioned on whether her company's sustainability efforts were "enough" (and EMC's sustainability work in Winkler's tenure was widely regarded as amongst the best in the field), she always responded: "No, I said, as do you. Because it isn't enough. We freely admit it to one another. But are we telling it to our executives? The press? Investors? Customers? And what the heck are we doing about it?"[19]

Winkler realizes the "value of incrementalism – to normalize sustainability as a decision-making criterion, to weave sustainability inextricably into operations, to align people around a vision," she wrote. "But can we please stop pretending that it's enough? Let's dispense with the fairy tales, or the 'happy horseshit,' as I've come to think of it, when we smile for the camera and pat ourselves on the back for minor gains." In other words, acknowledge the distinction between *damned numbers* and *numbers that*

*matter*, a gesture that exemplifies the "positive maverick" approach advocated by Reporting 3.0. (See **Figure 5** for a working definition.)

**Positive Mavericks**

- Work productively (not obstructively) toward positive change
- Are motivated more by ultimate ends, with intermediate ends and means serving as vehicles, not destinations
- Challenge the constraints, structural limitations, unconscious biases and shadow agendas of the institutions and organizations they work with
- Backcast from a desired future, building bridge foundations on the far side of the river
- Work collaboratively in networks with other positive mavericks
- Think and act at systems levels
- Seek transformative (on top of incremental) change

**Figure 5:** Reporting 3.0 Platform, *Positive Mavericks*. (Source: Raj Thamotheram, Founding CEO, Preventable Surprises.)

It warrants unpacking why incrementalist data, management, and reporting are insufficient at this historical juncture. Due to the grave danger from overshooting ecological ceilings (and shortfalling on social foundation-building), humanity faces existential threats to the very preservation of "a planet similar to that on which civilization developed."[20] Incremental data say companies are doing "better," masking the fact that they individually fall far short of meeting their fair share responsibility for sustaining the ongoing viability of the common resources upon which we all rely – which often require individual and collective action, within bounded timelines. For example:

> "We need to bend the global curve of emissions no later than 2020 and reach a fossil-fuel free world economy by 2050," says Stockholm Resilience Centre Director Johan Rockström. "Yes, this is a grand transformation. Is it doable? Yes. Is it a sacrifice? No. The evidence grows day-by-day that a decarbonized world is a more attractive world."[21]

So, the business case for transcending incrementalism to achieve true sustainability supports the implementation of a data architecture and information systems contextualized to sustainability thresholds. There's opportunity in the intelligence: so concludes a recent report finding that meeting the Sustainable Development Goals (SDGs) in just four out of 60 sectors – food and agriculture; cities; energy and materials; and health and wellbeing – promises to spur up to $12 trillion in market opportunities over the next 15 years.[22]

In fact, the very same kinds of thresholds that apply to company impacts on the sustainability of ecological and social systems also apply to *company* sustainability, financially. In order to sustain itself, a company needs to surpass thresholds of current and future financial value creation, saddling boards and their dual dependents – C-suite executives and institutional investors – with the fiduciary duty of establishing performance metrics, incentive schemes, and governance mechanisms that ensure such sustainable performance. And yet even here, this contextualization is typically lacking from company data and reporting.

So, this *Data Blueprint* is *primarily* concerned with the design and architecture demands of data flows and information systems that contextualize corporate performance within the thresholds of financial, economic, social and ecological sustainability. Most of these instances require contextualization of company impacts in relation to the broader systems within which it operates, which often necessitates "fair-share" allocations from the flows of capital resource stocks.

This relegates the technical mechanisms one might expect from a "data blueprint" – such as artificial intelligence (AI), big data, blockchain, natural language processing (NLP), the internet of things (IoT), and a plethora of other technological approaches to data analysis – to a secondary tier of significance. Of primary concern is the proper structuring of data contextualization, integration, and flows between micro, meso, and macro levels of the economy and society. How this gets handled, technologically, is a next step in significance. The *Data Blueprint* addresses this tier in some of its Recommendations and projected pilot projects, and so will be explored in more depth in the Beta Testing Program that follows on the publication of this final report of the *Data Blueprint*.

## 3.2. DONELLA MEADOWS ON THE DALY TRIANGLE: CAPITALS & CONTEXT

*"Extending the definition of capital to natural, human, and social capital could provide an easily understood base for calculating and integrating [sustainability]…The information system…will measure capital stocks at every level and the flows that increase, decrease and connect these stocks."*[23]

*– Donella Meadows*

The conceptual foundations for this *Data Blueprint* trace back to Donella Meadows' seminal 1998 report entitled *Indicators and Information Systems for Sustainable Development* – the first-tier, uber-referent of this Blueprint, if you will.[24] In it, *Limits to Growth* Co-Author and Sustainability Institute Founder Meadows assesses the gaps in the then-current conceptualizations of information systems to measure economic, social, and ecological health and vibrancy. And the gaps she identified almost two decades ago, in dialogue with her colleagues in the Balaton Group, largely remain today.[25] So, the work of this *Data Blueprint* is to complete this "unfinished business" by mapping out ways to actualize these concepts.

Specifically, Dana Meadows (as she called herself) asserted then (and this *Data Blueprint*, along with its sibling *Blueprints*, now reasserts) that the focus of our collective thinking is too narrow, and needs expansion to encompass both a broader sense of "economic system design" as well as deeper interconnections with the ecological foundations upon which our systems are built – and the social outcomes of well-being and fulfillment we seek. Meadows did this by using the "Daly Triangle," named after former World Bank Economist and Ecological Economics Co-Founder Herman Daly.

> The framework I suggest is based on a diagram Herman Daly drew more than twenty years ago. It pictures the relationship between the human economy and the earth in a way that is, to me, logical, systematic, and clarifying. Daly originally drew it as a triangle or pyramid, and for historical purposes I will use that symbolism, though the shape is not necessary to the logic… The important idea is to situate the human economy within a hierarchy, resting on a foundation of natural resources and reaching to the height of ultimate purpose.[26]

The foundation of natural resources further rests on concepts Meadows distilled from him, which she dubbed the "Daly Rules" for sustainability:

- **Renewable resources** (fish, forests, soils, groundwaters) must be used no faster than the rate at which they regenerate;
- **Nonrenewable resources** (mineral ores, fossil fuels, fossil groundwaters) must be used no faster than renewable substitutes for them can be put into place;
- **Pollution and wastes** must be emitted no faster than natural systems can absorb them, recycle them, or render them harmless.[27]

In other words, the "Daly Rules" call for operating within natural cycles of renewal, regeneration and assimilation; operations outside these cycles must be engineered out of the system.

The Daly Triangle comprises a continuum running from this foundation – the "ultimate means" – through "intermediate means" and "intermediate ends" (the 2 realms where our economic assessment systems currently focus, primarily) to "ultimate ends," which focus beyond mere economic "growth" to overall "well-being." See **Figure 6** to visualize this continuum.

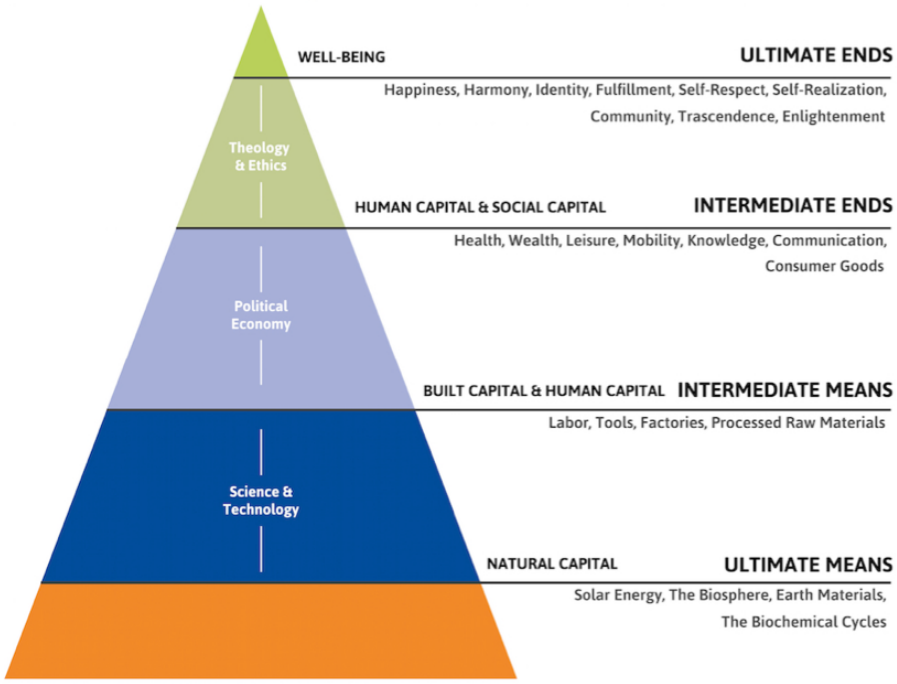



**Figure 6:** Daly Triangle (Source: Meadows, *Indicators and Information Systems for Sustainable Development*, 1998.)

The first striking aspect of the Daly Triangle is its grounding in "multicapitalism," the term recently coined by former Sustainability Institute Chair and Center for Sustainable Organizations Founder Mark McElroy, drawing on the literature over decades across diverse disciplines.[28]

According to Meadows:

> The "Daly Triangle," which relates natural wealth to ultimate human purpose through technology, economy, politics, and ethics, provides a simple integrating framework.
>
> Sustainable development is a call to expand the economic calculus to include the top (development) and bottom (sustainability) of the triangle.

> The three most basic aggregate measures of sustainable development are the *sufficiency* with which ultimate ends are realized for all people, the *efficiency* with which ultimate means are translated into ultimate ends, and the *sustainability* of use of ultimate means.
>
> **Extending the definition of capital to natural, human, and social capital could provide an easily understood base for calculating and integrating the Daly triangle.**[29]

For a visual representation and definitions of the multiple capitals as conceived by Forum for the Future Founder Jonathon Porritt, see **Figure 7** and **Figure 8**.

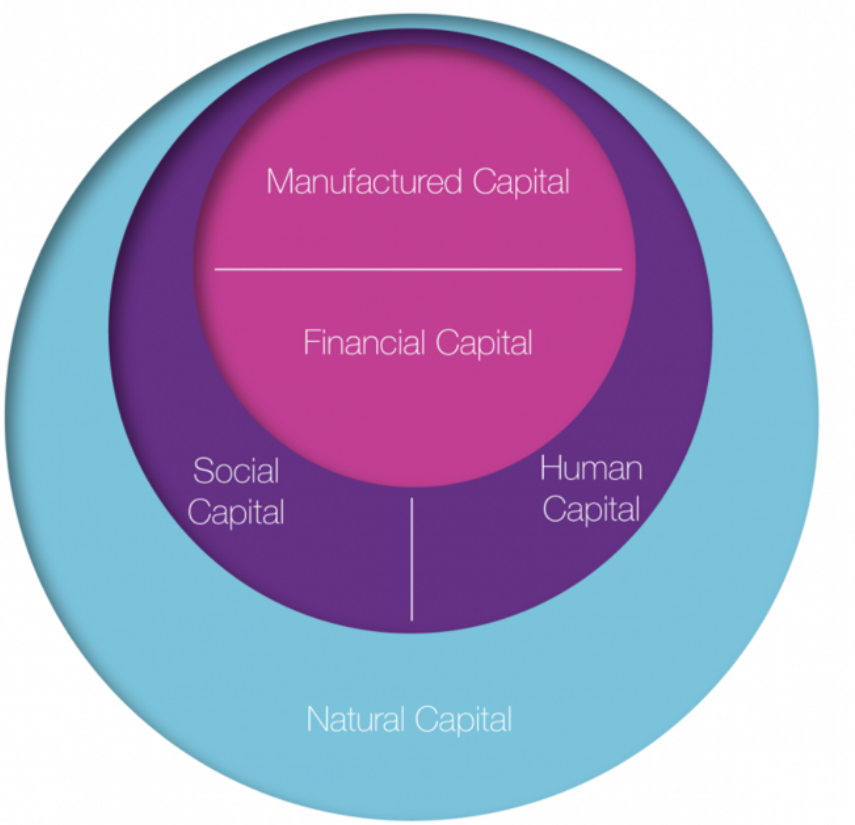



**Figure 7:** The Five Capitals Model (Source: Forum for the Future, *The Five Capitals*[30])

**The Five Capitals**

**Natural Capital** is any stock or flow of energy and material that produces goods and services. It includes:

- Resources - renewable and non-renewable materials
- Sinks - that absorb, neutralise or recycle wastes
- Processes - such as climate regulation

Natural capital is the basis not only of production but of life itself!

**Human Capital** consists of people's health, knowledge, skills and motivation. All these things are needed for productive work. Enhancing human capital through education and training is central to a flourishing economy.

**Social Capital** concerns the institutions that help us maintain and develop human capital in partnership with others; e.g. families, communities, businesses, trade unions, schools, and voluntary organisations.

**Manufactured Capital** comprises material goods or fixed assets which contribute to the production process rather than being the output itself – e.g. tools, machines and buildings.

**Financial Capital** plays an important role in our economy, enabling the other types of Capital to be owned and traded. But unlike the other types, it has no real value itself but is representative of natural, human, social or manufactured capital; e.g. shares, bonds or banknotes.

**Figure 8:** The Five Capitals (Source: Forum for the Future, *The Five Capitals*.[31])

Meadows notes that traditional economic measures, which typically inhabit the *intermediate means* and *intermediate ends* in middle of the pyramid, contain two significant *gaps*, at the far ends of the pyramid. At the bottom resides natural capital, the *ultimate means* that serve as the foundation of the economy; and at the top resides well-being (not a capital but a qualitative state), the *ultimate ends*.

Envisioning the *economic calculus* through a multicapital lens enables us to perceive these *missing links* that most of our data systems currently lack. In Meadows' view, information systems should link the bottom to the top of the triangle: the ultimate means of the economy's natural capital foundations to its ultimate ends – namely, the well-being of humans and our companion flora and fauna.

This multicapital focus leads directly to the second striking aspect of Meadows' conceptualization of the Daly Triangle: she introduces the notion of capital stocks and flows, which ultimately roll up to systemic viability. Meadows says:

> The central indicators of sustainable development will integrate the whole Daly triangle.
>
> The information system from which these central indicators can be derived will measure capital stocks at every level and the flows that increase, decrease and connect these stocks.
>
> There are systematic schemes for assessing the total viability of a system. These schemes can serve as checklists for sustainable development indicators.[32]

Elsewhere in the report, Meadows goes into more depth on this relationship between these capital resources and systemic viability – or sustainability:

> An environmental indicator becomes a sustainability indicator (or unsustainability indicator) with the addition of time, limit, or target. The central questions of sustainability are: *How long can this activity last? How long do we have to respond before we run into trouble? Where are we with respect to our limits?...*

> [S]ustainability indicators should be related to carrying capacity or to threshold of danger or to targets. 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.[33]

In other words, indicating the *time*, *limit*, *target*, *carrying capacity*, or threshold provides the relevant context necessary to transform essentially meaningless information (*damned numbers*) into intelligence (*numbers that matter*) with clear signals embedded within the quantification itelf: signposts that point to the requisite responses. Unfortunately, most corporate data falls into the "means nothing to people" category, devoid of the context needed to discern its ultimate significance.

## 3.3. FROM SUSTAINABILITY CONTEXT TO CONTEXT-BASED SUSTAINABILITY

*Many aspects of sustainability reporting draw significant meaning from the larger context of how performance at the organisational level affects economic, environmental, and social capital formation and depletion at a local, regional, or global level… [S]imply reporting on the trend in individual performance (or the efficiency of the organisation) leaves open the question of an organisation's contribution to the total amount of these different types of capital.*
*– Global Reporting Initiative*[34]

*Of particular importance to…Context-Based Sustainability…is the concept of carrying capacity – the size of the load or degree of demand a resource can support without degrading – and the idea that the carrying capacities of vital resources (capitals) must be maintained at desired levels in order to ensure stakeholder or human well-being – anything less is unsustainable.*
*– Mark McElroy*[35]

At the very time Meadows' *Indicators and Information Systems* report came out, the sustainability reporting field was burgeoning into codification, with the emergence of the Global Reporting Initiative (GRI)[36]. Its evolving guidelines soon adopted this call for contextualizing impacts on the multiple capitals within their limits, through the introduction of the *Sustainability Context* Principle (in the second generation of GRI Guidelines, dubbed "G2," released in 2002):

> Many aspects of sustainability reporting draw significant meaning from the **larger context of how performance at the organisational level affects economic, environmental, and social capital formation and depletion at a local, regional, or global level…** [S]imply reporting on the trend in individual performance (or the efficiency of the organisation) leaves open the question of an organisation's contribution to the total amount of these different types of capital… [P]lacing performance information in the broader biophysical, social, and economic context lies at the heart of sustainability reporting… This principle emphasises the sustainability of the broader natural and human environment within which organisations operate…
>
> [R]eporting organisations should consider their individual performance in the contexts of economic, environmental, and social sustainability. This will involve discussing the **performance of the organisation in the context of the limits and demands placed on economic, environmental, or social resources at a macro-level.**[37]

GRI's application to corporate reporting of these concepts of capitals & context, which Meadows advocated for more broadly, introduced a key new element: the "micro-macro" link between the organization

and the broader systems it operates within[38]. It places an individual company's "contribution to the total amount of these different types of capital" into "the context of the limits and demands placed on economic, environmental, or social resources at a macro-level."[39] In essence, the Sustainability Context Principle calls for measuring companies' proportionate impacts on what McElroy calls the "carrying capacities of capitals."[40] In the absence of specific guidance from GRI on implementing the Sustainability Context Principle, McElroy conceptualized "Context-Based Sustainability" (CBS) as an operationalization framework, which he recently distilled thus:[41]

> Of particular importance to…Context-Based Sustainability…is the concept of *carrying capacity* – the size of the load or degree of demand a resource can support without degrading – and the idea that the carrying capacities of vital resources (capitals) must be maintained at desired levels in order to ensure stakeholder or human well-being – anything less is unsustainable.[42]

So, McElroy followed in his mentor Meadows' footsteps by grounding CBS in the carrying capacities of capitals, within their contextual thresholds – and ultimately tied to the well-being of living species. In essence, contextualizing data within the carrying capacities of capitals in order to support ongoing human well-being embeds a "message" in the data (to hearken back to Meadows' "begins to carry a message" as well as our "numbers that matter" theme).[43] This *message* answers Meadows' question, how long do we have to respond before we run into trouble?

***To respond.*** The message embedded in the data is a call-to-action: intelligent information activates a response. Contextualized, multicapital data contains a call to expand the economic calculus in order to measure:

- ***the sustainability*** of the use of ultimate means (natural capital);
- ***the efficiency*** with which ultimate means (natural capital) are translated into ultimate ends (well-being); and
- ***the sufficiency*** with which ultimate ends (well-being) are realized for all people.

If any of these indicators fall outside acceptable thresholds, we're called to act in order to remedy this shortfall or overshoot.

This interlinkage that anchors a data point to its real-world response is key for Meadows – she stresses the importance of this "integration" that ties together the bottom of the pyramid (foundational natural capital) through its middle (the social or "anthro" capitals, as McElroy calls them) to the top (ultimate well-being).[44] Meadows writes:

> The "Daly Triangle," which relates natural wealth to ultimate human purpose through technology, economy, politics, and ethics, provides a **simple integrating framework…**
>
> The central indicators of sustainable development will **integrate** the whole Daly triangle…
>
> **Integration of the triangle from bottom to top** requires good science *and* just and efficient political *and* economic systems and a culture that illuminates the higher purposes of life. The focus of such a society would be *wholeness*, not maximizing one part of the system at the expense of other parts. **The goal of perpetual economic growth would be seen as nonsensical, partly because the finite material base cannot sustain it, partly because human fulfillment does not demand it.** The focus would be on quality, not quantity, and yet quantity sufficient for the physical needs of all would not be lacking. [45]

So, Meadows established the need for a holistic, integrated, systemic framework for measuring the sustainable development of the global economy, nested as it is within our global society and biosphere. Arguably, a mechanism to implement this framework has yet to fully emerge. In order to fulfill Meadows' vision of truly integrated information systems, it would need to do three things:

- **Integrate** the multiple capitals to link Ultimate Means (natural capital) through to Ultimate Ends (well-being);
- **Contextualize** organizational impacts on the carrying capacities of the capitals;
- **Activate** responses when the sustainability of any capitals – and hence the potential for biota well-being and human fulfillment – is placed at significant risk.

## 3.4. RE-VISIONING THE DALY TRIANGLE

*Daly originally drew it as a triangle or pyramid, and for historical purposes I will use that symbolism, though the shape is not necessary to the logic… The important idea is to situate the human economy within a hierarchy, resting on a foundation of natural resources and reaching to the height of ultimate purpose.*[46]
*– Dana Meadows*

The Virtual Dialogue on Exposure Draft 2.0 of this *Data Blueprint* included consideration of the Daly Triangle, resulting in the following feedback from ECO-OS CEO Noam Gressel:

> While thresholds are key to Meadows' thesis, their importance is not brought to life in the graphic representation by the Daly Triangle.[47]

This questioning of the Daly Triangle also came in direct feedback from Bob Willard of Sustainability Advantage, a Co-Founder of the Future Fit Business Benchmark, who cited the below quote from Meadows that sheds light on the sanctity (or not) of the triangle, and on the function of symbols for conveying deeper meanings – including those that help conceptualize the transformation of *numbers* into *numbers that matter.*[48]

> I must state that several for my Balaton colleagues have reservations about this scheme [the triangle], more on the symbolic and philosophical levels than on the level of logical concepts. No scheme we came up with [hierarchical triangle, "nested dependencies" concentric circles, flower, Möbius strip, compass] was embraced by all without reservation. Our discussions of our doubts about each scheme were revealing, showing the power of symbols and the different interpretations different cultures can bring to the same symbol. I see no way around that difficulty, except to choose a framework that seems to capture the central logic one is trying to communicate, and then, through use and example, to imbue that framework with the intended meaning. That is how every large-scale indicator, from the GDP to the Dow-Jones Index, has evolved…
>
> The whole discussion, which became very emotional, taught us a lot about the humorlessness with which human beings take their symbols – a vital lesson in the design of indicators! I don't insist on the triangle, though out of deference to Daly's original vision, I use it here. I certainly don't intend to convey by it the idea that the only purpose of nature is to fulfill human ends, an interpretation to which most Balaton members strongly object. (Rather, I see the triangle as saying there's no way human ends can be realized without healthy, functioning natural and economic and social systems. Others see no problem, because they assume that high human purposes must naturally include valuing nature in its own right, independent of its ability to supply

> human ends.) The logical relationship among the levels of the hierarchy is what's important to me, along with the challenge of orienting indicators toward the two things that ultimately count for me — the health of nature and real human well-being.
>
> I find the Daly pyramid the most intuitive of the many frameworks I have seen for organizing indicators, one that organizes the links among many aspects of sustainable development, and one which [...] lends itself naturally to dynamic modeling, pressure-state-response schemes, ecological footprints, and various kinds of capital.

Oxford University scholar Kate Raworth, in her recent book *Doughnut Economics*, similarly describes the "Power of Pictures" in re-conceptualizing systems:

> If we want to rewrite economics, we need to redraw its pictures because we stand little chance of telling a new story if we stick to the old illustrations.[49]

She cites cognitive linguist George Lakoff on framing, noting that "simply rebutting the dominant frame will, ironically, only serve to reinforce it [so] it is absolutely essential to have a compelling alternative frame..."[50] In an interview with Reporting 3.0, Raworth recounted how, in 2011, she conceived of a new visualization of the economic system while working for Oxfam. She started with the "planetary boundaries," a concept introduced in 2009 by Stockholm Resilience Center Director Johan Rockström and colleagues that proposed maximum "do not exceed" thresholds of adverse environmental impact in 9 areas, such as climate change and biodiversity.

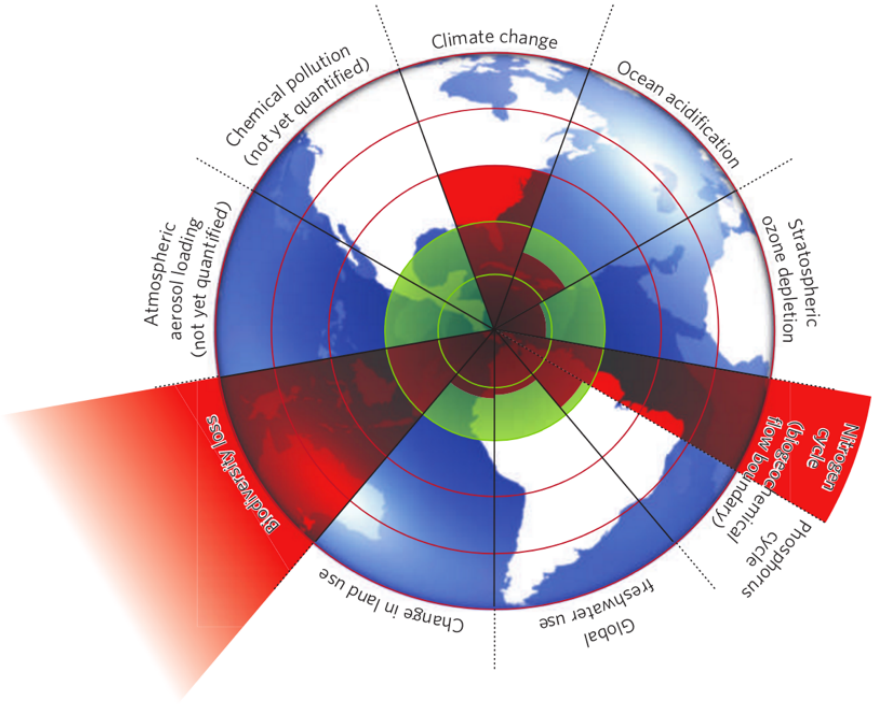



**Figure 9:** Planetary Boundaries (Source: Johan Rockström et al, "A Safe Operating Space for Humanity," *Nature*, Vol 461, 24 September 2009.)[51]

Raworth realized that these "ecological ceilings" are mirrored by "social foundations," or minimum thresholds for supporting human wellbeing. To her surprise, fusing the two together results in ... a doughnut: "yes, the American kind with a hole in the middle."

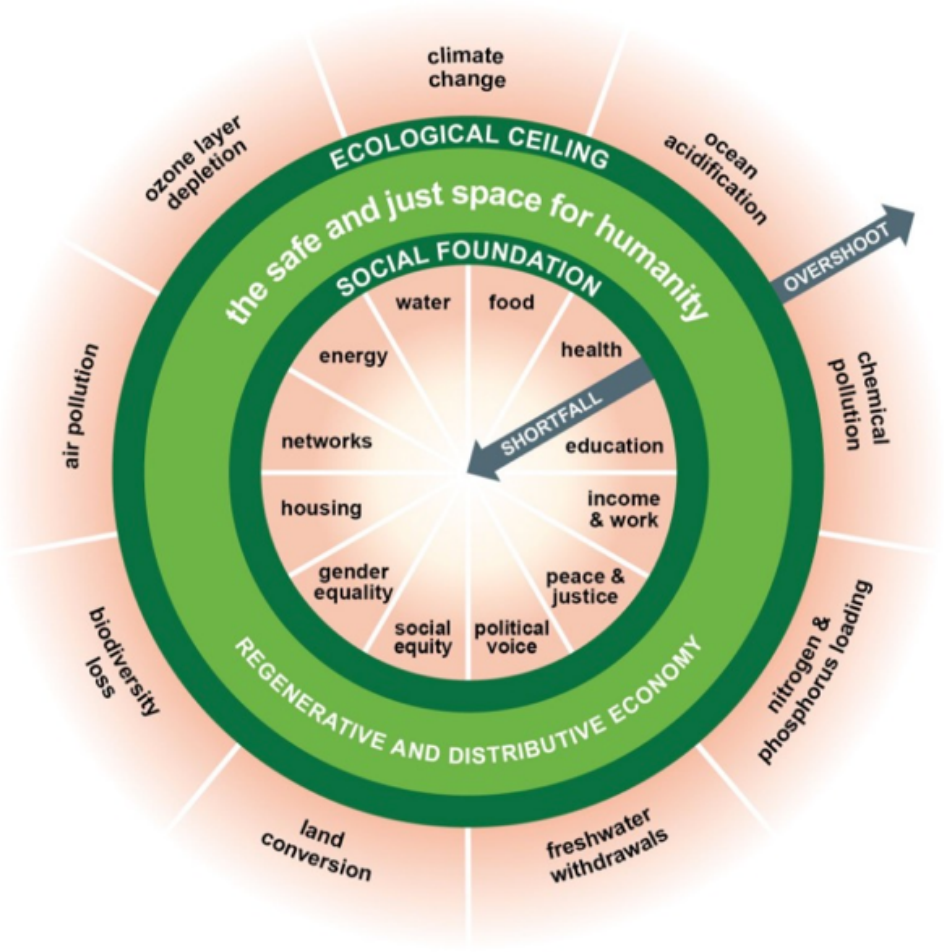



**Figure 10:** The Doughnut (Source: Kate Raworth, *Doughnut Economics: 7 Ways to Think Like a 21st Century Economist*, White River Junction: Chelsea Green, 2017.)

Validating the power of pictures, Raworth "was taken aback by the international response to" the Doughnut.

> In 2015, insiders to the UN process of negotiating the Sustainable Development Goals – the 17 globally agreed goals for charting human progress – told me that, in late-night meetings to hammer out the final text, the image of the Doughnut was there on the table as a reminder of the big-picture goals they were aiming for.[52]

Reporting 3.0 is tapping into this *power of pictures* to imagine new realities into being: new economic structures built on integral information flows tracking capital stocks and flows at each level – from ultimate means to ultimate ends, and back again. As Dana said:

> Daly originally drew it as a triangle or pyramid, and for historical purposes I will use that symbolism, though the shape is not necessary to the logic… The important idea is to situate the human economy within a hierarchy, resting on a foundation of natural resources and reaching to the height of ultimate purpose.[53]

So, Dana gives us license to re-imagine the Daly/Meadows triangular vision, at the behest of the Reporting 3.0 community. What resulted was a series of steps to more fully represent embedded thinking.

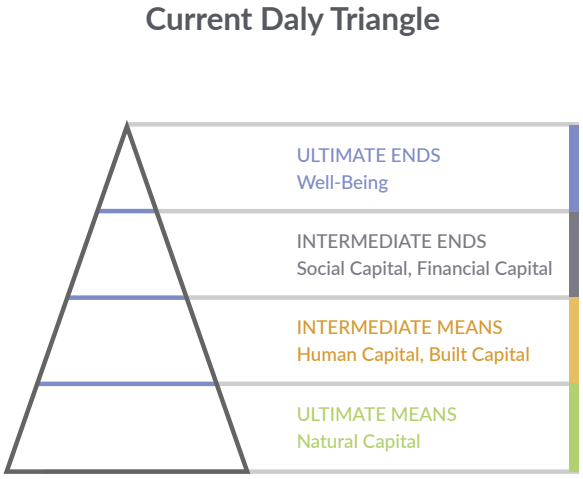



**Figure 11:** Current Daly Triangle @2017 Reporting 3.0

- **Step One:** A triangle's broad base visually emphasizes natural capital as the ultimate means, and its narrow peak inherently de-emphasizes the significance of the ultimate ends of well-being. So this first step in re-imagining Dana and Daly's vision is to recognize the equal importance of the ultimate means and the ultimate ends. And so we represent that equivalence by mirroring the downward-facing triangle with an upward-facing one.

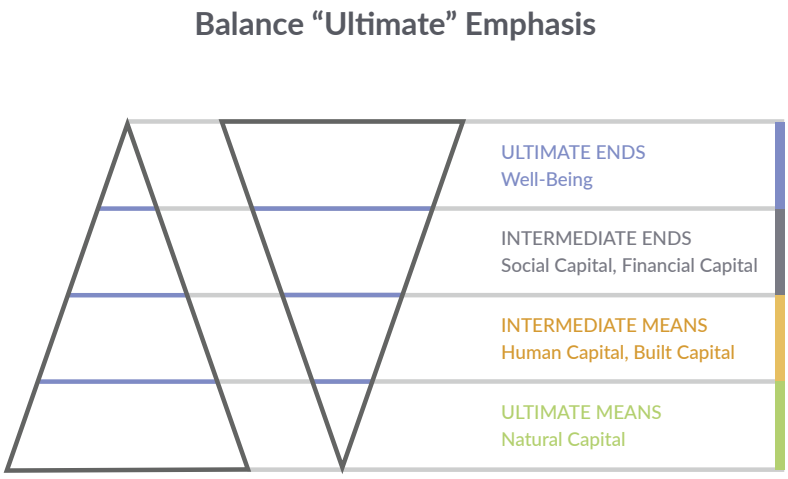



**Figure 12:** Balance "Ultimate" Emphasis @2017 Reporting 3.0

- **Step Two:** The next logical step – combine these two opposite-facing triangles, fusing them into an hourglass shape that equalizes the top and bottom in significance:

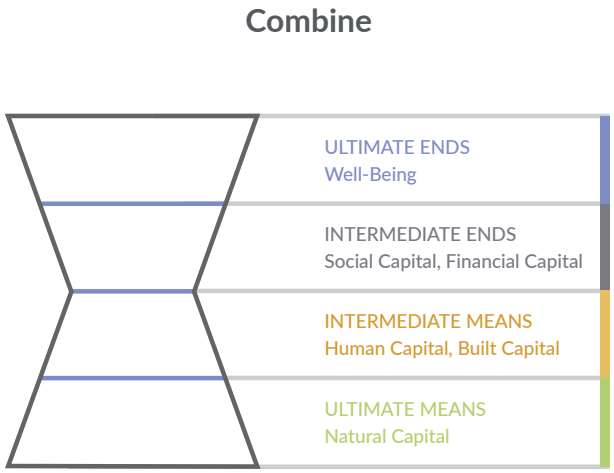



**Figure 13:** Combine @2017 Reporting 3.0

- **Step Three:** Following the hourglass metaphor, it makes more sense for nature's bounty to nest atop, with the metaphorical sands of natural capital flowing down to fill humanity's vessel of wellbeing.

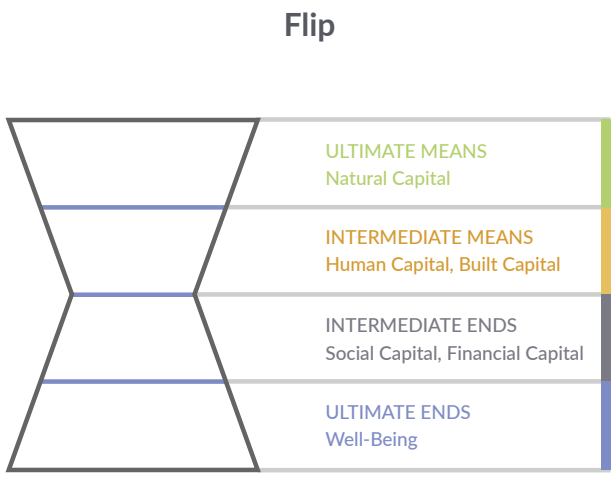



**Figure 14:** Flip @2017 Reporting 3.0

- **Step Four:** In the spirit of Meadows' call for representing "dynamic modeling, pressure-state-response schemes, ecological footprints, and various kinds of capital," as well as the focus on cycles in the "Daly Rules," we in Reporting 3.0 see value in displaying the cyclical nature of capital stock preservation, as well as the capital flows available to feed other capital stocks (which in turn feed further flows). Representing natural capital stocks cyclically introduces the fascinating aspect of a perpetual hourglass with stocks of sand that forever generate excess flows – so long as stocks are properly preserved.

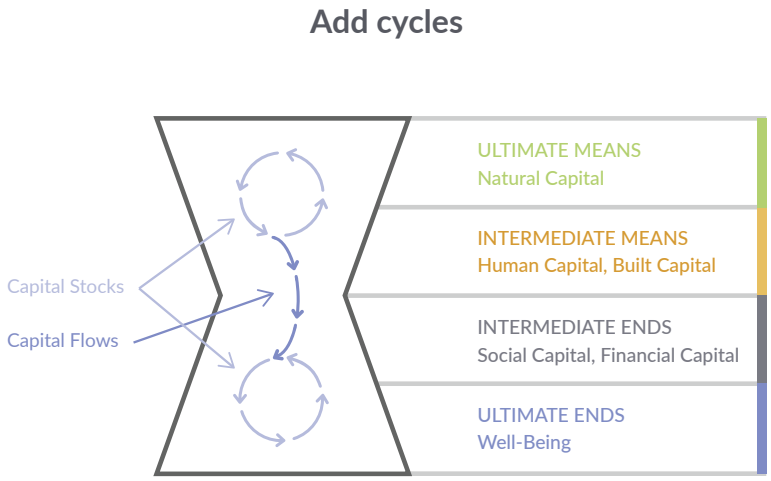



**Figure 15:** Add Cycles @2017 Reporting 3.0

- **Step Five:** Of course, flow can go both directions between and amongst capital stocks at the different levels of intermediate and ultimate means and ends. So it makes sense to represent this multidirectional exchange. And now comes the opportune moment to integrate sustainability thresholds for respecting the carrying capacities of capitals – which the Doughnut readily does. So to implement Noam Gressel's suggestion, the Doughnut intersects each exchange of capital flows to ensure stock preservation within carrying capacities of capitals that respect ecological ceilings and social foundations.

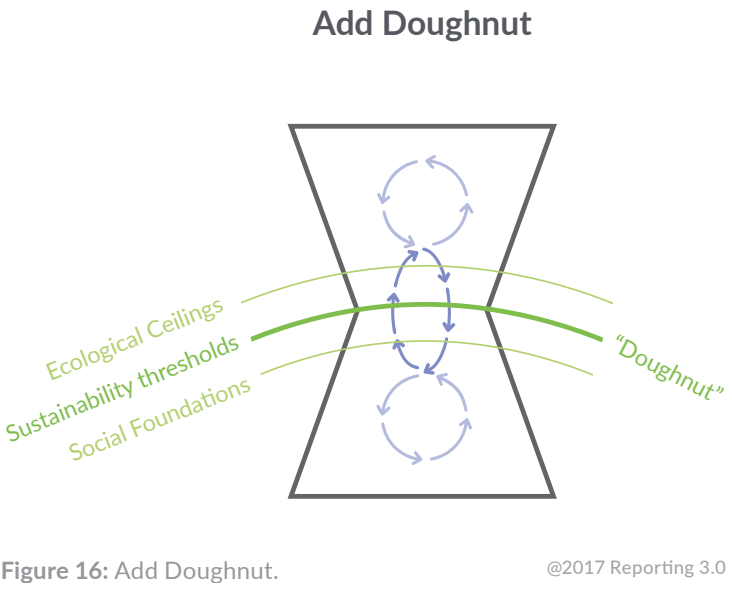



**Figure 16:** Add Doughnut. @2017 Reporting 3.0

- **Step Six:** The final step is to integrate all of these cyclical and contextual elements across the four levels of capitals as intermediate and ultimate means and ends.[54]

## DALY HOURGLASS

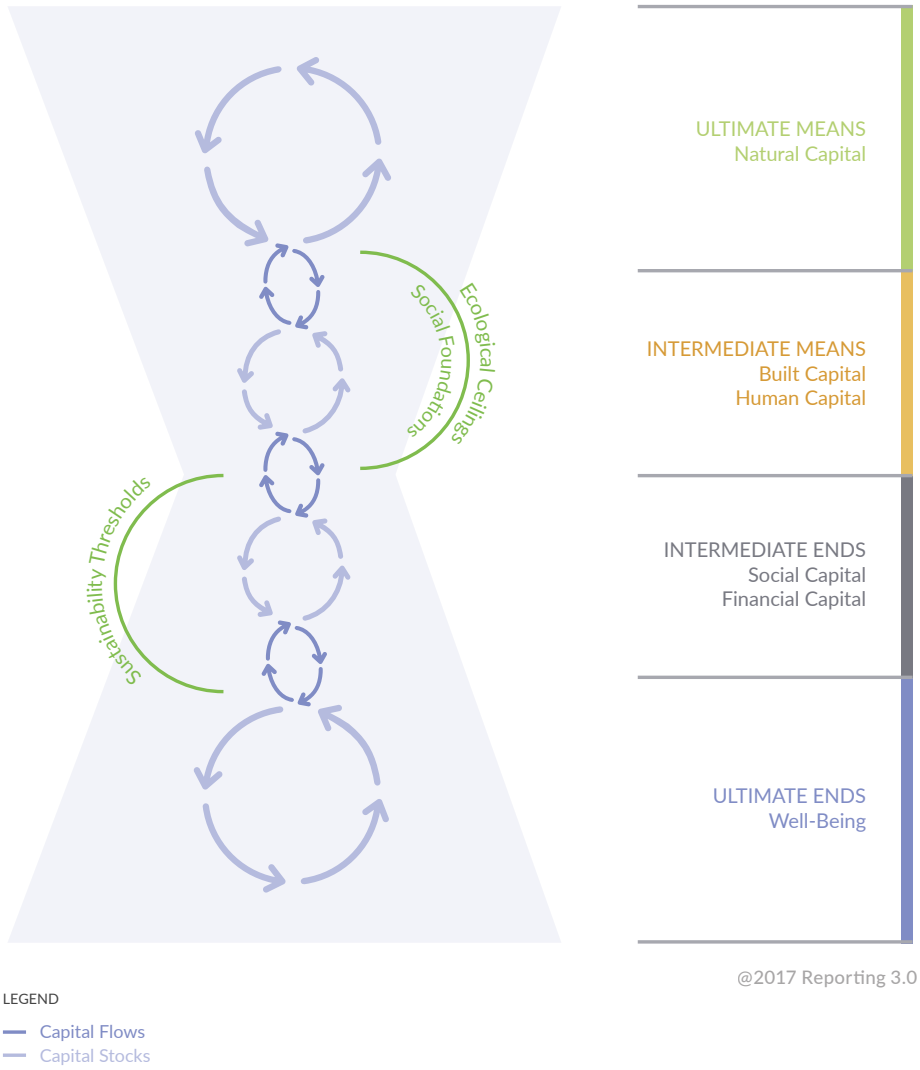



**Figure 17:** Daly Hourglass (Source: @2017 Reporting 3.0 Platform)

Now that we can see the hourglass design in its entirety, its implications crystallize. First and foremost, an hourglass is traditionally a timepiece, reminding us that the process of transforming natural capital resources into anthro capitals for the ultimate purpose of supporting wellbeing and enhancing fulfillment is embedded in the flow of time – one of the key defining aspects of sustainability indicators, according to Meadows *("How long can this activity last? How long do we have to respond before we run into trouble?")*

Simultaneously, the Daly Hourglass demonstrates the feasibility of transcending the "ticking clock" aspect of 21st Century life (ever-aware as we are that overshooting ecological ceilings and shortfalling social foundations can only last so long before systems collapse) by tapping into cyclical balance for the perpetual regeneration of capital stocks and flows inherent in the natural order.

This underlines the vital importance of a data / information systems architecture that encompasses this multicapital, contextualized orientation. Our current monocapital, uncontextualized data architecture, wedded as it is to the status quo or to incrementalism at best, yields information shackled to the illusion of progress, thereby damning itself to always fall short of sustainability. So, a fit-to-purpose data / information systems architecture creates seamless data and information flows across 3 dimensions:

- Across the multiple capitals;
- Across the micro / meso / macro levels interlinking companies / industries & habitats / socio-ecological systems;
- Across value cycles.

So, what we arrive at with the Daly Hourglass is a general specification for data architecture and information systems that are fit-to-purpose for spurring the emergence of a truly regenerative, green, inclusive, and open economy. Indicators and metrics built to represent financial, economic, environmental, and social sustainability should align with this general specification.

## 3.5. INTEGRATION, CONTEXTUALIZATION & ACTIVATION

This *Data Blueprint* endeavors to identify the key elements needed to design a data / information systems architecture that helps spur the emergence of a truly green, inclusive, and open economy. The role of Reporting 3.0 is to catalyze this transformation, though not necessarily to implement the build-out of this overarching infrastructure. Rather, Reporting 3.0 works collaboratively with *Data Blueprint* Working Group members to identify the design constraints and needs of a fit-to-purpose data regime. Reporting 3.0 also coordinates with collaborators who pilot proof-of-concept demonstrations of potential solutions in the Beta Testing Program that launches upon the publication of this *Blueprint*. This *Blueprint's* Recommendations identify ways actors in the broad Reporting 3.0 community can contribute to building a holistic data ecosystem that helps spur the necessary transformation of the economy.

Following in Meadows' footsteps, this *Data Blueprint* focuses on the three intertwined design requirements identified above. Accordingly, we devote a chapter to each.

- **Integration:** Business and investment focuses primarily on measuring, managing, and reporting on financial capital, while sustainability focuses on so-called "non-financial" capitals (natural, manufactured, human, social, etc…), but in general, "never the twain shall meet."[55] And even when financial and "non-financial" data intermingle, each capital is typically treated in relative isolation, falling short of capturing the interrelationships between the multiple capitals; so true integration calls for optimizing synergies between and amongst the multiple capitals, to better support the creation of financial, societal, and system value.

- **Contextualization:** Currently, traditional financial corporate reporting discloses risks to the company from broader social and ecological systems; and corporate sustainability reporting typically discloses impacts from company operations on society and the environment. Unfortunately, neither traditional nor sustainability reporting typically makes the direct micro-macro link between company-level impacts and broader systems-levels viability, which can be either a virtuous (regenerative) or vicious (degenerative) cycle– but which of these it is remains invisible currently. To fill this context gap, companies need to assess their fair share contribution to maintaining the overall sufficiency of vital capital resources and cycles. As well, external parties (such as investors, activist NGOs, academics, data firms, and other intermediaries) can layer this context onto raw corporate data.

- **Activation:** Data without engagement is useless; "activated" data fulfills its potential of driving the change signaled by integrated, contextualized data. The key to activation is evidence-based advocacy by context-driven stakeholders.[56] And activated data also catalyzes "acceleration" to scale up change toward trigger tipping points of systems change. Indeed, properly contextualized data signals the magnitude of unsustainability and hence the pace and scale of reform needed to achieve sustainability.

This *Data Blueprint* explores these three primary dimensions necessary for building out a data infrastructure that fulfills the potential of triggering transformative systems change. The *Blueprint* does **not** seek to provide a comprehensive catalog of all the shortcomings in data, such as accuracy, auditability, comparability, simplicity, etc… While these issues are clearly problematic, they are second-order issues. In other words, if all second-order issues were resolved but the first-order issues listed above remained unresolved, we believe a truly green, inclusive and open economy would still remain beyond grasp. So, it's imperative to focus on closing these first-order gaps around integration, contextualization and activation/acceleration.

## 4. INTEGRATION: MULTICAPITAL ACCOUNTING OF INTEGRAL DATA

*Integration of the [Daly] triangle from bottom to top requires good science and just and efficient political and economic systems and a culture that illuminates the higher purposes of life. The focus of such a society would be wholeness, not maximizing one part of the system at the expense of other parts. The goal of perpetual economic growth would be seen as nonsensical, partly because the finite material base cannot sustain it, partly because human fulfillment does not demand it. The focus would be on quality, not quantity, and yet quantity sufficient for the physical needs of all would not be lacking.*[57]
*– Donella Meadows*

The integration of data amongst and across the multiple capitals is one necessary element in creating a data architecture in service to the emergence of a truly green, open, and inclusive economy. Such an information system liberates the capitals from silos, placing them into dynamic and synergistic relationship with each other, reflective of their interconnectedness in the real world. It also frees the economy from the shackles of monocapitalism, the singular lens that has constricted the vision of economic life into a monochrome, opening up to a full spectrum palette that more accurately paints the picture of our fiscal lives.

However, integration is not a simple panacea; how integration is applied dictates its effectiveness in steering our economy toward the ultimate ends of flourishing well-being. Current integrative efforts hit pitfalls, falling short of the transformative potential of multicapitalism. This chapter seeks to identify burgeoning attempts at integration, and to diagnose shortcomings and propose more holistic solutions. Indeed, building a holistic data and information systems architecture that synthesizes numbers into numbers that matter requires first establishing a fit-to-purpose design regime as a blueprint for constructing the enabling information flows infrastructure.

### 4.1. <IR> AND THE INTEGRATION PROGRESSION

The integration of the multiple capitals advocated by Dana Meadows (and others) finally started to take hold in corporate reporting more than a decade after the 1998 publication of *Indicators and Information*

*Systems*.[58] Now, multicapitalism is firmly established in the conceptual framework for "integrated reporting" (or <IR>) from the International Integrated Reporting Council (IIRC):

> An integrated report aims to provide insight about the resources and relationships used and affected by an organization – these are collectively referred to as "the capitals" in this Frame work. It also seeks to explain how the organization interacts with the external environment and the capitals to create value over the short, medium and long term.
>
> The capitals are stocks of value that are increased, decreased or transformed through the activities and outputs of the organization. They are categorized in this Framework as financial, manufactured, intellectual, human, social and relationship, and natural capital...
>
> The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates value over time... The ability of an organization to create value for itself enables financial returns to the providers of financial capital. This is interrelated with the value the organization creates for stakeholders and society at large through a wide range of activities, interactions and relationships. When these are material to the organization's ability to create value for itself, they are included in the integrated report.[59]

The IIRC has created a graphic (dubbed the "Octopus," though it's got 12 limbs) to visually display the process by which business models ingest the capitals as inputs, transform them in the process of creating value, and create outputs and outcomes that enhance, preserve or diminish the six capitals (the IIRC adds Intellectual Capital to the five capitals listed in the last chapter from Forum for the Future; others view Intellectual Capital as a subcategory of the primary anthro capitals, Human Capital and Social Capital).

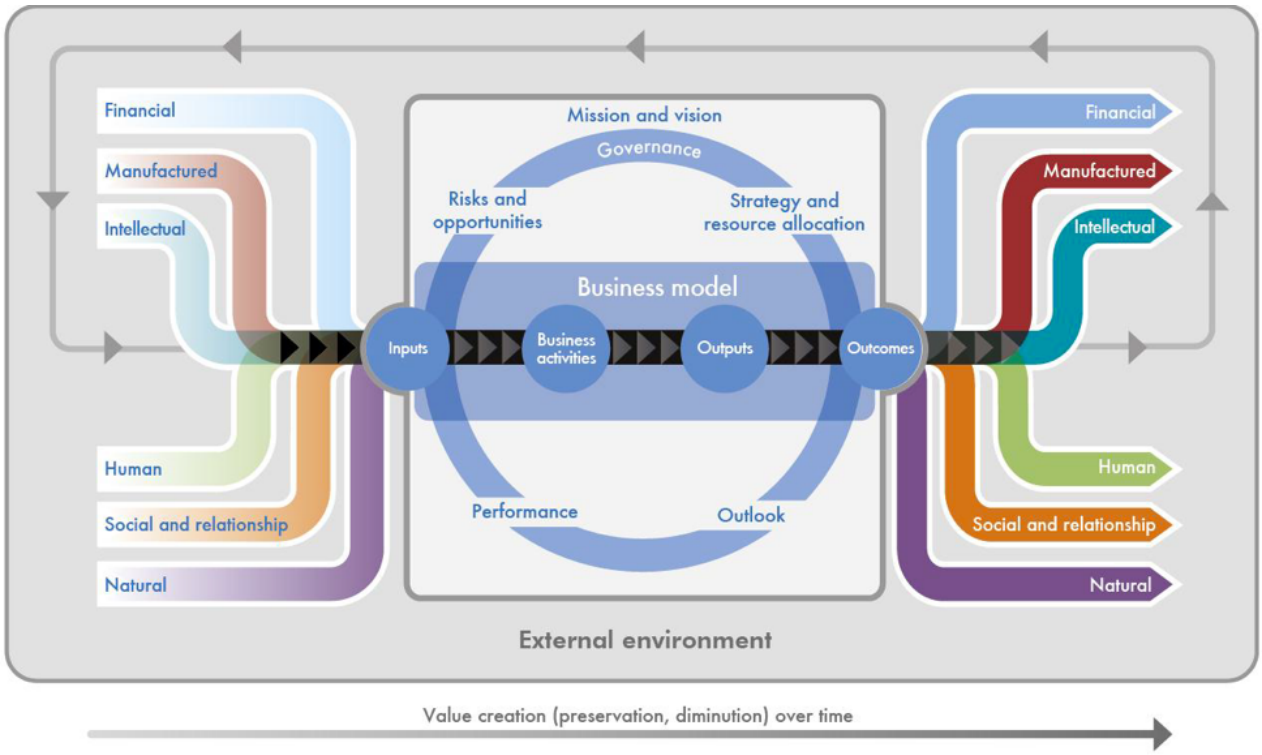



**Figure 18:** The IIRC "Octopus" (Source: International Integrated Reporting Council, *The International <IR> Framework*, 2013.)

At the March 2017 Meeting of the Reporting 3.0 *Reporting* and *Data Blueprints* Working Groups at the Dutch Federation of Accountants (NBA) in Amsterdam, Henk Hadders pointed out that the <IR> *Inputs → Business Activities → Outputs → Outcomes* progression would benefit from an additional stage of Impacts. At which point Paul Hurks went to his office and returned with the 2017 NBA Value Creation Model – which tacks on Impact to the <IR> Progression:

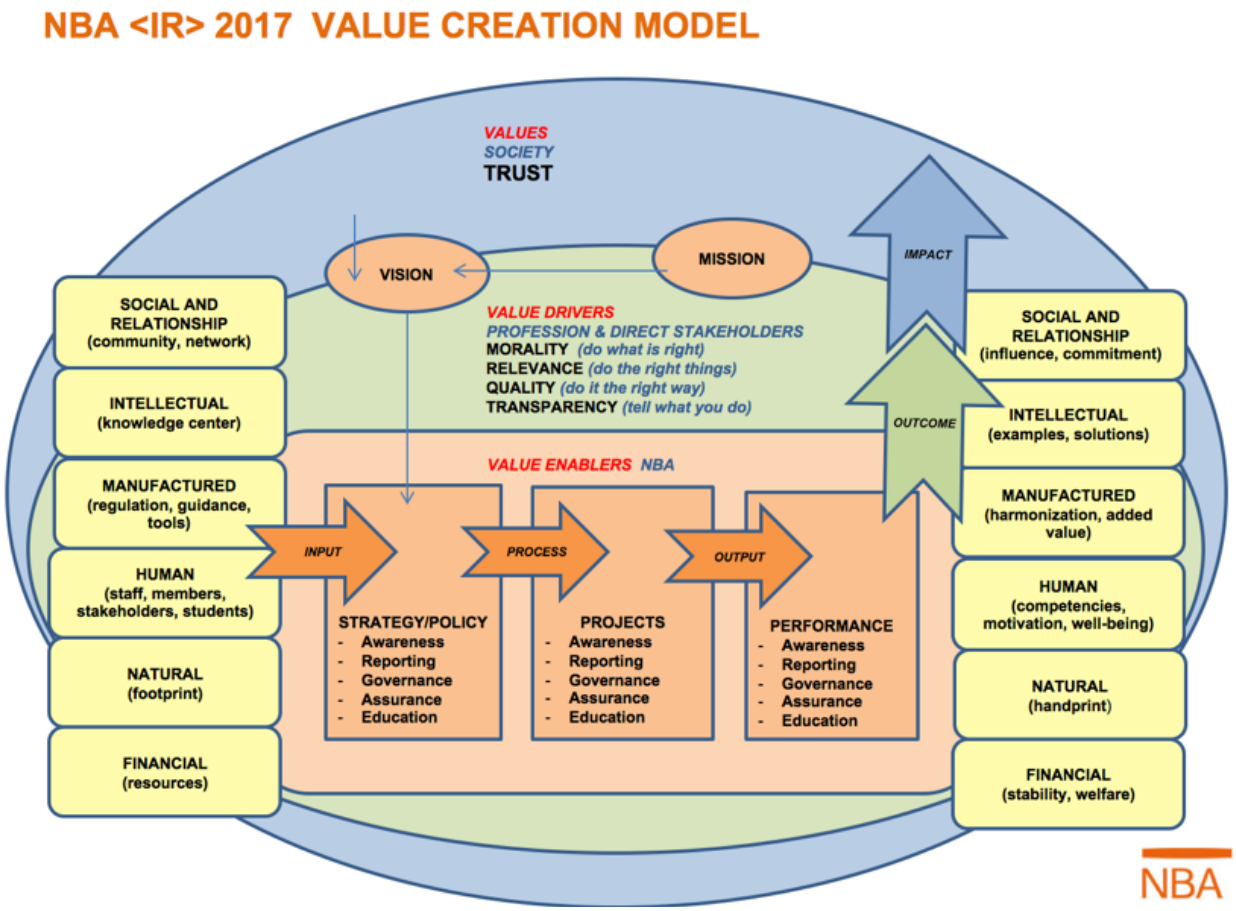



**Figure 19:** NBA Value Creation Model (Source: Paul Hurks, Dutch Federation of Accountants 2017 Value Creation Model.)

The BASF Value-to-Society Methodology goes one step further, adding not only *Impact* but also *Societal Benefits / Costs: how do people value the change of their lives and well-being due to the impact?* Note that this extension enters the realm of Meadows' *Ultimate Ends of well-being.*

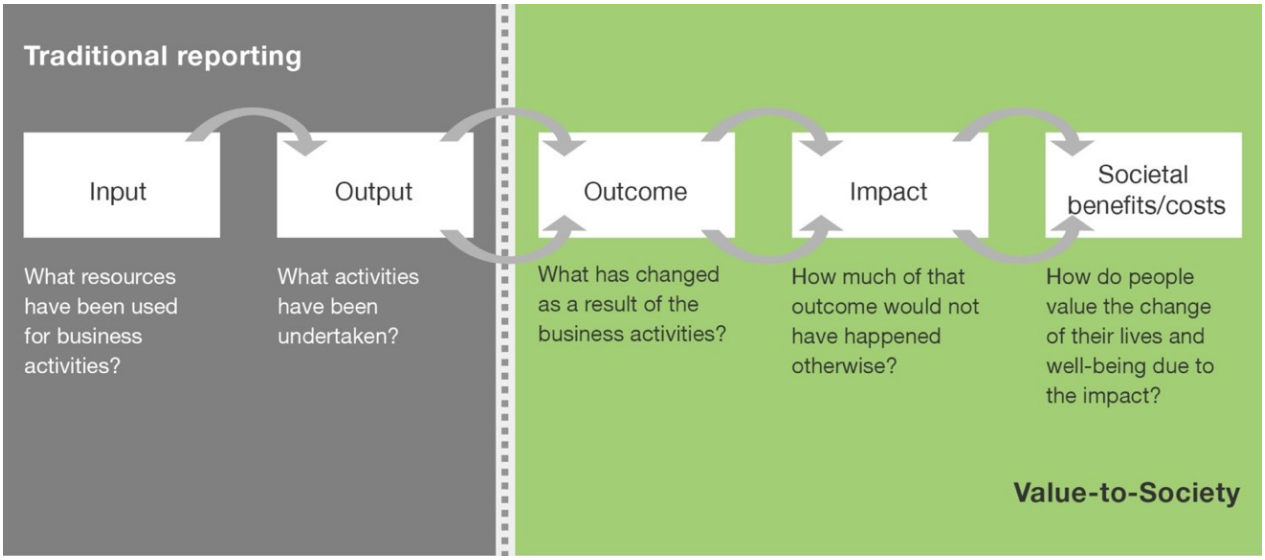



**Figure 20:** BASF Value-to-Society Methodology (Source: BASF, *We create value.*[60])

## 4.2. INTEGRATED THINKING AND THE LIMITS OF <IR>

The IIRC framework sees <IR> as a trigger for "integrated thinking," essentially employing the act of reporting as a leverage point to transform mindsets – thus aligning with Meadows' 1999 essay *Leverage Points: Places to Intervene in a System*. In it, she identifies the second-highest leverage point as "the mindset or paradigm out of which the system — its goals, structure, rules, delays, parameters — arises." (The highest leverage point is "the power to transcend paradigms.")[61] IIRC describes integrated thinking thus:

> Because traditional reporting occurs in silos, it encourages thinking in silos. Integrated Reporting, on the other hand, reflects, and supports, integrated thinking – monitoring, managing and communicating the full complexity of the value creation process and how this contributes to success over time.[62]

For the purposes of this *Blueprint*, the key implication of IIRC's version of integration is the application to data, suggesting the notion of "integrated data" that liberates information from silos and synthesizes it. However, before aligning this *Blueprint*'s approach to data with IIRC's work, it warrants exploring further the alignment with Meadows' work.

To recap, IIRC's <IR> Framework aligns with Meadows in 2 key ways:

- <IR> is multicapital-based; and
- <IR> triggers integrated thinking, which is mindset-shifting.

However, <IR> *diverges* from Meadows in 2 key ways:

- <IR> is context-free (i.e. it does not address the carrying capacities of capitals); and
- <IR> falls short of linking to the ultimate ends of well-being in the Daly Hourglass

The context-free nature of <IR> was addressed in the Public Comment Period for the Consultation Draft of the International <IR> Framework in a letter co-signed by 63 members of the Sustainability

Context Group, a global network of thought leaders and practitioners committed to Context-Based Sustainability[63]. And it has been flagged repeatedly ever since, most recently in a direct appeal to incoming IIRC CEO Richard Howitt to "incorporate the *Sustainability Context* Principle into the scope of the standard." In an article directly responding, Howitt reacted, "I do not think anyone could seriously suggest that sustainability is not an integral part of our work."[64] However, he did not respond to the more specific suggestion of integrating the *Sustainability Context* Principle into the <IR> framework.

This lack of context in <IR> leads to a deeper issue. As established earlier, the very reason for managing the capitals within their carrying capacities is, ultimately, the ethical imperative to support the well-being (or at the very least, to refrain from degrading the well-being) of all stakeholders impacted by companies. "The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates value over time," states the <IR> Framework. Under the <IR> Framework, negative impacts on stakeholder well-being are material only insofar as they impact companies' ability to create value, primarily for providers of financial capital. This is an Achilles Heel of <IR> in terms of being truly "integrated" in the holistic terms Meadows outlines – a stance shared by Jane Gleeson-White, author of *Six Capitals, or Can Accountants Save the Planet?:*

> But there is a logical inconsistency at the heart of the [IIRC's] six capitals model which will prevent it from saving the planet: it seeks to account for nonfinancial value but can only see it in terms of financial value.[65]

In Meadows' formulation (and Gleeson-White's opinion), <IR> is focused primarily on *Intermediate Ends* ("the ability of an organization to create value for itself enables financial returns to the providers of financial capital"), and not on *Ultimate Ends* (the ethical imperative of supporting well-being).

Applying Meadows' holistic approach, integrated reporting – and integrated data – should be:

- Multicapital-based;
- Context-based;
- Mindset- and paradigm-shifting;
- Well-being creating.

## 4.3. FROM INTEGRATED DATA TO INTEGRAL DATA

Given that the term "integration" is commonly used to describe the combination of discrete components but falls short of more holistic interconnectivity, it warrants considering a term that more comprehensively encompasses these broader synergies.

The ThriveAbility Foundation has advanced a synthesis approach that applies Integral Theory, a broad body of knowledge drawing from diverse disciplines.[66] Among many tenets of Integral Theory is the synthesis of four quadrants of human experience, ranging from individual to collective on one axis and from interior / subjective to exterior / objective on the other axis.

Whereas integrated data combines elements in one or two quadrants (for example, integrating capitals on the "collective" quadrants), what we might call "Integral Data" synthesizes amongst all quadrants. For example, integrating the capitals cross-pollinates the Lower Right (LR) Quadrant where Natural Capital resides with the Lower Left (LL) where Social Capital lives. And contextualizing the capitals enacts the micro-macro link between companies (LR – "systems") and the sustainability of natural and social systems (also LR), anchoring this to individual well-being on the Upper Left (UL) and Upper Right (UR). So,

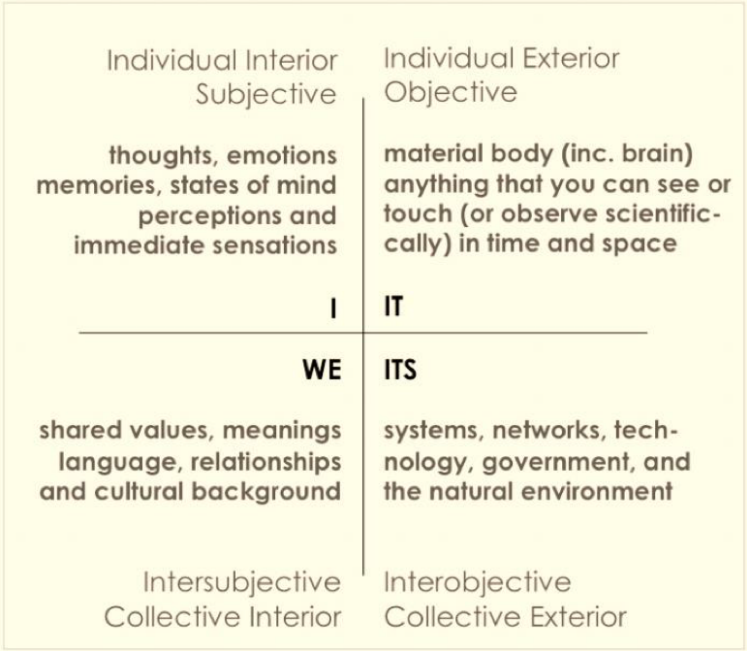



**Figure 21:** Integral Quadrants (Source: Robin Lincoln Wood & the ThriveAbility Foundation Team, A *Leader's Guide to ThriveAbility*, 2015)

contextualized, multicapital data represents *Integral Data*.[67]

And this ties back to the question of value creation, which is tightly defined in <IR> as primarily tied to value creation for the enterprise and its providers of financial capital. <IR> does recognize broader societal value creation, but only insofar as it impacts value creation for the firm and its financiers. However, broader definitions of value creation that take a more integral approach are emerging.

For example, the Network for Sustainable Financial Markets (NSFM) recently submitted a Comment Letter to the Financial Stability Board on the Recommendations drafted by its Task Force on Climate-Related Financial Disclosures.[68] In it, NSFM members "recommend that the Task Force consider:

1. Climate change disclosure as part of a fundamental short-termism problem
2. Incorporating longer-term strategic planning disclosures
3. Focusing on board and executive cognitive capabilities needed for long-term value creation
4. Structuring reporting standards to neutralize behavioural biases
5. Emphasizing investor stewardship responsibilities."[69]

The NSFM Comment Letter, lead authored by Mark Van Clieaf of Organizational Capital Partners, calls for

1. extending traditional financial metrics such as positive Return on Invested Capital (ROIC), or Cash Flow Return on Investment (CFROI) to longer time horizons than TCFD calls for, while also
2. integrating natural capital thresholds of Net Zero GHG Emissions by 2050 (aligned with International Energy Agency (IEA) targets) as well as
3. executive and board cognitive capacities necessary for transforming business models that can create sustainable future value in a <2°C world.[70]

The letter states:

> The transformative changes required to develop and to implement sustainable long-term business strategies and business model transformations that align to Net Zero GHG Business models by 2050 and which will address climate-related financial concerns require identification of director, executive and investment decision-makers who have the personal conceptual and systems thinking (cognitive) capacity to effectively think longer-term and through complex issues.[71]

In other words, the NSFM letter calls for redefining "value creation" across multiple dimensions, accounting for internal (cognitive) and external (financial, ecological and social) systems. Of particular interest is Organizational Capital Partners' association of corporate and investment executives' cognitive capacities with future value creation. Drawing on the management theory of psychologist Eliot Jacques, Van Clieaf links individual cognitive capacity levels with the time horizons associated with work roles – and ties these to current and future value.[72] By extrapolation, in order to be truly sustainable, companies (via their agents at the board, c-suite, and institutional investor level) need to focus not only on the transactional level of current value creation, but also the breakthrough and transformational levels of business model innovation and indeed industry and economic system transformation.

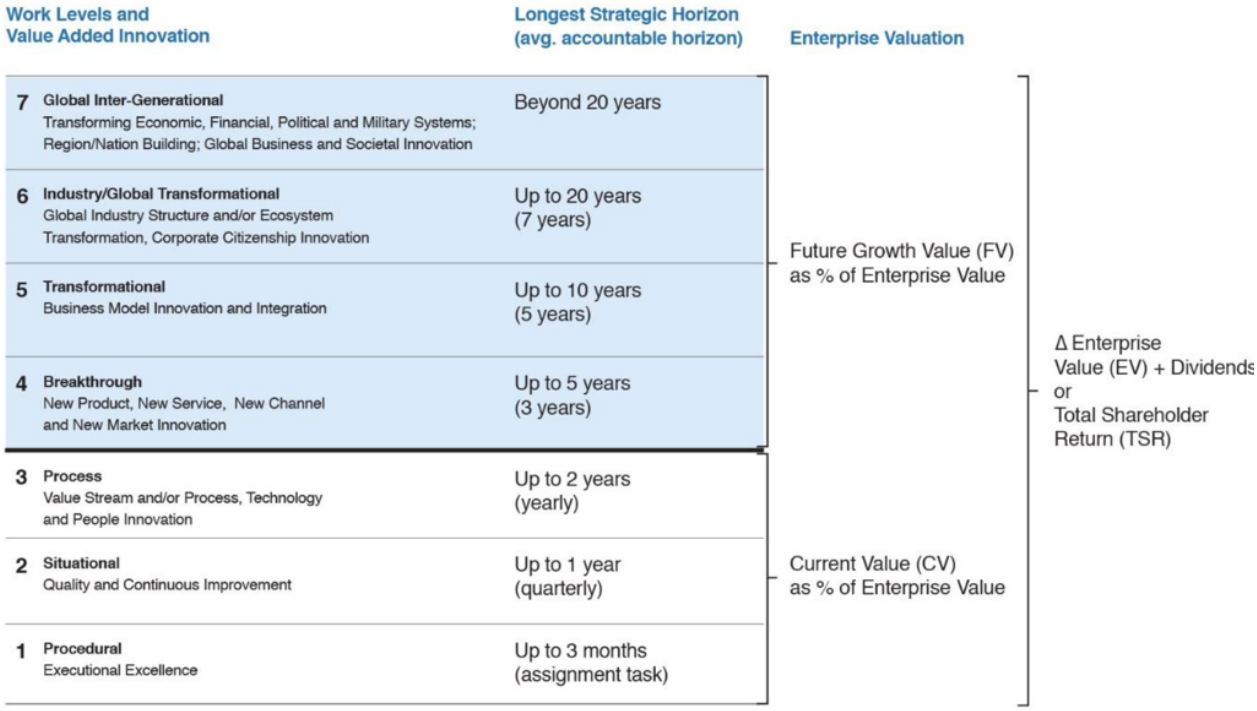



**Figure 22:** Work Levels and Value Added Innovation (Source: Network for Sustainable Financial Markets (NSFM), *Submission to Members of the Task Force on Climate-Related Financial Disclosures (TCFD) in response to Public Consultation on Task Force Recommendations*, 12 February 2017.[73])

At the same time, the Commons community is calling for an expanded conception of value creation that more clearly acknowledges the primary sources of value residing in the Commons globally, regionally, and locally. This re-conceptualization shifts power from the corporate- and investor-centric approaches, which enable value extraction from the Commons for privatization to shareholders (i.e. enclosure) while externalizing negative impacts onto the Commons (i.e., depletion & degradation of "common" capitals, or capitals drawn from the Commons), and reclaiming power for self-determination via Commons-based

governance of common capitals.[74] Michel Bauwens and Vasilis Niaros call for a "Value Shift" toward what David Bollier calls a "Relational Theory of Value." Bollier has previously expressed skepticism about an integration of a Commons perspective with a capitals-based perspective.[75]

The ThriveAbility Foundation essentially synthesizes these perspectives with its True Future Value Equation, which takes a context-based, multicapital approach that integrates traditional financial valuation with acknowledgement of commons-based resources. Drawing on sources as diverse as the IIRC, Martin Thomas & Mark McElroy's MultiCapital Scorecard, and Kate Raworth's Doughnut Economics, among many other concepts, the True Future Value Equation calculates value creation by synergizing the anthro capitals, in the context of breakthrough innovation amongst natural and manufactured capitals, all bounded by respect for environmental ceilings and social foundations. In this sense, the True Future Value Equation not only shifts mindsets, but in fact transcends the current paradigm that views value creation in a bounded (enterprise-centric) sense to a paradigm that views value creation holistically.

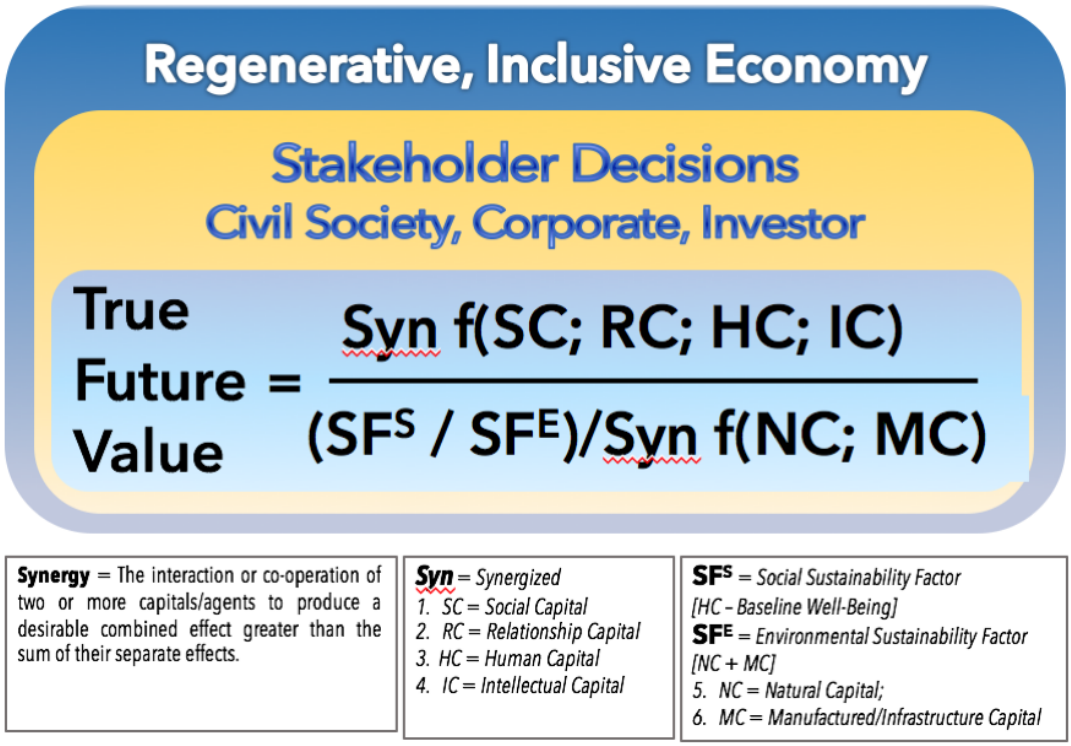



**Figure 23:** ThriveAbility Foundation True Future Value Equation (Source: ThriveAbility Foundation, *ThriveAbility MasterClass*, Boston, MA 21 March 2016.)

The ThriveAbility True Future Value Equation represents one approach to an Integral Data architecture that takes into account the four key elements: Multicapital-based; Context-based; Mindset- and paradigm-shifting; Well-being creating.

## 4.4. INTEGRATION, VALUATION AND AGGREGATION: THE CROWN ESTATE'S TOTAL CONTRIBUTION METHODOLOGY

Shifting from conceptualization of integrated reporting and Integral Data at the Framework level to implementation at the enterprise level, the Crown Estate has devised and implemented a multicapital reporting and data system with its Total Contribution methodology. The Crown Estate pursued this approach "for two reasons:

1. to be clear on whether we are making a positive impact year on year, and
2. to influence our own decision-making. For example, where it is obvious that we have a significant negative impact we can explore actions we can take to reduce that impact. Conversely, evidence of our actions resulting in a positive impact justifies the investment and can provide the business case for more investment.

Total Contribution is a reflection of how we do business, highlighting where we add (and diminish value."[76]

**Figure 24** shows how Total Contribution tracks the positive and negative flows of value across the multiple capitals.

| Capitals | Investment | Depreciation of Value - Internal | Depreciation of Value - External | Appreciation of Value - Internal | Appreciation of Value - External | External Benefits | External Costs |
|---|---|---|---|---|---|---|---|
| | (+) Positive flow | (-) Negative flow | (-) Negative flow | (+) Positive flow | (+) Positive flow | (+) Positive flow | (-) Negative flow |
| **Financial Resources** | The respective flows for financial resources are fully reflected and integrated e.g. profits generated and captured within Gross Value Added. | | | | | | |
| **Physical Resources** | e.g. new development | e.g. building damage via workplace incident | e.g. building damage via flooding (natural) | e.g. additional functionality for existing building | e.g. new policy such as feed in tariff regime increasing the value of renewable energy installations | e.g. free use of space by community groups | e.g. use of public infrastructure without payment |
| **Natural Resources** | e.g. additional forestry planting | e.g. mineral resource depletion through extraction | e.g. new policy restricting agricultural activity (political) | e.g. land management practice generating greater soil fertility | e.g. new policy creating additional functionality of seabed (political) | e.g. production of ecosystem services | e.g. greenhouse gases emitted |
| **Our People** | e.g. employee well being programmes | e.g. sickness absence | e.g. seasonal epidemic (social) | e.g. greater employee engagement | e.g. improved work-life balance (social) | e.g. employee volunteer schemes in working hours | e.g. under-compensated labour |
| **Our Know-how** | e.g. employee training and development programmes | e.g. employee turnover | e.g. obsolescence of existing skill set through innovation (market) | e.g. learning by doing | e.g. new policy creating additional functionality for skills (political) | e.g. production of public information, i.e. knowledge sharing | e.g. consumption of public information |
| **Our Networks** | e.g. community investment projects | e.g. late payment of suppliers | e.g. economic downturn straining relationships (market) | e.g. placing unemployed into employment | e.g. economic upturn strengthening relationships (market) | e.g. enhanced visitor well-being | e.g. reduced visitor well being |

**Figure 24:** The Crown Estate's Total Contribution Methodology (Source: The Crown Estate, *Total Contribution Methodology*, January 2017.)

As with <IR>, the Crown Estate's Total Contribution approach integrates the multiple capitals, which in turn influences a different kind of decision-making (i.e. shifting mindsets.) The Crown Estate acknowledges that its approach currently lacks context – a shortcoming it intends to redress, according to Claudine Blamey, Crown Estate Head of Stewardship & Sustainability:

> The Crown Estate fully acknowledges that our Total Contribution methodology continues to be a work in progress, intended not only for our purposes but also for use by others to enable consistency and comparability. A logical next step for Total Contribution is to integrate context, taking into account the carrying capacities of the capitals. Reporting impact on all the capitals that an organization relies on makes complete sense and I believe we will see more of this happening in the near future, spurred in part by Reporting 3.0, which is providing the platform for this movement to take place faster.[77]

Total Contribution also takes two other approaches to multicapital accounting that warrant exploration: Valuation and Aggregation.

### 4.4.1. VALUATION & MONETIZATION CURVES

One challenge of integration is what the Crown Estate calls "commonality," or the ability to track diverse impacts across the multiple capitals and express them in a "common unit of measurement." To meet this challenge, the Crown Estate chose "an economic value" as the integrating metric, a move they call "valuation" (also known as "monetization.") According to the Crown Estate, "This enables us to:

- Understand the magnitude and relative impacts of different indicators;
- Integrate indicators with conventional finance-based management systems and apply this to business decision-making;
- Aggregate the values of all indicators, netting off the positive and negative values to develop a Total Contribution trend line year-on-year."[78]

Using valuation (or monetization) as a "commonalizing" factor has spurred critique in other, similar instances. The *Sustainability Accounting, Management and Policy Journal* (SAMPJ), edited by Professor Carol Adams, recently featured an issue dedicated to exploring the KPMG True Value accounting methodology (introduced in its report, *A New Vision of Value*), an integrated approach that seeks to internalize externalities to enhance corporate and societal value creation.[79] See **Figure 25** for an example of the True Value methodology.

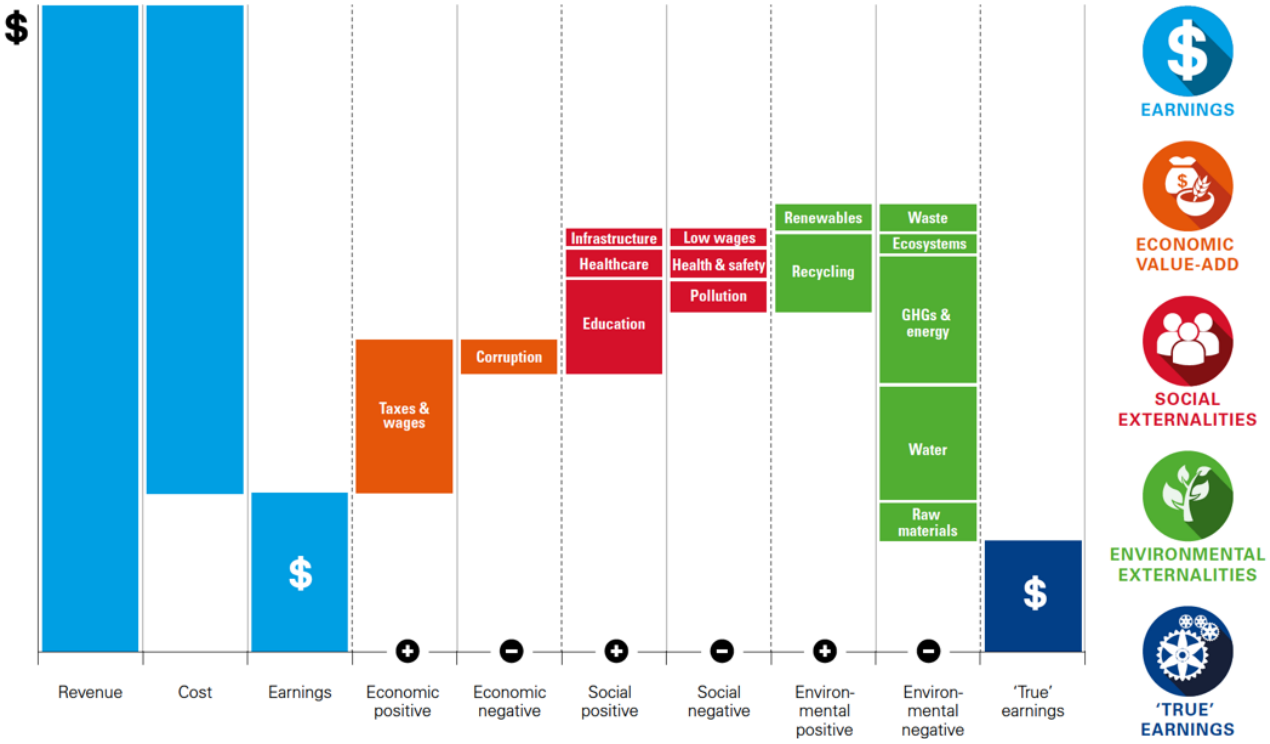



**Figure 25:** KPMG True Value Earnings Bridge for a Brewery in India (Source: KPMG International, *A New Vision of Value*, 2014)

This issue of SAMPJ includes one paper by KPMG as well as three papers by academics constructively critiquing the methodology – in particular, its monetization approach. In a blog about this SAMPJ issue, Adams notes that the KPMG authors "themselves recognise the limitations of monetisation of social value stressing the importance of considering the context in which social impacts occur."[80] In the *New Vision of Value* report, KPMG states that

> monetization does offer a useful means to draw comparisons of scale between a company's various externalities and identify which of them are most material both to the business and to society. We believe it is the best approach available right now and for this reason, monetization forms the starting point of KPMG's True Value methodology as well as initiatives from other organizations. However, monetization is not necessarily the ultimate solution.[81]

The academic critiques take aim even more squarely at monetization, according to Adams:

> Coulson (2016) questions the morality of the premise that anything of value must be measurable in monetary terms, a position she notes is contrary to that of the International Integrated Reporting Council (IIRC).[82]
>
> Barter (2016) finds merit in KPMG's "true value" methodology in its encouragement of more systemic thinking, but challenges the notion that society well-being should be measured by monetary exchanges rather than considered through moral and ethical lenses. Barter argues (p 535) that the rationalism inherent in the KPMG approach "has little room for morals, values, ethics and purpose, and in the trade-off between numbers, the quantum of the figure becomes

important and the assumptions, concerns, narratives and purpose are lost in the discussion of the desired quantum". Barter briefly considers the (lack of or negative) impact of the approach on leadership, management and culture.[83]

These critiques essentially validate Meadows' perspective on the need to link to well-being at the top of the Daly Triangle (or the bottom of the Daly Hourglass, ) the realm of ethics and, ultimately, well-being – which KPMG itself acknowledges, noting that "monetization cannot fully express ethical aspects of externalities such as human rights or health and safety."[84] The "commonalization" impulse certainly makes sense as an integrating tool (The Crown Estate's "common unit of measurement"), so it seems to make sense to understand more clearly the problems introduced by employing monetization as the commonalization mechanism. And the above perspectives from KPMG and the academics point in the right direction.

The commonalizing factor of monetization in both the KPMG's True Value and The Crown Estate's Total Contribution methodologies currently lacks the link to the Ultimate Ends of the Daly Hourglass (the ethical imperative of supporting and enhancing holistic well-being). The resulting risk: these methodologies may actually send signals that fall short of triggering the desired outcomes. Specifically, monetization applied in advance of full integration (or in Integral Data terms, full "synthesis") may price positive and negative impacts on capital resources – but not, importantly, in the context of their carrying capacities. This misstep thus distorts the price signal, which should rightly (from an ethical perspective linked to holistic well-being) be tied to the overall sufficiency of capitals for the full population relying on them, not the relative rise and fall of overall capitals, netted at the company level.

Absent contextual thresholds, simple abundance / scarcity supply-and-demand dynamics anchor to an *overall* capital stock. But this ignores that available capital must be drawn from flows, not stocks, in order to be sustainable. For example, prudent financial management calls for preserving principal (stock) and utilizing interest (flows). So, proper monetization of capitals should be applied only *after* contextualization. And the pricing should rise as impacts on capitals near the threshold separating sustainability from unsustainability – at which point the prices should logically become prohibitive.[85]

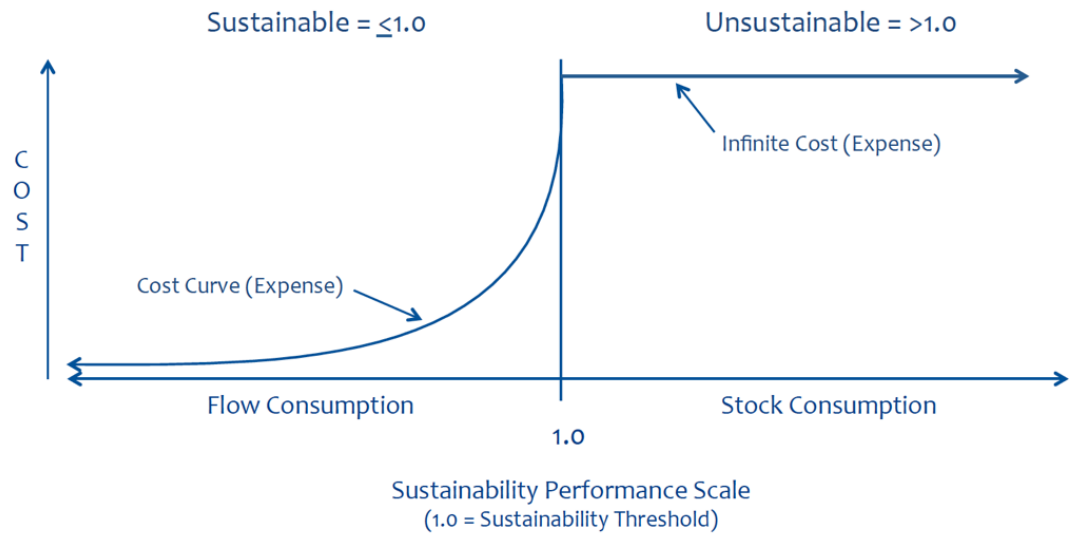



**Figure 26:** Cost Curve for Ecological Impacts on Natural Capitals (Source: Mark McElroy, *Context-Based Monetization Curves*, 2014.[86])

This application of Context-Based Sustainability to the monetization issue underlines how CBS is predicated on ethical underpinnings, and thus effectively integrates the Daly Hourglass into an implementation framework. See **Figure 27** for a graphical representation of this overlap.

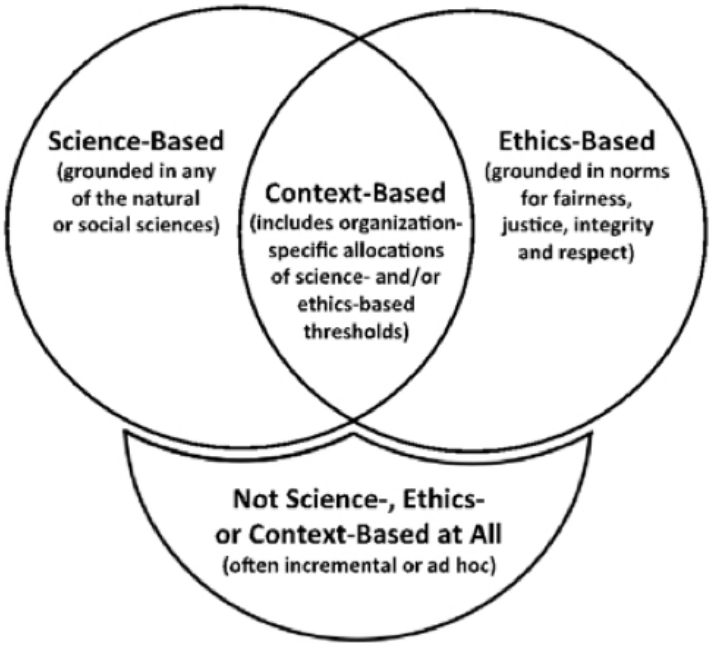



**Figure 27:** Venn Diagram of Science-, Ethics-, and Context-Based Approaches (Source: Mark McElroy, "Science- vs. Context-Based Metrics – What's the Difference?" *Sustainable Brands*, 25 May 2015.[87])

The ethical basis for integrated reporting finds one of its strongest proponents in the *King IV Report on Corporate Governance for South Africa 2016*, which uses integrated reporting as a platform for spurring integrated thinking in corporate governance. Among other things, King IV's primary "objectives are to:

- Promote corporate governance as integral to running an organisation and delivering governance outcomes such as an ethical culture, good performance, effective control and legitimacy; [and]
- Present corporate governance as concerned with not only structure and process, but also with an ethical consciousness and conduct."[88]

King IV's definition of corporate governance is "the exercise of ethical and effective leadership by the governing body towards the achievement of the following governance outcomes:

- Ethical culture;
- Good performance;
- Effective control;
- Legitimacy.

King IV continues to assert that "ethical and effective leadership should complement and reinforce each other:

> Ethical leadership is exemplified by integrity, competence, responsibility, accountability, fairness

and transparency. It involves the anticipation and prevention, or otherwise amelioration, of the negative consequences of the organisation's activities and outputs on the economy, society and the environment and the capitals that it uses and affects.[89]

This definition in King IV effectively links the far ends of the Daly Hourglass (natural capital to ethical culture), further validating the integration of ethics into integrated reporting and thinking, and integral data.

### 4.4.2 AGGREGATION: SUBSTITUTION OR SYNERGIES?

Another challenge of integrating the capitals is what the Crown Estate calls "aggregation." The Crown Estate enacts this by applying its adjusted Gross Value Added (aGVA) methodology that merges the conventional economic measure of Gross Value Added (net return minus the costs of goods and services purchased) with the net of the positive and negative values of the other capitals to calculate Total Contribution. The Crown Estate then calculates its three-year rolling average Total Contribution trend line for the future.[90] For 2017 results, see **Figure 28.**

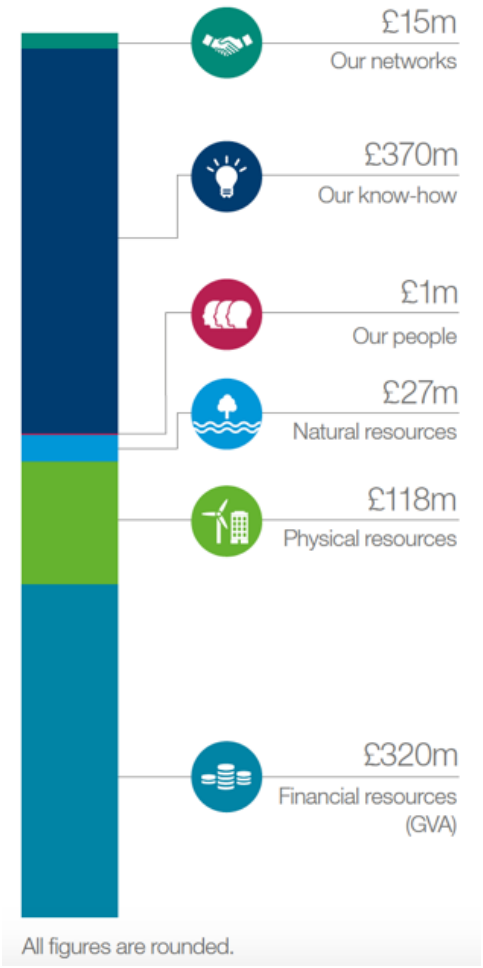



**Figure 28:** Crown Estate's 2017 Total Contribution (Valuated and Aggregated) (Source: The Crown Estate, *Everything is Connected: Total Contribution Report 2017*)

The tricky thing about integrating the capitals is the need to treat them separately when considering the sustainability of a capital stock (i.e. maintaining flows within the carrying capacity of the capital), while also considering how the capitals integrate dynamically.

This question has been addressed in the sustainability literature, resulting in the distinction between "weak sustainability" and "strong sustainability" that pivots on the question of "substitutability." Thus writes Simon Dresner in *The Principles of Sustainability*:

> There is controversy about whether to consider human-made capital and natural capital together (weak sustainability) or separately (strong sustainability). If they are counted together then increases in human-made capital can compensate for running down natural capital. Is that legitimate? Are the two kinds of capital substitutable in that way?[91]

As with its approach to monetization, where The Crown Estate's Total Contribution methodology does not factor in the sustainability of capitals, so too does its approach to adding up the impacts on the capitals neglect to address their sustainability. Total Contribution simply nets the positive and negative impacts on each capital, then adds up those net impacts to come up with a total. In this approach, a positive score on one capital can offset a negative score for another capital, essentially swapping them amongst each other.

For a non-contextualized approach to multicapitalism that simply wishes to add up negative and positive impacts, without regard to the *sustainability* of those impacts, this method is acceptable. But it risks falling into Meadows' "meaningless" category of data, divorced as it is from the ultimate ethical imperative of data informing well-being in the Daly Hourglass.

| Bottom Line | # | Area of Impact (Capital) | Score* | Sustainable?* |
|---|---|---|---|---|
| Environmental | 1 | Water (N) | 0.9 | Yes |
| | 2 | Toxic Air Emissions (N) | 1.1 | No |
| | 3 | Biodiversity (N) | 1.4 | No |
| Social | 4 | Climate Change Mitigation (H, S, C) | 1.1 | Yes |
| | 5 | Work/Life Balance (H,S) | 1.0 | Yes |
| | 6 | Roads and Highways (C) | 0.7 | No |
| Economic | 7 | Livable Wage (H) | 1.5 | Yes |
| | 8 | Fair Trade (H) | 1.2 | Yes |
| | 9 | Commercial Performance (H, S, C) | 1.0 | Yes |

| Legend: | | |
|---|---|---|
| N = Natural Capital<br>H = Human Capital<br>S = Social Capital<br>C = Constructed Capital | Environmental Bottom Line Score (Metrics 1-3) | 0.33 |
| | Social Bottom Line Score (Metrics 4-6) | 0.66 |
| | Economic Bottom Line Score (Metrics 7-9) | 1.00 |
| | Overall Sustainability Performance Score (Metrics 1-9) | 0.67 |

**Figure 29:** Aggregating Unified Context-Based Sustainability Scores (Source: McElroy & van Engelen, *Corporate Sustainability Management*, 2012, p 134.)

From a strong sustainability perspective, capitals are not substitutable like this, and need to be treated separately to account for their sustainability. Aggregate scoring is possible, but it must take care not to enact this kind of "swapping" or offsetting non-substitutable elements. Context-Based Sustainability takes a different approach:

> Instead of adding and averaging scores, [CBS] instead determines the proportion of all scores [across the multiple capitals] that meet or exceed sustainability performance standards — a quotient of quotients, as it were, where a perfect score would be 100 percent.[92]

When extending CBS to also encompass financial capital for the MultiCapital Scorecard (MCS), McElroy and his co-author Martin Thomas likewise extended the aggregation mechanism to measure not just unified sustainability scores in a static snapshot, but rather they calculate progression toward sustainability as a more dynamic and interactive picture of performance. Says McElroy:

> In MCS, we use yet another scoring method which measures progression towards full sustainability. In that case, we **do** want offsetting to occur because we want performance towards an overall goal of 100 percent sustainability to be reported. If a company achieves sustainability in one area at the expense of performance in all the others, we want the negative performance to offset the positive performance so as not to hide or suppress the fact that progress in one area came at the cost of regression in others and that progression overall is poor.
>
> Importantly, "progression" towards sustainability is what's being measured here, not "sustainability" performance per se. And since progression towards achieving a goal is a measure that is equally applicable to all areas of impact, it is fully substitutable across all areas of impact (AOIs) and offsetting, therefore, is not a problem. In fact, offsetting is what we want if progress in one area is coming at the expense of regression in another. We want the negative scores to offset the positive ones and vice versa.[93]

The MCS uses a combination of "trajectory targets" (or multiperiod milestones for progression toward sustainability norms) and weighting of capital impacts (to reflect an organization's view of the importance of each.) This enables an aggregation that complies with strong sustainability.

## 4.5. IMPLICATIONS OF MULTICAPITAL, CONTEXTUALIZED DATA

As this chapter demonstrates, a multicapital data architecture holds great promise for spurring the emergence of a green, open, inclusive economy. Yet simply embracing a multicapital approach does not guarantee that it will achieve this potential. A number of key factors need to be attended to. First and foremost, the stocks-and-flows nature of capitals carries an incumbent requirement to manage those stocks and flows within the carrying capacities of capitals: capital flows depleting capital stocks defeats the purpose of adopting a capitals-based approach (a fact lost on many if not most companies embracing a multicapital-based approach). Rather, the imperative of capital preservation is baked into the DNA of true (context-based) multicapitalism.

For this reason, the impulse to assign a unifying monetary value to the multiple capitals is premature – and distorting – if applied *before* contextualizing the capitals within their carrying capacities. That said, the translation of capital stocks into valuated denominations is perfectly legitimate (and indeed, perhaps useful) if performed *after* contextualization. Indeed, such monetization proves useful for expressing the sufficiency of capitals.

**Vital capitals**

- Constructed
- Economic
- Human
- Natural
- Social & Relationship

| BOTTOM LINE | AREAS OF IMPACT | CAPITAL IMPACTS | A Progression score | B Weight | C Weighted score (AxB) | D Fully sustainable score (Bx3) | Gap to fully sustainable (D-C) | Area of impact (AoI) bottom line (C/D) | TRIPLE BOTTOM LINE SCORES |
|---|---|---|---|---|---|---|---|---|---|
| SOCIAL | Product safety | | 3 | 5 | 15 | 15 | 0 | 100% | 43% |
| | Workplace safety | | -1 | 5 | -5 | 15 | 20 | -33% | |
| | Gender equity | | 2 | 4 | 8 | 12 | 4 | 67% | |
| ECONOMIC | Living wages | | 1 | 1 | 1 | 3 | 2 | 33% | 79% |
| | Owners' equity | | 2 | 5 | 10 | 15 | 5 | 67% | |
| | Borrowings | | 3 | 5 | 15 | 15 | 0 | 100% | |
| ENVIRONMENTAL | Climate system | | -2 | 4 | -8 | 12 | 16 | 66% | 0% |
| | Water | | 2 | 3 | 6 | 9 | 3 | 67% | |
| | Solid waste | | 1 | 2 | 2 | 6 | 4 | 33% | |
| Note: Areas of Impact shown here are purely illustrative and are always organisation-specific. | | OVERALL PERFORMANCE | | | 44 | 102 | 58 | | 43% |

**Figure 30:** Sample MultiCapital Scorecard (Source: Martin Thomas & Mark McElroy, "Does Sustainable Performance Mean Abandoning Capitalism?" *The World Financial Review*, 2 June 2016.[94])

Digging deeper, preserving capital stocks for their own sake is nonsensical; the whole reason for conserving capital (and living off the flows) is to support our individual and collective well-being. Adding this consideration integrates the Daly Hourglass, and points to a definition of *integral data* that is more holistic than mere integrated data.

Finally, the impulse toward data aggregation is compelling, yet simple netting of positive and negative impacts on capitals yields results that can be distorting, potentially masking unsustainable capital stocks that can be offset by abundant stocks of other capitals. So, the integration of the multiple capitals must retain the integrity of the sustainability status of each capital.

When these common-sense considerations are factored in, multicapital integration plays a powerful role in structuring information in ways that more accurately reflects the healthy world order they seek to symbolize.

### 4.5.1. CONSEQUENCES FOR THE REPORTING REGIME

The current reporting regime is almost exclusively focused on incrementalism when it comes to performance metrics in the financial, economic, environmental, and social realms. Prevailing approaches to integration are no different – integrating uncontextualized financial metrics with uncontextualized "sustainability" metrics yields nothing more than *damned numbers* that risk creating the *illusion of progress*.

So, the primary consequences for the reporting regime flowing from this chapter call for contextualized multicapital integration. The positive benefits of such a shift are clearly demonstrated by the Daly Hourglass, which shows how the economic system can focus on prosperous value creation within ecological constraints while bolstering social foundations.

### 4.5.2. CONSEQUENCES FOR LEADERSHIP BEHAVIOR

Reporting standard-setters have yet to embrace a holistic approach to contextualized, multicapital, integral data. All of the reporting standards contain such elements, yet none has wrapped their arms around the full body of necessary conceptual commitments. So leadership in the reporting regime will require a full embrace and advocation for contextualized multicapitalism. Reporting 3.0 recognizes that this development may or may not come from the standard-setters. The former will certainly accelerate progress more efficiently and effectively, but it isn't necessary. Other market actors can certainly advocate for contextualized multicapitalism, creating momentum buoyed by inherent logic. Companies, investors, stock exchanges, regulators, NGOs, raters, and information intermediaries can all join this movement. Each of these constituencies has a vital role to play in spurring the field in this direction. The grounding in ultimate well-being plays a magnetic role in drawing practice in this direction.

## 4.6. RECOMMENDATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 - Integrate multiple capitals in data architecture to liberate them from silos and place them in dynamic relationship with each other, enabling detection of synergies; And to free the economy from the shackles of monocapitalism<br><br>2 - Embrace Integral Data to enhance multidimensionality of information<br><br>3 - Integrated Reporting and Integral Data Systems should be context-based |
| ADVOCATE | 1 – Leverage multicapitalism in Integral Data Architecture as a mindset- and paradigm-shifting philosophy and practice across the individual / collective and interior subjective / exterior objective spectrum.<br><br>2 - Merge financial valuation approaches with Commons-based "value shift" toward "relational theory of value<br><br>3 - Aggregate capitals only after contextualizing them within their carrying capacities to maintain the integrity of strong sustainability and abide by the doctrine of non-substitutability; When aggregating impacts across capitals, take a quotient of quotients approach<br><br>4 - Monetize capitals in direct relationship to the status of their carrying capacities, pricing unsustainable stocks prohibitively expensive; Apply context-based cost curves<br><br>5 – Explore other forms of "commonalizing" (tracking diverse impacts across the multiple capitals and expressing them in a "common unit of measurement") in addition to monetization; In particular, attend to the moral and ethical implications of communalizing mechanisms<br><br>6 - Structure data flows and information systems in ways that spur ethical consciousness and conduct |
| ACCELERATE | 1 - Adopt True Future Value Equation into Data Systems<br><br>2 - Employ trajectory targets as a means of calculating progression toward sustainability |

### 4.6.1. REPORTING STANDARD SETTERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – TCFD should consider climate change disclosure as part of a fundamental short-termism problem<br><br>2 – TCFD should Integrate natural capital thresholds of Net Zero GHG Emissions by 2050 |
| ADVOCATE | 1 – IIRC should integrate the Sustainability Context Principle and Context-Based Sustainability into <IR>; Specifically, track the carrying capacities of capitals to maintain the ability of capital stocks to continue generating productive flows<br><br>2 – IIRC should link <IR> to well-being creation<br><br>3 – IIRC should add Impacts and Societal Benefits / Costs to its Octopus continuum from Inputs to Outcomes; the last step (Societal Benefits / Costs) links multicapital accounting to the ultimate ends of well-being<br><br>4 – IIRC should integrate the ethical basis for multicapitalism into <IR><br><br>5 – TCFD should consider incorporating longer-term strategic planning disclosures; Extend traditional financial metrics such as positive Return on Invested Capital (ROIC), or Cash Flow Return on Investment (CFROI) to longer time horizons in order to measure future value creation<br><br>6 – TCFD should consider structuring reporting standards to neutralize behavioural biases<br><br>7 – TCFD should consider emphasizing investor stewardship responsibilities |
| ACCELERATE | 1 – TCFD should consider focusing on board and executive cognitive capabilities needed for long-term value creation; Measure executive and board cognitive capacities to effectively think longer-term and handle complexity |

### 4.6.2. GOVERNMENTS, LEGISLATORS AND MULTILATERIAL ORGANIZATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Governments, legislators, and multilateral organizations should integrate multicapitalism into their approaches to economics and sustainability |

### 4.6.3. CORPORATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Enhance understanding of multicapitalism |
| ADVOCATE | 1 - Integrate Context into Total Contribution Methodology<br><br>2 - Apply contextual thresholds before applying monetization as a commonalizing mechanism for integrating multiple capital accounting (eg in Total Contribution<br><br>3 - When aggregating capitals, avoid substitution (weak sustainability) by treating each capital separately in comparison to its carrying capacity (sustainability threshold) before aggregating / unifying |
| ACCELERATE | 1 - Apply trajectory targets to capital aggregation methods |

### 4.6.4. INVESTORS & BROADER STAKEHOLDERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Enhance understanding of multicapitalism |

## 5. CONTEXTUALIZATION: "TIME FOR AGGRESSIVE MOVEMENT"

*Sustainability requires contextualization within thresholds. That's what sustainability is all about... [But] to this day in the reporting world ... Sustainability Context is incipient, uneven, and occasional... We don't have decades to get serious about Context in light of the ecological and social perils that lie ahead. I think the time for procrastination has passed and the time for aggressive movement is upon us.*[95]
*– Allen White*

*Sustainability indicators must be...about time and/or thresholds... The central questions of sustainability are: How long can this activity last? How long do we have to respond before we run into trouble? Where are we with respect to our limits? [S]ustainability indicators should be related to carrying capacity or to threshold of danger or to targets. 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.*[96]
*– Donella Meadows*

The current state of "sustainability" data belies this title, as the data don't actually discern sustainability: *damned numbers*. Sustainability, in the context properly defined by White and Meadows above, is largely absent from the so-called sustainability data field. So says Allen White, Co-Founder of the Global Reporting Initiative (that established the *Sustainability Context* Principle) and Founder of the Global Initiative for Sustainability Ratings (GISR):

> On the ratings side, Sustainability Context is, to my knowledge, virtually invisible. It is a rarity. SustainAbility's Rate the Raters project found 100+ sustainability raters of all types, both integrated and topic specific. And one would be very hard pressed to find even a single example in any rating where such Context is seriously represented.[97]

The overwhelming majority of the data are "raw" numbers, or "normalized" in ways that "mean nothing to people" in Meadows' terms (her "tons of nutrient per year released into waterways.") What makes data meaningful – data that *begins to carry a message or matters* – is context, specifically about time and thresholds. "*How long do we have to respond...*" is the time component of Meadows' rhetorical question; *"...before we run into trouble?"* is the threshold component.

Why are time and thresholds important? Ultimately, for our individual and collective well-being. If we overshoot or shortfall on the carrying capacities of capitals – or in plainer terms, if we use up Mother Nature's bounty and erode our social fabric – then our well-being suffers, to the point of threatening the very survival of our species. Meadows situates well-being and fulfillment as the *Ultimate Ends* that information systems should seek to measure. Meadows maintains that

> The most important indicator, without which the others make no sense, is an indicator of ultimate ends...
>
> We need to press courageously to discuss well-being and define indicators that reflect it, even if we suspect that this process will shake up our worldviews and challenge our power structures and our lives. If those power structures and lives are in fact creating well-being, then they won't be challenged. If they are not, then they should be shaken.[98]

White affirms the political challenges in shifting entrenched mindsets and predominant paradigms:

> We don't have decades to get serious about Context in light of the ecological and social perils that lie ahead. I think the time for procrastination has passed and the time for aggressive movement is upon us. The world is issuing a collective wake-up call on the issue of thresholds and limits. We've lost precious time dawdling in the last decade. We can't afford another decade of the same.[99]

These quotes support the "positive maverick" aspects of the Reporting 3.0 community.

## 5.1. CONTEXT-BASED SUSTAINABILITY: THRESHOLDS & ALLOCATIONS

Meadows, drawing on the work of Daly (and others), posited the need for information systems attuned to the carrying capacities of capitals, in order to ultimately support well-being. The Global Reporting Initiative transposed this concept from the broad realm of sustainable development to the more targeted realm of enterprises, calling on companies to report on the micro-macro link between their impacts and the health of the broader social, environmental and economic systems they're embedded within. The GRI Principle of *Sustainability Context* calls for "discussing the performance of the organisation in the context of the limits and demands placed on economic, environmental, or social resources at a macro-level."

Recognizing the need to translate this Principle into practice, Mark McElroy founded the Center for Sustainable Organizations (CSO) as a US-based NGO in 2004 to develop Context-Based Sustainability (CBS), a framework for implementing *Sustainability Context*.[100] Two concepts in particular serve as pillars for CBS and the related application of Context-Based Metrics (CBMs):

- **Thresholds** that demarcate the carrying capacities of vital capital resources (natural, social, human, constructed, financial) and therefore divide sustainable from unsustainable performance; and

- **Allocations** that apportion to companies fair shares of responsibility and accountability for their positive and negative impacts on common capital resources that are vital to stakeholder well-being.

Notice that the end-goal of CBS is stakeholder well-being; not surprisingly, stakeholders are also the starting point of CBS. The first step in CBS is to identify stakeholders (or "rightsholders" in R3's terminology) to whom companies owe a (moral/ethical) duty and/or (legal) obligation to manage impacts on vital capitals that (materially) affect stakeholder well-being.[101] To reiterate the earlier point, CBS thus integrates the full Daly Hourglass, from the *Ultimate Means* of natural capital to the *Ultimate Ends* of well-being, attending to sustainability thresholds (carrying capacities of capitals) along the way. And furthermore, it seems safe and accurate to suggest that CBS requires significant mindset shifting – and even paradigm transcending.

## 5.2. THE CONTEXT GAP: "INCIPIENT, UNEVEN, AND OCCASIONAL"

After a decade-and-a-half since the introduction of the *Sustainability Context* Principle in G2, one would expect to find widespread integration of *Sustainability Context* in corporate sustainability reporting. In a recent interview GRI Co-Founder White reflected that,

> In the best of worlds, reporting would have evolved … with Context-based disclosures. But this is not the case… [To] this day in the reporting world … Sustainability Context is incipient, uneven, and occasional."[102]

Empirical research amply documents this "Context Gap":

- A November 2015 report by the United Nations Environment Programme (UNEP) entitled *Raising the Bar – Advancing Environmental Disclosure in Sustainability Reporting* found only 9 out of 108 (8%) surveyed companies have established reduction targets in accordance with the science-based target of limiting global warming to 2 degrees Celsius in accordance with the Paris Agreement; [103]
- A January 2016 study by Danish academics examined 40,000 corporate responsibility (CR) reports from 9,000 companies issued between 2000 – 2014, and found only 5% referred to ecological limits, with a mere 31 companies (0.3%) explicitly using ecological limits to define targets for resource consumption, emissions reductions and/or as a stated reason for adjusting their product portfolio;[104]
- An October 2016 study of 211 large multinational companies by sustainability consultancy Article 13 found that only 30 companies (14%) made reference to some form of wider 'context' (e.g. national goals) informing their sustainability targets, and only 17 companies (8%) referenced the Sustainability Context Principle in their latest Sustainability or CR report.[105]
- A November 2016 conference presentation by PivotGoals of 970 corporate sustainability goals (across all relevant environmental and social categories) in the Global Fortune 100 found that 79.2% (768) are context-, science-, and ethics-free; only 11.4% (110) are "science-equivalent" (meaning they align with scientific goals – though less than 1% are explicitly science-based).[106]

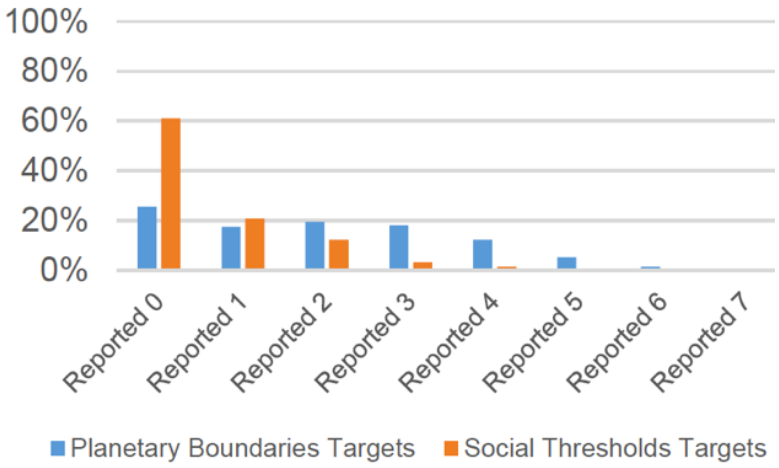



**Figure 31:** Percent of companies reporting planetary boundary and social threshold targets (Source: Article 13, *Planetary Boundaries and Social Thresholds: How do companies measure up? A practitioner's perspective*, October 2016.)

The takeaway: *Sustainability Context* remains a Principle essentially sitting on the shelf, largely unused, despite the fact that it "lies at the heart of sustainability reporting." Recommendations in these reports – which align with the perspective of this *Data Blueprint* – include the following:

- All companies should apply a context-based approach to sustainability reporting, allocating their

fair share impacts on common capital resources within the thresholds of their carrying capacities (UNEP *Raising the Bar*)

- While companies are reporting in greater depth against the GRI's principles of 'Materiality' and 'Stakeholder Inclusiveness', there needs to be more guidance and practical examples of how organizations can report against the GRI's Sustainability Context principle (Article 13 *Planetary Boundaries and Social Thresholds*)
- Reporting standards / guidance bodies such as GRI, IIRC, SASB, CDP, etc. should integrate Sus tainability Context more explicitly into their frameworks, for example by applying the concept of carrying capacities to multiple capitals-based frameworks (UNEP *Raising the Bar*)
- Multiple reporting standards, frameworks and indexes can create confusion: Collaboration is needed to focus reporting on the issues which matter most, at a business, stakeholder, and planetary scale (Article 13 *Planetary Boundaries and Social Thresholds*)

## 5.3. CLOSING THE CONTEXT GAP: "WE CAN'T AFFORD ANOTHER DECADE"

It warrants repeating two key quotes from above. The first from Dana Meadows:

> If those power structures…are in fact creating well-being, then they won't be challenged. If they are not, then they should be shaken.[107]

The second from Allen White (which we're encountering for the third time, lest you missed it earlier):

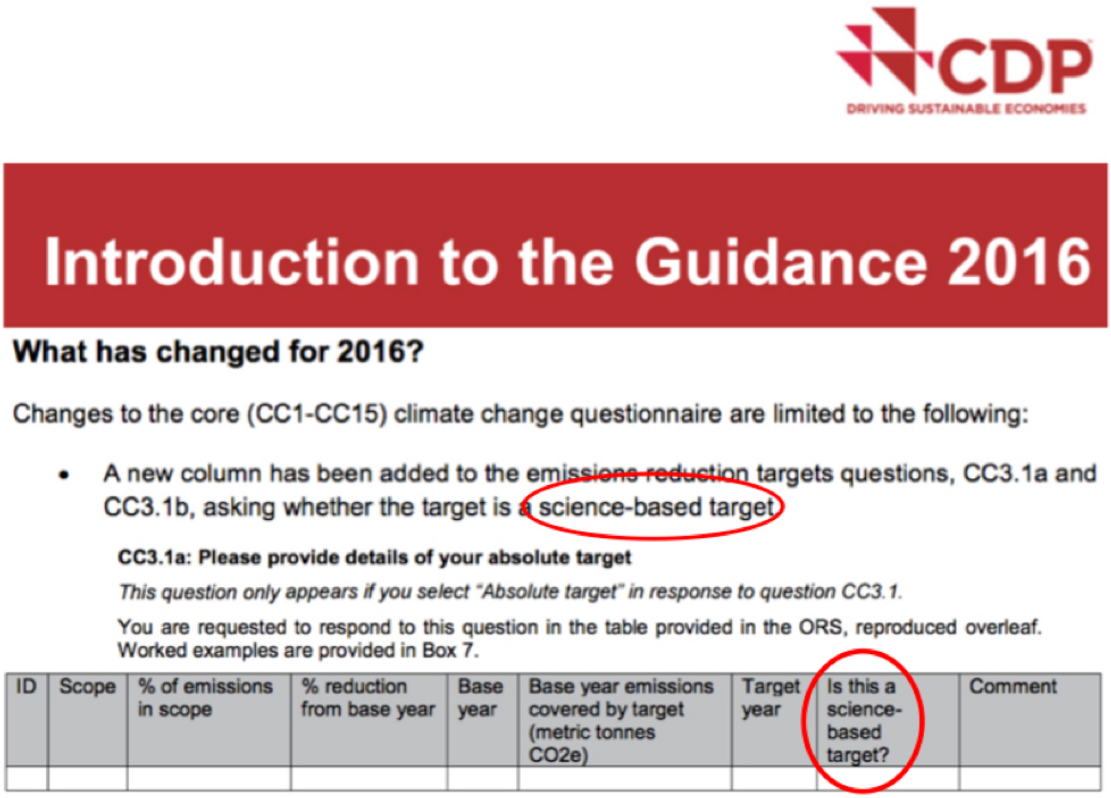
> We don't have decades to get serious about Context in light of the ecological and social perils that lie ahead. I think the time for procrastination has passed and the time for aggressive movement is upon us. The world is issuing a collective wake-up call on the issue of thresholds and limits. We've lost precious time dawdling in the last decade. We can't afford another decade of the same.[108]

Reporting 3.0 takes these declarations seriously, and works collaboratively with institutions and power structures that are in fact creating well-being. And if they are not, Reporting 3.0 invites collaboration to shift these incrementalist practices – or "be shaken." Indeed, "the time for procrastination has passed – the time for aggressive movement is upon us." So, the following sections explore examples of closing the Context gap. To be clear, these are just a start, and much more movement is needed, urgently. We're only just starting.

### 5.3.1. SCIENCE-BASED TARGETS

The Greenhouse Gas Protocol, a joint initiative of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) established in the late 1990s, published its first standard for accounting and reporting corporate GHG emissions in 2001.[109] Of course, the underlying goal was to reduce emissions in recognition of climate change; however, not only the original Standard, but also subsequent iterations of the standards, neglected to call for tying emissions reductions to their very *raison d'être* – the collective reduction of emissions in time to avoid catastrophic climate change. Upon recognizing this gap, WRI set about to resolve this shortcoming, at about the same time (circa 2012-2013) that other major NGOs in the space (namely CDP and WWF) were coming to similar realizations about the need for discipline and guidance around setting GHG emissions reduction targets in line with the science.

What resulted was the Science-Based Targets (SBTs) initiative, a collaboration between 4 major NGOs (CDP, UN Global Compact, World Resources Institute, and WWF) that advocates for aligning corporate GHG emissions goals with IPCC decarbonization pathways. Since its founding in 2014, more than 250 companies (265 as of 15 May 2017) have committed to set Science-Based Targets, arguably the most robust example of implementation of *Sustainability Context*.[110] And one partner – CDP (formerly the Carbon Disclosure Project), an investor-initiated survey of company carbon emissions and management (among other elements) – has integrated Science-Based Targets into its annual questionnaire.



CDP
DRIVING SUSTAINABLE ECONOMIES

# Introduction to the Guidance 2016

**What has changed for 2016?**

Changes to the core (CC1-CC15) climate change questionnaire are limited to the following:

- A new column has been added to the emissions reduction targets questions, CC3.1a and CC3.1b, asking whether the target is a science-based target

**CC3.1a: Please provide details of your absolute target**

*This question only appears if you select "Absolute target" in response to question CC3.1.*

You are requested to respond to this question in the table provided in the ORS, reproduced overleaf. Worked examples are provided in Box 7.

| ID | Scope | % of emissions in scope | % reduction from base year | Base year | Base year emissions covered by target (metric tonnes CO2e) | Target year | Is this a science-based target? | Comment |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**Figure 32:** CDP Guidance 2016 on Science-Based Targets (Source: CDP, *Guidance for companies reporting on climate change on behalf of investors & supply chain members 2016*[111])

In October 2016, CDP issued a report with results from this questionnaire, which revealed relatively robust uptake of Science-Based Targets considering the very short time period between the launch of the SBTs initiative and the survey.[112] **Figures 33 and 34** show these results:

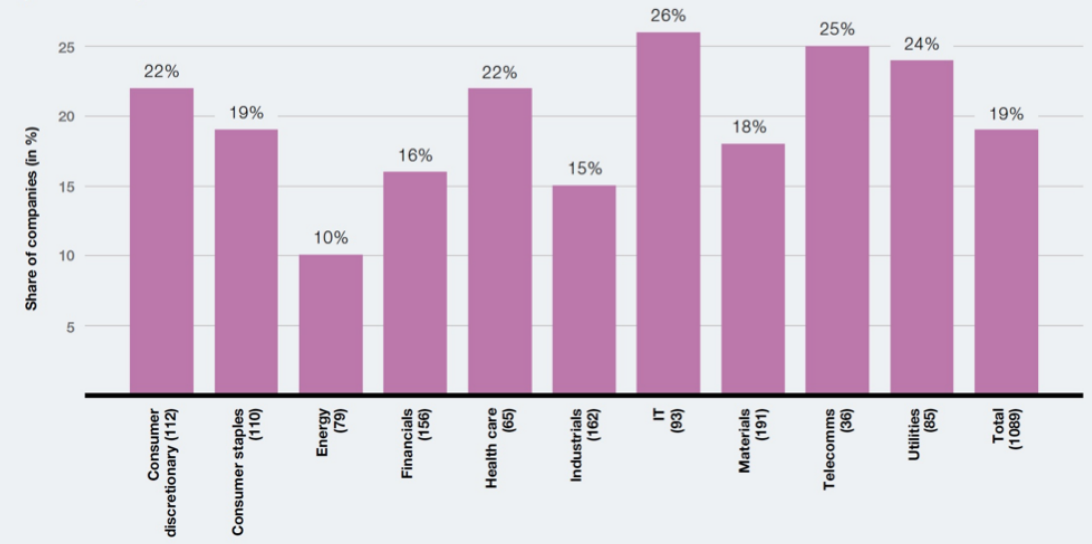



**Figure 33:** Self-Reported Science Based Targets by Sector (Source: CDP & We Mean Business, *Out of the starting blocks: Tracking progress on corporate climate action*, October 2016.[113])

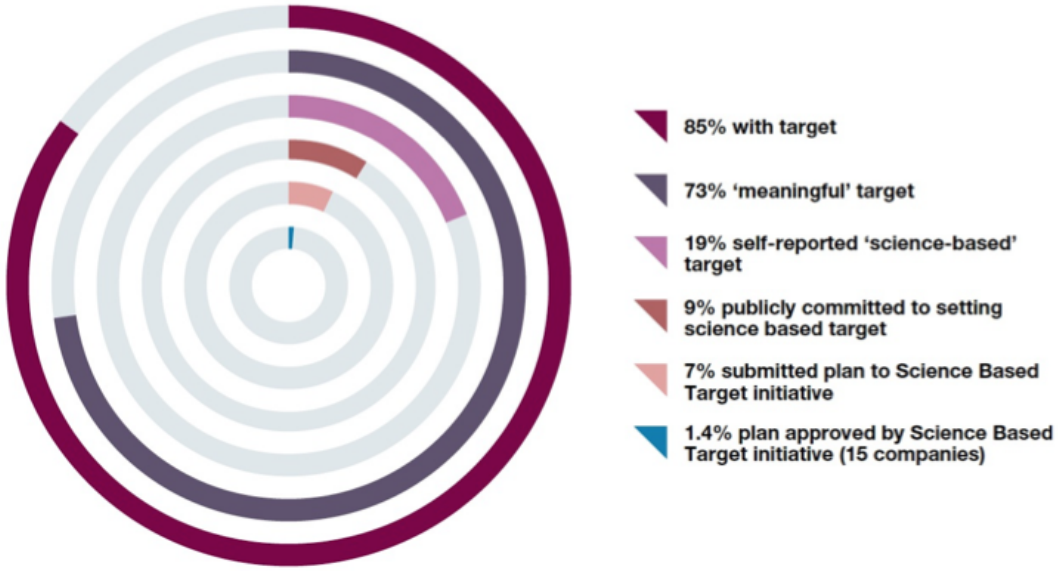



**Figure 34:** Ratio of Target Types in High Impact Sample Group of 1,089 Companies (Source: CDP & We Mean Business, *Out of the starting blocks: Tracking progress on corporate climate action*, October 2016.[114])

This represents a significant development, as it makes much more visible than GRI whether companies are taking a science-based approach – or not. Comparing implementation of *Sustainability Context* in GRI-based reports over a dozen-plus years (almost non-existent) to uptake of Science-Based Targets (more than 200 companies in less than two years) warrants a close study of the differences in strategy between the two frameworks to better understand effective "activation" approaches (to be discussed in more depth in the **Activation** chapter.)

### 5.3.2. CONTEXT-BASED WATER STEWARDSHIP TARGETS

The momentum on GHGs shows promise of migrating to other areas of environmental and social impact, starting with other climate-related impacts such as water. The Science-Based Targets partners, plus The Nature Conservancy (TNC) are dipping their toes into this realm, having published a discussion paper on *Establishing Context-Based Water Stewardship Targets*, which explores the idea of applying to water a similar context-based and science-based approach to that which the SBTs initiative applies to greenhouse gases.[115]

The paper includes this footnote explaining its choice of terminology: "While science is a critical basis for targets that are meaningful, water use is also informed by other socio-political aspects, and accordingly, we have opted to employ the term 'context-based' rather than purely 'science-based'." See **Figure 35** (a repetition of **Figure 27**) for a visual depiction of the distinctions between science-based and context-based targets.

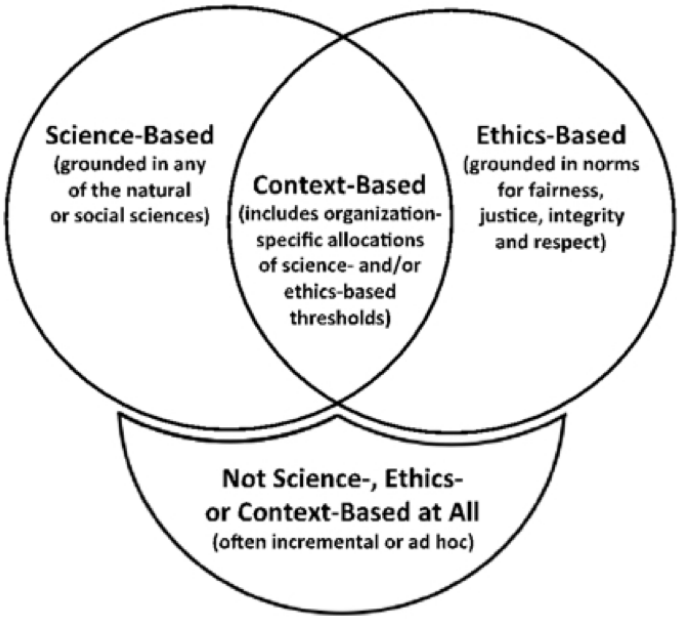



**Figure 35:** Venn Diagram of Science-, Ethics-, and Context-Based Approaches (Source: Mark McElroy, "Science- vs. Context-Based Metrics – What's the Difference?" *Sustainable Brands*, 25 May 2015. )

This Paper discusses the key importance of data in tracking – and driving – sustainable water stewardship and achievement of the UN Sustainable Development Goal 6 on Water.[117] And it acknowledges the greater complexity of thresholds and allocations for the water cycle, which is watershed-specific, than the climate cycle, which is more global. See **Figure 36** for a visualization of context-based water allocation from a more recent report.

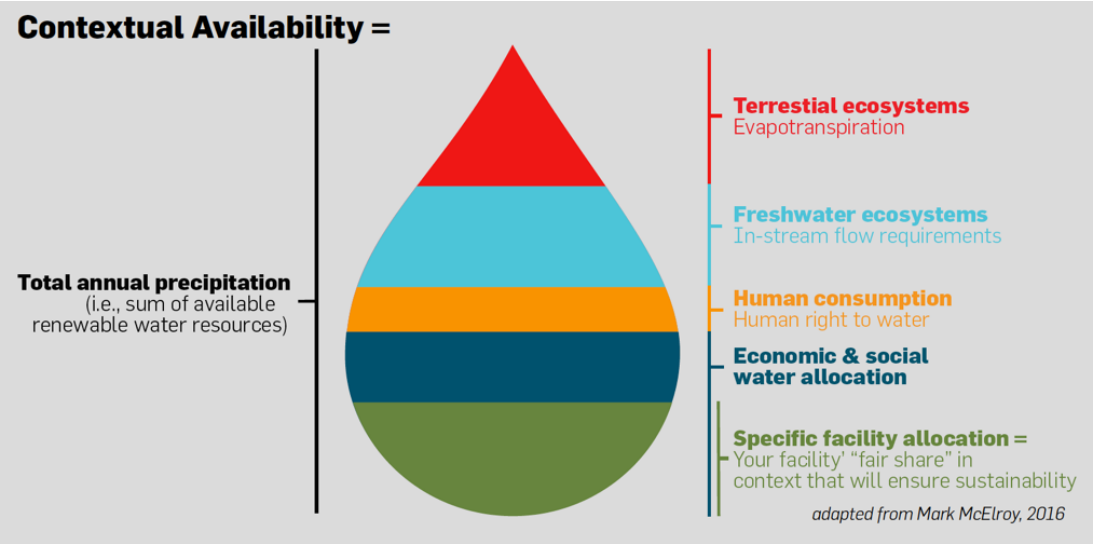



**Figure 36:** Context-Based Water Allocation (Source: Pacific Institute et al, *Exploring The Case For Corporate Context-Based Water Targets*, April 2017.[118])

The 2016 Discussion Paper also points to the key role of collaboration between companies and the public sector, as well as other stakeholders.

> Public sector organizations are the largest providers of water-related data, nevertheless, one of the main challenges faced by governments when establishing water targets is the availability of data. Experience from developing global water tools, such as WWF's Water Risk Filter, WRI's Aqueduct Water Risk Atlas, or TNC's Urban Water Blueprint, has made clear there is a considerable lack of comparable and comprehensively reported water data. While there have been significant advances in technology and science (e.g., remote sensing, ecosystem service modelling, etc.), **national, local and provincial governments continue to face significant data gaps, and because of that, so do companies.** In the context of SDG6, some data exists, but for the most part, significant investments in data collection and disclosure are needed. Monitoring, evaluation and water data will need more funding, more collaboration, and greater accessibility.
>
> In summary, the public sector is not only a key element of the context, but also offers considerable learning for the private sector when it comes to context-based water target setting and monitoring. The opportunities for the private sector to engage with, learn from, draw data from (and share data with), and align with public sector water initiatives (especially the SDGs) is extensive. Moreover, for companies to effectively address the shared water challenges that underpin corporate water risks, collaborating with the public sector (and also other **context-driven stakeholders**) will be essential.[119]

It seems that this discussion paper coins this last term, *context-driven stakeholders*. It is a welcome addition to the lexicon, as it articulates a key perspective of this *Blueprint* – that stakeholders who embrace context-based approaches to data and *evidence-based advocacy* play a key role in advancing the achievement of a regenerative and inclusive economy. (The question of stakeholder advocacy is addressed in depth in the next chapter on **Activation** and **Acceleration**, as does the question of the intersection between the public and private sectors when it comes to sustainability data.)

Indeed, the term **Context-Driven Stakeholders** ties in with Meadows' notions of data that "carries a message" and calls on us "to respond," seeing as (in the words of White) "the time for aggressive movement" and "getting serious about Context … is upon us."[120]

### 5.3.3. SYNERGIZING CONTEXT-BASED GHG, WATER & LAND METRICS

Mars Incorporated, the privately held company best known for its confectionery business lines, has long been a pioneer in applying a science- and context-based approaches across multiple areas of impact (AoIs). In addition to GHGs and water, Mars applies context to its land use, given the agricultural basis of its business models. Mars Global Sustainability Director Kevin Rabinovitch also chose three high-level areas for context-based sustainability targets for pragmatic reasons:

> Corporate leadership integrates only a very limited number of metrics into overall management decisions. For example, very few (typically three to five) key financial metrics are used to assess business growth; examples might be sales growth, earnings, or return on assets… For Mars Incorporated, duplicating this approach for environmental metrics is considered desirable to help gain buy-in from corporate leaders. The company therefore provided WRI with a fixed budget of three management-level impact metrics, challenging WRI to identify metrics that would cover as much of the impact areas as possible. This necessitated eliminating redundancies and trading perfection for pragmatism.[121]

Mars and WRI incorporated the defining aspects of context-based practice, including science-based thresholds and fair-share allocations, and Mars actively collaborates in the Science-Based Targets and Context-Based Water Stewardship initiatives. Land stewardship is arguably the least mature impact area for context-based metrics and targets, requiring Mars and WRI to innovate:

> Using science to inform not just GHG targets but multiple impact areas like land and water breaks new ground. Especially interesting was the **opportunity to identify synergies and tensions between the different impact areas.**[122]

**Figure 37** displays some of the lines of synergies between these three areas of impact (AoIs).

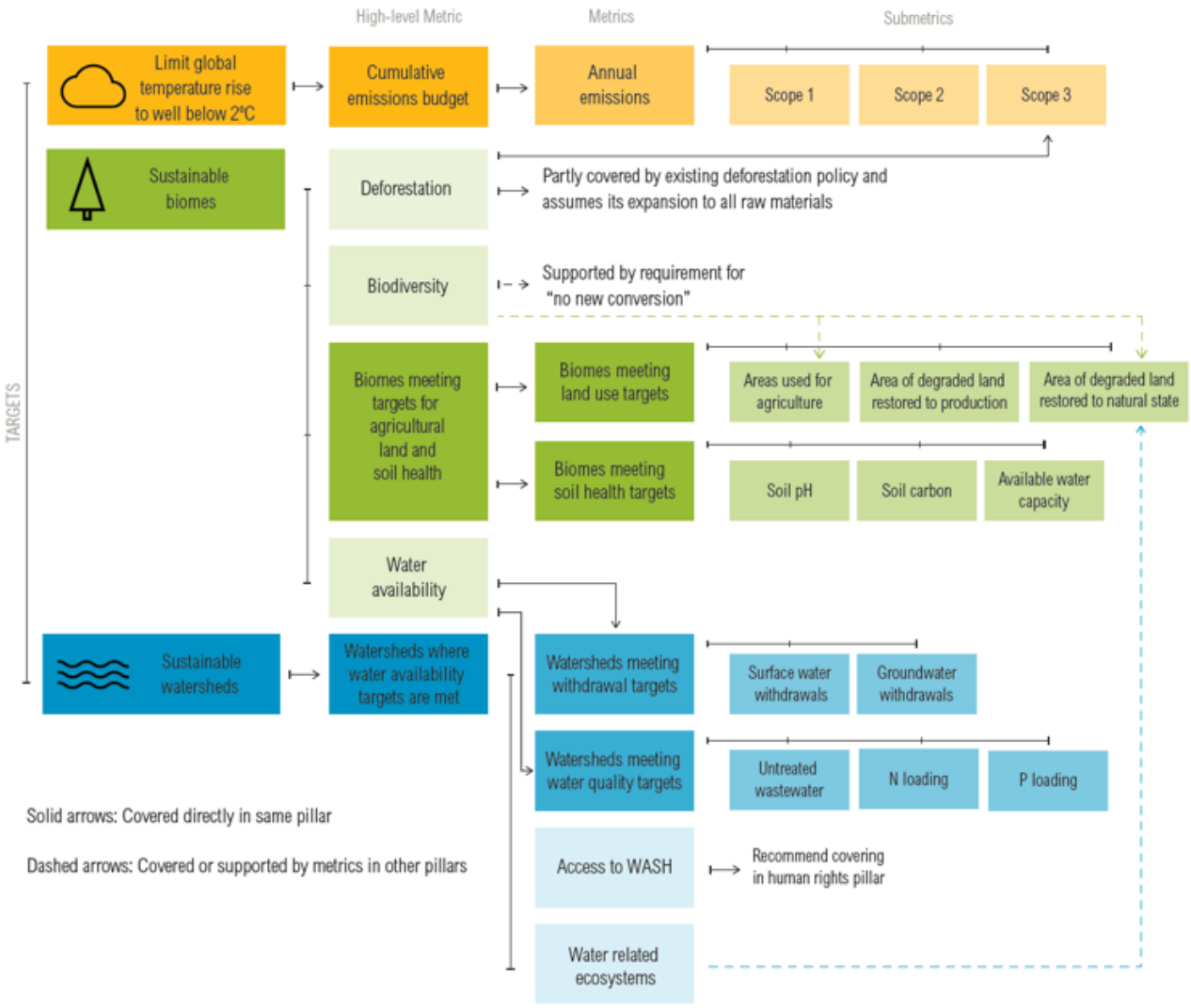



**Figure 37:** Ecosystem of Metrics: GHGs, Land, Water (Source: Samantha Putt del Pino, et al. "From Doing Better to Doing Enough: Anchoring Corporate Sustainability Targets in Science." World Resources Institute & Mars Incorporated. 2016.[123])

Rabinovitch believes that a synergistic approach to context-based practices and metrics can help identify and innovate solutions that may be harder to identify in isolation. For example, when focusing on carbon, reducing atmospheric carbon and increasing soil carbon clearly go hand-in-hand, so synergistic solutions can emerge in creative ways by considering GHGs and land together instead of separately.[124]

From a data perspective, architecting information systems that integrate data from different areas of impact enable tracking to see how interventions in one impact area might have knock-on effects in other impact areas, allowing for detection of both desirable and undesirable feedback loops.

### 5.3.4. FROM CONTEXT-BASED TARGETS TO CONTEXT-BASED STRATEGIES: THE EMBEDDING PROJECT

"Forget context-based goals for corporate sustainability," former EMC CSO Kathrin Winkler wrote in her "happy horseshit" article cited earlier. "How about context-based strategies?"[125] Her point: while

it's encouraging that companies are embracing context-based targets and goals, achieving them will require deeper transformation at the strategic level.

The Embedding Project, a public-benefit research project that uses strong social science research methods, helps its member companies do just this: embed sustainability not only into their operations but also into their core strategy and culture. Several of its corporate members were increasingly being asked to 'contextualize' their sustainability performance, so they turned to the Embedding Project to better understand how they could factor socio-ecological thresholds into their goal setting processes and corporate strategy.

In response, the Embedding Project assembled a Global Community of Practice (CoP) on Contextualized Strategy-Making, which spurred the creation of a "Road to Context" framework that lays out four key steps for companies to contextualize their goals and strategy (see **Figure 38**). To help companies see how these steps are being applied in practice, the Embedding Project developed a casebook spotlighting the efforts of early adopters of context.[126]

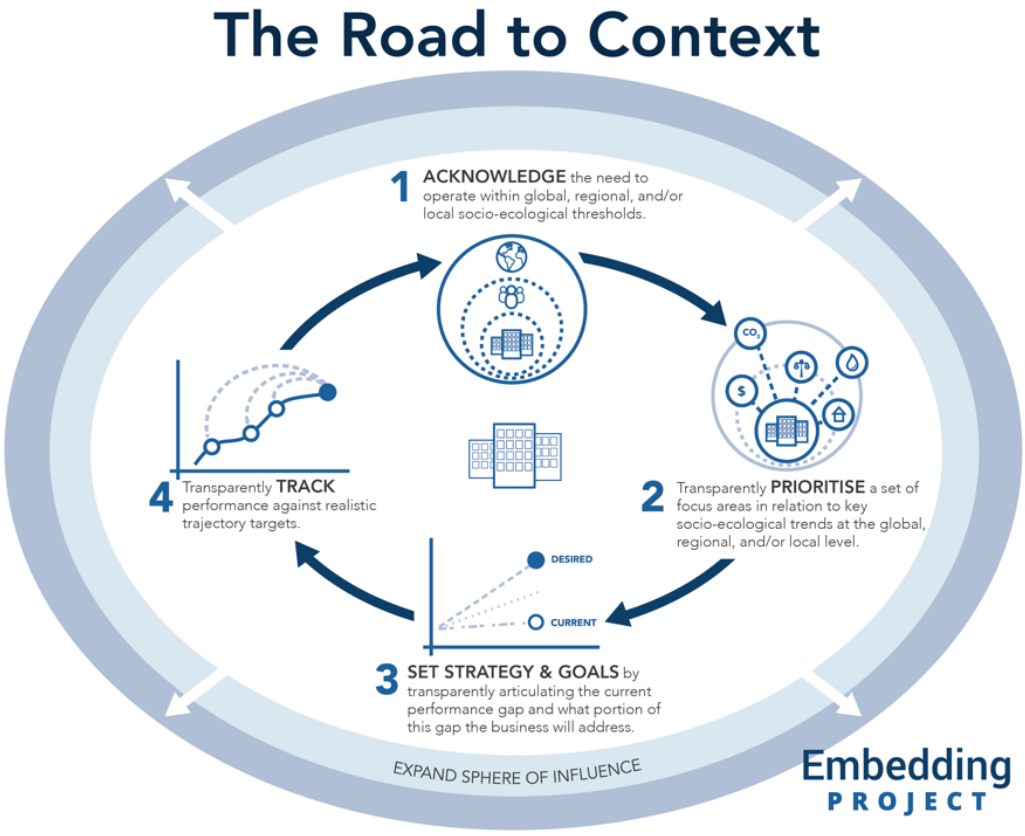



**Figure 38:** The Road to Context (Source: Embedding Project, The Road to Context: *Contextualizing Your Strategy & Goals Casebook*, May 2017.)

### 5.3.5. CONTEXTUALIZING NET POSITIVE

Another angle where companies are pursuing these potentially beneficial synergies is in the Net Positive movement. This trend was seeded by the Net Positive Group, founded by Forum for the Future in 2013

in collaboration with the Climate Group and WWF, comprising such companies as BT, Capgemini, Dell, Ikea, Kingfisher, PepsiCo, and The Crown Estate that collaboratively articulated a set of 12 Principles.[127] In June 2016, Forum for the Future joined with BSR and Harvard SHINE (Sustainability and Health Initiative for NetPositive Enterprise) to launch the Net Positive Project, a global initiative to advance Net Positive concepts and practice.

This community of practice is essentially applying a similar approach as The Crown Estate applies to Aggregation: measure positive impacts and then subtract negative impacts (in the same area of impact), with a goal of netting on the positive side of the ledger, such that positive impacts outweigh (or offset) negative impacts. Harvard SHINE Co-Founder Greg Norris coined the concept of "handprints" to delineate positive impact as a counterpoint to footprints, which are generally understood to represent negative impact.

> While we can and must work to continually reduce them, we will never drive our footprints to zero. Sustaining a person and operating an organization inevitably causes harm, albeit unintended and regretted. The inevitability of footprints does not mean that every person and every organization is doomed to be 'bad news' for the planet and future generations. These same people and organizations can also bring positive change, benefits, healing to the world around them. We call footprint-consistent estimates of the impacts of positive change handprints… If your handprint is larger than your footprints for a given impact category, then you are NetPositive for that impact category.[128]

However, the very notion of "Net" suggests a baseline dividing positive from negative performance. Where does one legitimately set this baseline? As with the Crown Estate approach to valuation and aggregation, it's tempting to pin the baseline at the full capital stock, but a context-based mindset teaches us that the carrying capacity of the capital is the actual baseline. So, a disciplined approach to Net Positive would set a context-based baseline, whereby positive performance needs to do more than simply build more capital than it destroys; a truly Net Positive approach would need to replenish capital beyond the carrying capacity; capital flows below this threshold would not count toward positivity. Prominent experts in the field advocate for such a context-based definition of Net Positive. According to Bob Willard, Co-Founder of the Future Fit Business Benchmark, there

> must be science-based, industry-independent definitions for what break-even / do no harm performance looks like.[129]

Mark McElroy adds:

> Setting baselines that delineate net positive from net zero or net negative impacts is something we have been doing now in fairly explicit and rigorous ways for the past several years under the banner of Context-Based Sustainability. So Net Positive should embrace CBS.[130]

Robin Lincoln Wood, Co-Founder of the ThriveAbility Foundation, further expounded:

> A quantitative interpretation of Net Positive can be framed in a way that is entirely consistent with CBS. Net Positive's starting point needs to be a disciplined approach to measuring degree of impact in a specific area of impact (e.g. carbon, or water, or living wage, etc.) The goal here would be to achieve coherence and 'mass balancing' of impacts. So, Net Positive needs to simultaneously assess areas of impact independently (do my water recycling efforts replenish aquifers in the watershed commensurate with my water withdrawals?) while also attending to how areas of impact dynamically interact (does the energy used in desalination tip my GHG footprint outside my allocation of the carbon budget?)[131]

Complicating this mathematical equation is the fact that downstream end of the value chain – product use – is increasingly seen as a key pathway to Net Positive solutions. For example, when it comes to GHGs, companies are touting the use of their products to reduce emissions by their users. BT helped establish this trend with its Net Good program, a pioneering Net Positive approach launched in 2013, and Dell followed suit in the next year with a 10x20 initiative pursuing the goal that "the good that will come from [Dell] technology will be 10x what it takes to create and use it" by 2020.[132]


**Figure 39:** BT's 3:1 Carbon Abatement Methodology (Source: BT)

The anchor of BT's Net Good program is its so-called "3:1" carbon emissions goal "to help our customers reduce carbon emissions by at least three times the end-to-end carbon burden of running our business" by 2020, according to Kevin Moss, who launched the program at BT (before joining the World Resources Institute).[133] BT, which is making the 3:1 methodology open source and its findings transparent, has identified 24 ways to measure decreases in its customers' carbon emissions, from audio conferencing to copper cable recycling.[134] Clearly, this program creates financial value for BT while also helping solve one of society's "wicked problems," though Moss points out that this connection is not necessarily axiomatic:

> There's an assumption there's financial value in solving problems. Porter and Kramer call this Creating Shared Value, looking at the intersection between financial value and social solutions.

> Focusing just on solutions that create financial value will get us part of the way, but it doesn't get us the whole way — there are still some problems to which industry and commerce contribute, where business' very core is compromised by these problems. But solutions, if applied unilaterally, create short-term competitive disadvantage. The trick is finding a way to align a joint intrinsic incentive to solve the problem with our ability to continue generating economic prosperity.[135]

### 5.3.6. FROM SHARED VALUE TO SYSTEM VALUE: FUTURE FIT BUSINESS BENCHMARK

In April 2017, the Future Fit Business Benchmark (F2B2) released a Concept Note introducing a next-step evolution from Shared Value that addresses the very issues Moss raised by coining the term "System Value":

> To understand the true extent of a company's impact – good and bad – demands a holistic approach. We need to think beyond social responsibility or even shared value, where one stakeholder group might benefit to the (albeit unintended) detriment of others, and instead focus on how business creates system value. Put simply, how – and how much – does a company help or hinder progress toward a prosperous future for all, through its own actions and those of others acting on its behalf? To really understand a company's impact on the world we must think in terms of Creating System Value.[136]

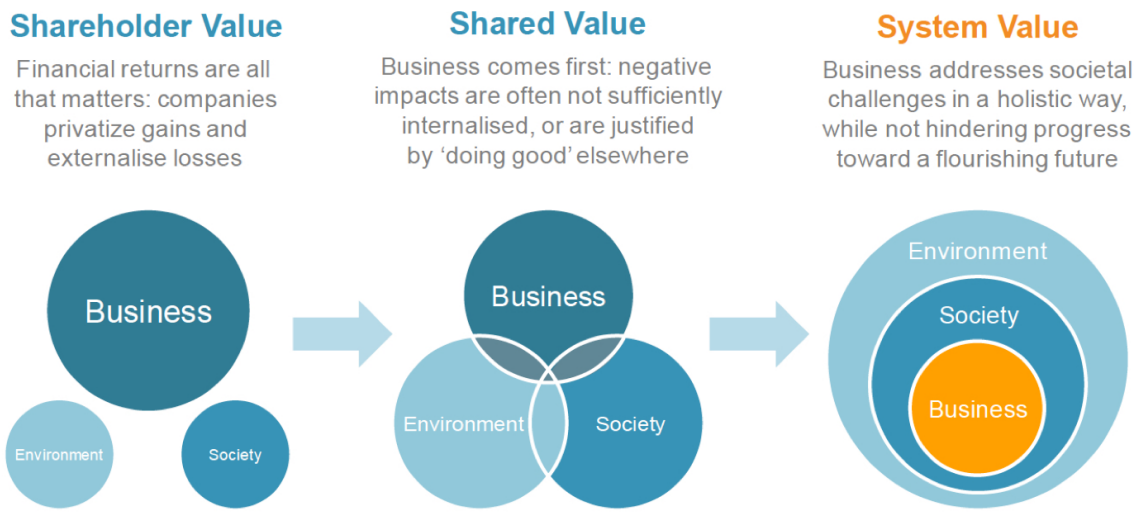



**Figure 40:** From Shareholder Value to System Value (Source: Future Fit Business Benchmark, *Creating System Value, Concept Note, April 2017.)*

This notion of System Value aligns with the Principle of Sustainability Context by calling for individual companies to place their own sustainability in the context of the sustainability of the broader systems in which they operate.

### 5.3.7. SYSTEMS-LEVEL INVESTING: THE INVESTMENT INTEGRATION PROJECT

Systems-level thinking is also making its way into the investing realm, as Steve Lydenberg and colleagues at The Investment Integration Project (TIIP) have documented in two recent reports. The first,

*Tipping Points 2016*, surveys and summarizes 50 asset owners' and managers' implementations of systems thinking into their investment strategies.[137] Following Bank of England Governor Mark Carney's "Tragedy of the Horizon" speech at Lloyd's of London on transition risk and the Bank's 2015 *Systemic Risk Survey*, the investing world has woken up to systems-level issues.[138] Lydenberg et al note a century's evolution of investment tenets to arrive at the integration of feedback loops between systems and portfolios.

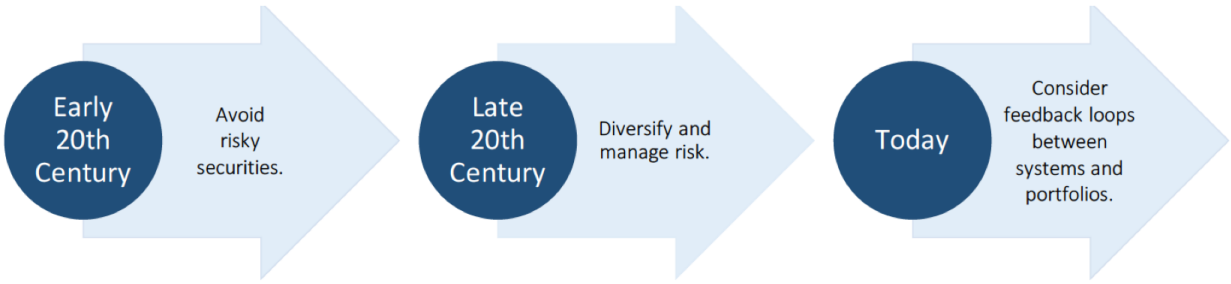



**Figure 41:** Evolution of Investment Tenets over the Last 100 Years (Source: Steve Lydenberg et al, *Tipping Points 2016*, The Investment Integration Project, November 2016.)

Lydenberg et al explain:

> What might be expected now … is a more comprehensive understanding of the impact of these investments on the environment and society—of the **feedback loops between investment practice and the environmental, societal and financial systems that are the framework within which investment operates.** In taking this next evolutionary step, asset owners and managers have begun to actively pursue policies and practices that intentionally complement the discipline of the efficient market with the discipline of the effective management of broader systems.[139]

Lydenberg et al graphically display this link between intentional systems change and portfolio-level assessment here:

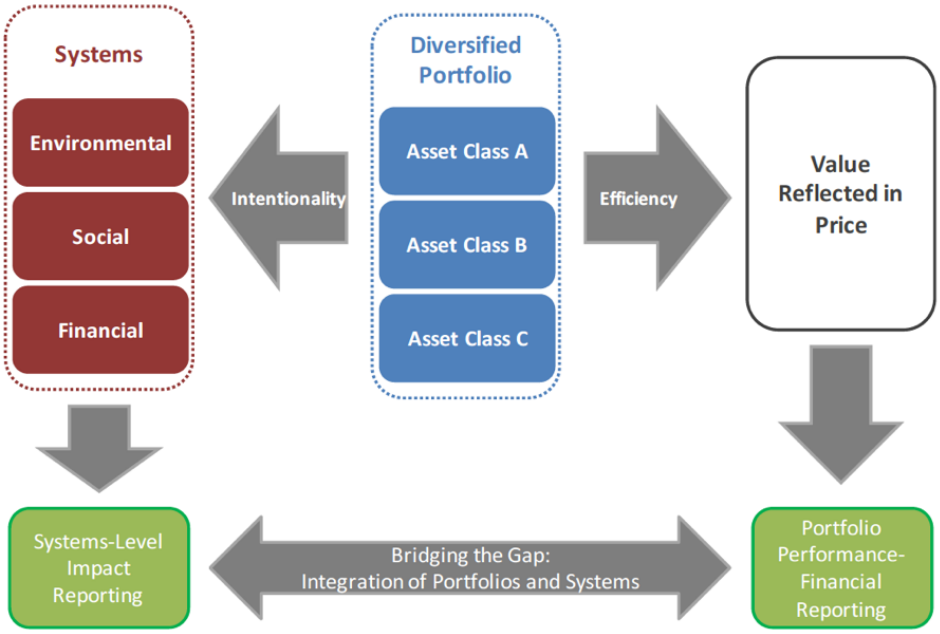



**Figure 42:** Integration of portfolios & systems. (Source: Steve Lydenberg et al, *Tipping Points 2016*, The Investment Integration Project, November 2016.)

It's telling that Lydenberg et al conceive of Systems-Level Impact Reporting as separate from Portfolio Performance-Financial Reporting; Reporting 3.0 would advocate for "bridging this gap" by integrating portfolio-level and systems-level reporting. Investors express these intentional policies and practices through a variety of tools, ten of which are key: additionality, diversity of approach, evaluation, geographic locality, interconnectedness, polity, self-organization, solutions, standards setting, and utility.


**Figure 43:** The 10 Tools of Intentionality (Source: Steve Lydenberg et al, *Tipping Points 2016*, The Investment Integration Project, November 2016.)

Of particular interest to this *Data Blueprint* is "Interconnectedness," which seeks to "increase the flow of information about the environmental, societal, and financial systems that they operate within, either among themselves of with the general public:

> Generally speaking, these investors use communications and collaborative action to minimize the possible risks and maximize the possible rewards associated with these systems. These communications and collaborative efforts can be thought of as playing an important role when the management of common-pooled resources ("the commons") is at stake.

> Interconnectedness attempts to increase the effectiveness of impact—and in a sense to preserve and enhance common wealth and minimize the "tragedy of the commons." Many investors, for example, currently participate in collaborative engagements with corporations to increase their chance of improving corporate performance on social and environmental issues. Because the benefit of these improvements in effect accrues to all investors, these engagements can be thought of as exercises in collective wealth creation.[140]

In addition to the eight examples cited in this report, more recently (after the report's publication) Arabesque Asset Management launched S-Ray, a data platform that systematically combines over 200 environmental, social and governance (ESG) metrics with news signals from over 50,000 sources across 15 languages.[141]

"With its name inspired by the impact of the X-Ray on medicine, Arabesque S-Ray enables anyone to look beneath a company's surface," said Omar Selim, CEO of Arabesque. "Our objective is to take sustainability into the mainstream by making it available in a practical and cost-efficient way. S-Ray's unbiased algorithms harness the power of artificial intelligence, processing big data to produce a daily snapshot of a corporation's sustainability."[142] Arabesque makes a basic version of the tool available for free to the public (with a 3-month lag in the currency of the data.)

The TIIP report includes the following recommendation on Measurement & Reporting:

> As asset owners and managers increasingly focus on environmental, societal and financial systems-level considerations, they want to understand the range of options available to measure and report on the scope and effectiveness of their policies and practices. Various investors, including notably members of the impact investing community, have developed measurement and assessment methods for individual portfolios as well as for collaborative efforts. Similarly, a variety of methods have been developed to measure and report on progress at the broader environmental, societal and financial levels. Although these parallel sets of initiatives help assess impact at the local portfolio level and measure progress at broad systems level, they provide relatively little guidance as to how the two relate to, and impact, each other. Research and guidance is needed on how investors can meaningfully measure their individual or collective impact with relation to these systems and how they can then report on these impacts. The development of methods for such measurement and reporting is crucial if investors are to intentionally manage these impacts.[143]

## 5.4. IMPLICATIONS OF DATA CONTEXTUALIZATION

The implications of contextualizing corporate data to performance thresholds of financial, economic, environmental, and social sustainability are profound, as this would by definition transform from the current, inherently incrementalist information systems to more transformative systems, tied as they are to performance norms that have clear meaning in the real world. If we wish to achieve *bona fide* sustainability, then the data and information systems employed in the corporate world need to tether themselves to sustainability indicators that integrate the Daly Hourglass, from the Ultimate Means of natural capital to the Ultimate Ends of well-being, attending to the carrying capacities of capital stocks and the perpetuation of capital flow within sustainability thresholds.

In short, integrating context into corporate reporting, data architecture, and information systems would radically transform the status quo, committed as it is to measuring incrementalism.

### 5.4.1. CONSEQUENCES FOR THE REPORTING REGIME

Integrating context into corporate reporting, data architecture, and information systems would deliver on the promise that has been latent for a decade-and-a-half, ever since the first publication of the *Sustainability Context* Principle in GRI's G2 Sustainability Reporting Guidelines. This promise has remained latent throughout this intervening time, with only 0.3% of corporate sustainability reports explicitly contextualizing performance targets against ecological limits and so-called sustainability raters, rankers, and index providers remaining similarly silent on context.

The reporting regime – standard setters, report producers (i.e. companies), and report consumers (investors, raters & rankers, NGOs) – now has the option of integrating context at core and ensuring reports are sufficiently and accurately contextualized, or continuing to willfully turn a blind eye.

### 5.4.2. CONSEQUENCES FOR LEADERSHIP BEHAVIOR

Clearly, proliferating contextualized data will require a transformation of leadership behavior, with leaders needing to display *positive maverick* characteristics. Leadership on context has been hard to find, yet clearly needed, creating a clearly opportunities for leadership.

## 5.5. RECOMMENDATIONS

| STAGE | RECOMMENDATION |
|---|---|
| **EDUCATE** | 1 – Gain understanding of sustainability thresholds that demarcate the carrying capacities of vital capital resources and allocations that apportion to companies fair shares of responsibility and accountability for their positive and negative impacts on common capital resources that are vital to stakeholder well-being<br><br>2 – Deepen understanding of value of multicapital, context-based data in protecting and preserving the stocks and flows of capital resources in the commons.<br><br>3 – Following Context-Based Sustainability, identify "rightsholders" to whom companies owe a (moral/ethical) duty and/or (legal) obligation to manage impacts on vital capitals that (materially) affect stakeholder well-being |
| **ADVOCATE** | 1 - Shift from concepts of shareholder value and shared value to system value<br><br>2 - Adopt Science-Based GHG Targets |

| STAGE | RECOMMENDATION |
|---|---|
| ADVOCATE | 2 - Adopt Science-Based GHG Targets |
| | 3 - Adopt Context-Based Water Stewardship Targets |
| | 4 – Redefine handprints from a “weak sustainability” to a “strong sustainability” definition, with the baseline of net positive pinned to the carrying capacities of capitals instead of the full capital stock |
| | 5 – Contextualize net positive methodologies and approaches, assessing carrying capacities of capitals before netting positive / negative performance in a capital / area of impact |
| ACCELERATE | 1 – Sponsor research on applying context on other areas of impact |
| | 2 – Examine the approaches, strategies, and cultures that help explain why the Science Based Targets initiative have spurred such growth in implementation, compared to the GRI Sustainability Context Principle |
| | 3 – Accelerate the profusion of context-driven stakeholders |
| | 4 – Mature from science-based targets to context-based goals |
| | 5 – Deepen from context-based targets / goals to context-based strategies |
| | 6 – Design information systems that integrate data from different areas of impact to enable tracking of how interventions in different areas of impact synergies and cross-pollinate, allowing for detection of both desirable and undesirable feedback loops |

### 5.5.1. REPORTING STANDARD SETTERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Gain understanding of sustainability thresholds that demarcate the carrying capacities of vital capital resources and allocations that apportion to companies fair shares of responsibility and accountability for their positive and negative impacts on common capital resources that are vital to stakeholder well-being |

| STAGE | RECOMMENDATION |
|---|---|
| ADVOCATE | 1 - There needs to be more guidance and practical examples of how organizations can report against the GRI's Sustainability Context principle [Article 13 Planetary Boundaries and Social Thresholds]<br><br>2 - Reporting standards / guidance bodies such as GRI, IIRC, SASB, CDP, etc. should integrate Sustainability Context more explicitly into their frameworks, for example by applying the concept of carrying capacities to multiple capitals-based frameworks [UNEP Raising the Bar]<br><br>3 - Multiple reporting standards, frameworks and indexes can create confusion: Collaboration is needed to focus reporting on the issues which matter most, at a business, stakeholder, and planetary scale [Article 13 Planetary Boundaries and Social Thresholds]<br><br>4 – Redefine handprints from a "weak sustainability" to a "strong sustainability" definition, with the baseline of net positive pinned to the carrying capacities of capitals instead of the full capital stock<br><br>5 – Contextualize net positive methodologies and approaches, assessing carrying capacities of capitals before netting positive / negative performance in a capital / area of impact |
| ACCELERATE | 1 – Examine the approaches, strategies, and cultures that help explain why the Science Based Targets initiative have spurred such growth in implementation, compared to the GRI Sustainability Context Principle |

### 5.5.2. GOVERNMENTS, LEGISLATORS AND MULTILATERIAL ORGANIZATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Deepen understanding of value of multicapital, context-based data in protecting and preserving the stocks and flows of capital resources in the commons. |
| ADVOCATE | 1 - Public and Private Sector actors should collaborate on context-based multicapital data<br><br>2 - Significant investments in data collection and disclosure are needed. |

| STAGE | RECOMMENDATION |
|---|---|
| ACCELERATE | 1 – Regulate, legislate, and use other governmental and multilateral mechanisms to accelerate the spread of contextualized data and information. |

### 5.5.3. RECOMMENDATIONS TO CORPORATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Following Context-Based Sustainability, identify "rightsholders" to whom companies owe a (moral/ethical) duty and/or (legal) obligation to manage impacts on vital capitals that (materially) affect stakeholder well-being |
| ADVOCATE | 1 - All companies should apply a context-based approach to reporting, allocating their fair share impacts on common capital resources within the thresholds of their carrying capacities (UNEP Raising the Bar)<br><br>2 - Adopt Science-Based GHG Targets<br><br>3 - Adopt Context-Based Water Stewardship Targets<br><br>4 – Redefine handprints from a "weak sustainability" to a "strong sustainability" definition, with the baseline of net positive pinned to the carrying capacities of capitals instead of the full capital stock<br><br>5 – Contextualize net positive methodologies and approaches, assessing carrying capacities of capitals before netting positive / negative performance in a capital / area of impact<br><br>6 — Sponsor research on applying context on other areas of impact |
| ACCELERATE | 1 – Mature from science-based targets to context-based goals<br><br>2 – Deepen from context-based targets / goals to context-based strategies<br><br>3 – Design information systems that integrate data from different areas of impact to enable tracking of how interventions in different areas of impact synergies and cross-pollinate, allowing for detection of both desirable and undesirable feedback loops |

### 5.5.4. RECOMMENDATIONS TO INVESTORS & BROADER STAKEHOLDERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Investors should raise their own awareness of the micro-meso-macro link between company-level, portfolio-level, and system-level impacts |
| ADVOCATE | 1 – Investors should bridge from reporting and assessing portfolio performance only at the portfolio level to also report on impacts as the systems level.<br><br>2 – Research and guidance is needed on how investors can meaningfully measure their individual or collective impact with relation to these systems and how they can then report on these impacts |
| ACCELERATE | 1 – Accelerate the profusion of context-driven stakeholders |

## 6. ACTIVATION & ACCELERATION: CATALYZING CONTEXT-DRIVEN STAKEHOLDERS

*We need to press courageously to discuss well-being and define indicators that reflect it, even if we suspect that this process will shake up our worldviews and challenge our power structures and our lives. If those power structures and lives are in fact creating well-being, then they won't be challenged. If they are not, then they should be shaken.*[144]
*– Dana Meadows*

*For companies to effectively address the shared water challenges that underpin corporate water risks, collaborating with the public sector (and also other context-driven stakeholders) will be essential.*[145]
*– Alexis Morgan & Paul Reig*

"[S]ustainability indicators should…carry a message" that starts to answer the question, "How long do we have to respond before we run into trouble?" says Dana Meadows. This distills to its essence the relationship between data and its human users. Intelligent information is structured such that it sends discernable signals: Slow down! Stop! Turn around! Go! And such signals invite us into relationship with the data, acting in response. In a word: *numbers that matter* activate smart responses.

The earlier chapters focused on the first part of this equation – smartening up the data. This final chapter focuses on the other side of the equation: activation. Context-driven stakeholders are the primary actors spurring this activation. They see the signals flashing from the data, and respond with commensurate concern. In this sense, data creates its own feedback loops between the impacts represented in the data, and those interpreting the data and responding to its signals. The more dispersed these

context-driven stakeholders, the better – across the corporate organizational chart, and across the company's external ecosystem, from governments to NGOs to suppliers to investors to data scientists, programmers, and entrepreneurs.

Reporting 3.0 Steering Board Member Brendan LeBlanc of Ernst & Young supports this approach:

> My particular interest, since I first heard about the Platform, has been in helping Reporting 3.0 activate evidence-based stakeholder advocacy that uses data from corporate reports to contextualize the sustainability of company performance.[146]

Stakeholder activation transforms linear communications chains -- from data producer through intermediaries to data users -- into communications *cycles*, as the flow becomes discursive, circling from the "user" at the end of the chain back to the producer to spur change. The transformative potential embedded in this cyclical dynamic is well established (though still largely latent) both conceptually and empirically.

On the conceptual front, Donella Meadows underlines the key role of citizen stakeholders in collaborating with experts to determine indicators, as well as actually gathering "ground-truth" data (complementing more technical data source.)[147] More recently, Tellus Institute President Paul Raskin, prime initiator of the Great Transition Initiative, authored *Journey to Earthland: The Great Transition to Planetary Civilization*, a kind of sequel to his 2002 book *Great Transition: The Promise and Lure of the Times Ahead* that encapsulated the work of the Global Scenario Group.[148] *Journey to Earthland* "focuses on the critical question of collective action, whereby a vast and plural 'global citizens movement' becomes the key social actor for carrying the transformation forward."[149] This is precisely what activation looks like at the global scale.

On the empirical front, Andrea Liesen, Andreas Hoepner, Den Patten, and Frank Figge conducted a study asking, *Does Stakeholder Pressure Influence Corporate GHG Emissions Reporting?* The short answer: yes.[150] However, Peter Seele of the University of Lugano cites the work of Timothy Coombs and Sherry Holladay of Texas A&M, who point out that the promise of digital transparency in driving more credible sustainability reporting has not actualized in reality, and that very few activist groups create databases that help citizens ''figure out which companies are polluting the air in their neighborhood."[151]

Contextualized data triggers not only activation, but also acceleration. "How long do we have to respond before we run into trouble?" is the question that contextualized data answers, according to Meadows. The answer can be sobering: in many instances, we have already surpassed sustainability thresholds, so the accurate answer is: yesterday. Or rather, 20 years ago. But in the absence of these, then *right now!* So, context-based data also embeds signals on the rate of acceleration needed to transform systems to respect thresholds.

A companion dynamic to activation is catalysis, as conceptualized by Daniel Aronson of Valutus. Whereas activation focuses primarily on the principal actor / agent, catalysis focuses on the process of activating others. This mechanism particularly applies to value chains, where a company's own impacts are relatively minor compared to the impacts of its upstream suppliers or downstream customers / consumers. So, catalysis seeks to "catalyze" other players to act in ways that create change across value chains.

Aronson distinguishes between a number of means of internal activation, along a 2-axis matrix ranging from promote to create on the vertical axis and from resources to knowledge on the horizontal axis, resulting in integrating, investing, informing, and inventing. See **Figure 44.**

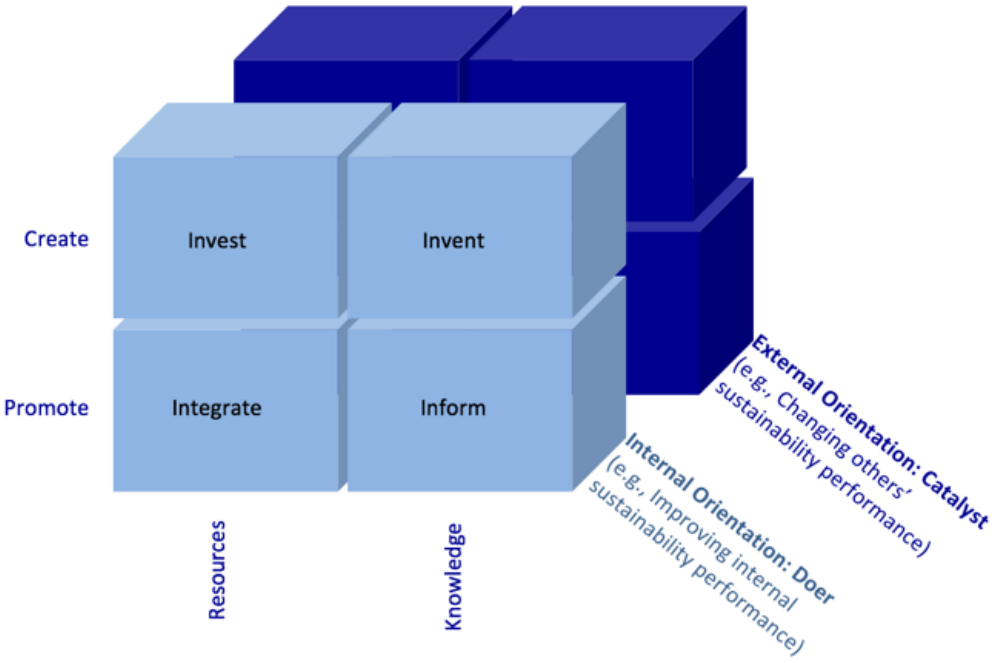



**Figure 44:** Internal Activation. (Source: Daniel Aronson, *Catalytics & Net Positive*, Sustainable Brands New Metrics Conference, 6 December 2016.[152])

To complement this internal focused activation, Aronson posits the dynamic of catalysis, which similarly navigates the same axes, but results in increased use, development / funding, publicizing, and originating. See **Figure 45.**

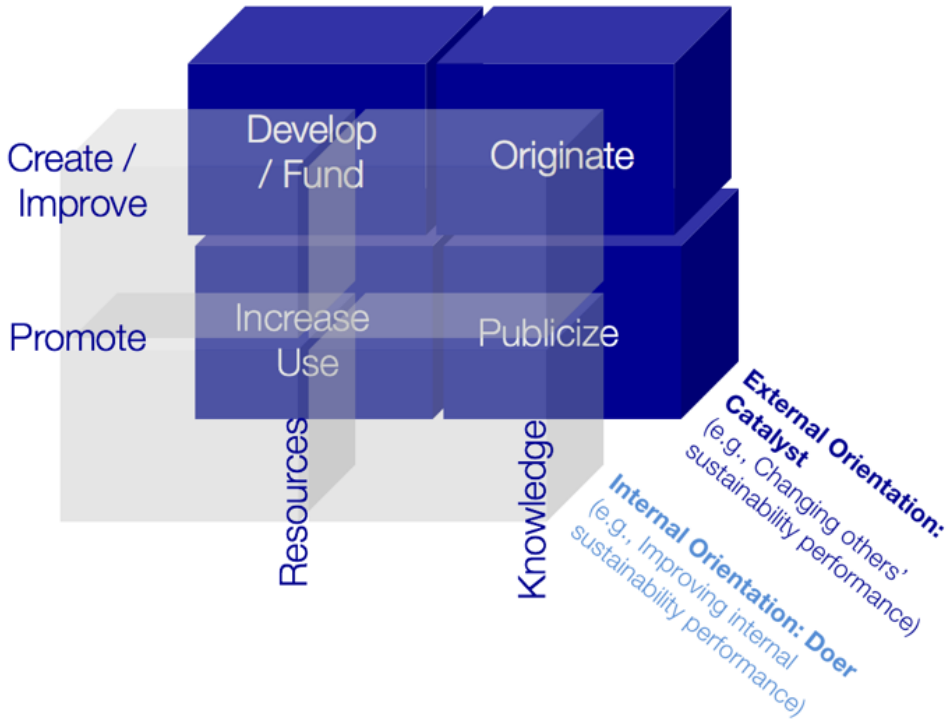



**Figure 45:** External Catalysis (Source: Daniel Aronson, *Catalytics & Net Positive*, Sustainable Brands New Metrics Conference, 6 December 2016.[153])

Catalysis is particularly significant when it comes to acceleration, as it amplifies change organizations make within their own purview by spurring change outside an organization's own scope.

This chapter explores how different context-driven stakeholder constituencies can activate integral data to trigger systems change toward a green, inclusive and open economy.

## 6.1. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: GOVERNMENTS

2015 saw the unveiling of the Sustainable Development Goals (SDGs) and the signing of the Paris Agreement at COP21, both of which require the achievement of global targets, primarily coordinated by governments at the national level – via National Sustainable Development Strategies (NSDS) for the SDGs and Nationally Determined Contributions (NDCs) for COP21, which "create a constructive feedback loop between national and international decision-making on climate change."[154] This in turn requires corporate contributions that align with the level of ambition in various jurisdictions.


**Figure 46:** The UN Sustainable Development Goals (Source: United Nations, *Sustainable Development Knowledge Platform*)

Implementing these global sustainability goals requires data integration amongst nested geographic scopes that flow from global to national to regional (state / province) to local (city). Such coordination poses significant challenges. For example, a recent study by the Gund Institute for Ecological Economics at the University of Vermont identified a "climate information gap" in between National Climate Assessment (NCA) data and State Climate Assessment (SCA) data. "Large-scale analyses like the National Climate Assessment (NCA) contain a wealth of information critical to national and regional responses to climate change but tend to be insufficiently detailed for action at state or local levels," state the Gund researchers in the study. "Many states now engage in assessment processes to meet information needs for local authorities."[155]

This study makes recommendations for "bridging" this information gap based on experience from the

Vermont Climate Assessment (VCA) through the intermediation of state climate researchers, "knowledge brokers," and state and local decision-makers in multidirectional information flows (see **Figure 47**). "When knowledge is coproduced in collaboration between scientists and decision makers it is more likely to be utilized by these authorities (Meadow et al. 2015) and the information process is viewed as more legitimate (Cash et al. 2006)," Galford et al state.[156]

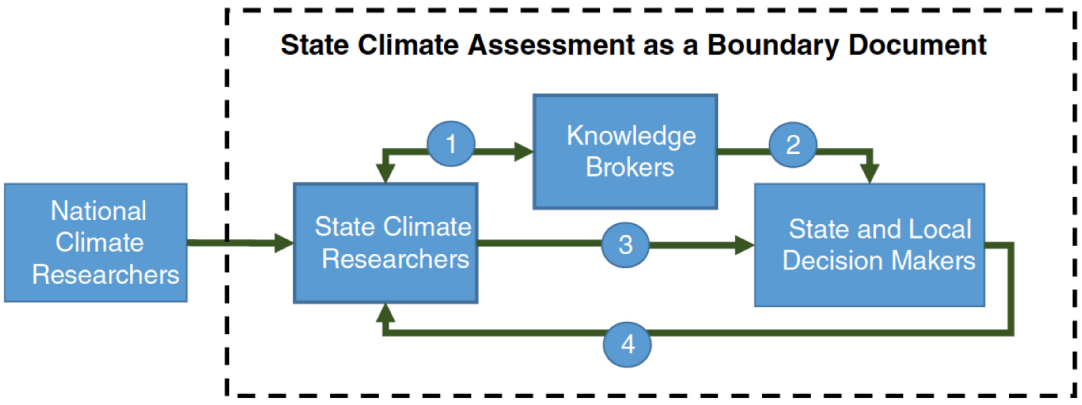



**Figure 47:** Framework for Uptake of Climate Assessment Information by State and Local Decision Makers (Source: Galford et al, "Bridging the climate information gap," *Climatic Change*, 23 August 2016.)

This recommendation, of course, applies more broadly than just to NCAs and SCAs; indeed, it is generalizable to this full *Data Blueprint*, whereby integration gaps are often technical disconnects grounded in human disconnects. In other words, to properly interlink data often requires – or results in – interlinking humans, who are currently siloed.

Also embedded in the contextualized data is the challenge of integrating diverse perspectives on its activation (or lack thereof) toward achieving the Ultimate Ends of well-being, according to one of the Gund researchers (and now Sustainability Coordinator for Cabot Creamery Cooperative) Ann Hoogenboom:

> It seems that there is a gap in how data must communicate not only the context-based standards/thresholds, but also the consequential outcomes from lack of action on human well-being based on the myriad of perceptions of right and wrong, good and bad. In other words, how can the same data be used to respond to competing perspectives to shift disagreements that hinder us from reaching the ultimate ends?[157]

Stated differently, the inherently ethical nature of contextualized data leads to diversity of responses, including the option to choose non-activation based on political bias. In the balance is human well-being, raising the stakes for achieving agreement on the "right" response to the signals contextualized data sends.

### 6.1.1. COUNTRY / COMPANY DATA INTEGRATION GAP

Another integration gap exists around the National Sustainable Development Strategies (NSDS) for the SDGs and Nationally Determined Contributions (NDCs) for the Paris Agreement, which are both managed by public sector experts and officials who are often disconnected from private sector experts

and executives at corporations operating within their jurisdictions. South Africa-based sustainability consultant David Baxter addressed this gap in the Virtual Dialogue on Exposure Draft 1.0 of this *Data Blueprint*:

> There are gaps not only in geographic reporting but also in the methodologies for reporting. Most companies use either the GHG Protocol or ISO14064 to determine their emissions and typically align their data to their financial year end. The South African government will use the IPCC methodology for national emissions for their purposes and work on an annual basis. The various levels of global governance may not have been aligned from the outset; this causes confusion and frustration for companies with respect to, who do they report what information to. Wouldn't it be lovely for all stakeholders to be in sync from the start?[158]

Sustainability consultant Renilde Becque, based in the Netherlands, concurs:

> The standard country and corporate methodologies for consumption-based emissions are very different, with countries calculating on the basis of Environmentally Extended Input-Output (EEIO) and companies on the basis of the GHG Protocol, for example. It wouldn't be doable time/effort wise for a country to go down the GHG Protocol path, while for a company it wouldn't make much sense to use EEOI due to its lack of granularity.
>
> There's some early harmonization efforts underway in Europe on the country level to reach greater consensus as to the preferred EEOI methodology to use and accompanying databases, with several IO databases available and leading to different outcomes if applied to a specific country (>10% different).
>
> Within mandatory carbon reporting exercises in Europe (scope 1 & 2; UK and France for specific companies), no specific methodology is mandated although the usual ones are recommended; nonetheless, it leads to a risk of a certain degree of non-comparability of footprint between companies in the same sector and subject to mandatory scope 1 and 2 and voluntary scope 3 reporting.[159]

The disconnect – with public sector and private sector essentially speaking different languages when it comes to environmental accounting – is concerning. Given that the private sector makes up a significant portion of the environmental footprint, yet the Paris Agreement and the SDGs are accounted in the public sector at a national level, this mismatch is troubling in terms of the promise of achieving either Paris or the SDGs.

## 6.2. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: NGOS

Global anti-poverty NGO Oxfam has long employed evidence-based advocacy in its *Behind the Brands* campaign, which assesses the agricultural sourcing policies of the world's 10 largest food and beverage companies. In 2016, it moved into context-based advocacy when it contracted well-known sustainability consultants Andrew Winston (author of *The Big Pivot*) and Jeff Gowdy to assess the Science-Based Targets on Scope 3 (agricultural supply chain) GHG emissions of General Mills and Kellogg's, since the majority of impact in food producers is in the supply chain – yet supply chain data is the weakest link in the chain, as accessing farm-level data is often arduous and time consuming.

This assessment fits into the larger trend of holding companies accountable for impacts across their full value chains, from upstream sourcing through suppliers to products in the use and end-of-life phases –

and in "reincarnation" through the circular economy. The Science-Based Targets initiative, for example, requires an "ambitious and measureable Scope 3 target with a clear time-frame is required when Scope 3 emissions cover a significant portion (greater than 40% of total scope 1, 2 and 3 emissions) of a company's overall emissions."[160]

Winston and Gowdy give "passing" marks for General Mills' and Kellogg's application of their targets to their agricultural supply chains, with significant caveats:

> For both companies, their work to reduce supply chain emissions is focused on key crops and suppliers, which do make up a large percentage of the supply chain. But the public statements are not entirely clear on whether the GHG targets as stated apply to all suppliers or only those producing the priority ingredients. General Mills' target can more easily be read as applying to all, while Kellogg's target is focused on 75-80% of the suppliers. **Over time, the target would need to apply to the full value chain to remain a science-based target.**
>
> While both companies clearly exceed industry peers in setting ambitious climate mitigation targets and goals that apply to scope 3 supply chain emissions, and have used currently available methods and tools for setting science-based targets (SBTs), there are some caveats that apply. COP 21 adopted a long-term mitigation goal "to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels" which would entail more aggressive cuts in emissions, and **current tools for setting SBTs do not appropriately capture decarbonization pathways for agriculture.**[161]

Winston and Gowdy put their finger on a significant gap – Scope 3 carbon accounting – which is widely perceived as not yet fit-to-task. Researchers have long raised red flags about carbon accounting, particularly in the indirect scopes.[162] For example, a 2013 study found that only 15 percent of European companies studied on GHG emissions disclosures from 2005 to 2009 report them completely, with respect to scope of emissions, type of emissions, and reporting boundary.[163] The researchers also examined potential influences, and concluded that "bringing corporate GHG emissions disclosure in line with recommended guidelines will require either more direct stakeholder pressure or, perhaps, a mandated disclosure regime."[164] Which brings us back to Oxfam, as an exemplary practitioner of evidence-based advocacy as a "context-driven stakeholder."

Such pressure from context-driven stakeholders like Oxfam has the potential to encourage what Winston & Gowdy call "next gen" best practice:

> Setting goals in line with the science … should be a minimum barrier, or floor, for goal setting… We do see a fundamental hurdle to global achievement of the 2-degree mark: some countries, sectors, and companies will clearly go slower on reductions. So we recommend that best practice would mean going even faster and leading value chains and sectors down the decarbonization path. The more aggressive approach would build a buffer zone for emissions reduction performance and, on a value chain level, may actually be more economic. (See best practice recommendation 2 below).[165]

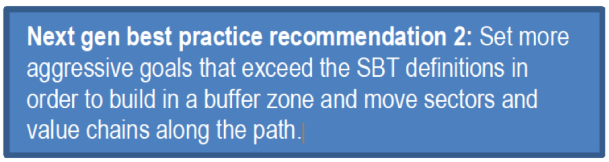



**Figure 48:** Oxfam Behind the Brands Recommendation to Food & Beverage (Source: Winston & Gowdy, *Evaluation of General Mills' and Kellogg's GHG Emissions Targets and Plans*, Oxfam, 2016.)

## 6.3. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: INVESTORS

In addition to tracking goals and progress toward them for discrete areas of impact, such as GHGs in agricultural supply chains, context-driven stakeholders are also asking companies to align their overall business models with future realities based on likely scenarios. For example, Reporting 3.0 *New Business Models Blueprint* Anchor Partner Preventable Surprises is coordinating amongst investors filing shareholder resolutions globally that ask companies to prepare and publish scenario analyses and transition plans to <2°C business models. Preventable Surprises calls this "forceful stewardship" that aligns with fiduciary duties to consider long-term systemic risks and opportunities

Preventable Surprises partnered with Jackie Cook of FundVotes to assess SEC EDGAR NP-X filings on mutual fund proxy voting records to assess which institutional investors voted in support of such <2°C resolutions – and which didn't. In 2015, the Aiming for A coalition (which includes the £150bn Local Authority Pension Fund Forum and the largest members of the £15bn Church Investors Group in the UK) filed <2°C resolutions that resulted in near-unanimous support by fellow investors at both BP (98.3%) and Shell (99.8%).[166] In contrast, nearly identical resolutions in the US received significantly less support in the US in 2016 at ExxonMobil (38.2%) and Chevron (41%).[167]

> Significantly, BP's and Shell's managements recommended support for the resolution, while ExxonMobil not only recommended voting against the resolution, but also petitioned the SEC for permission to omit the resolution in what has been characterized as an "unusually aggressive" effort. This suggests the missing 60% essentially rubber-stamped management's recommendation. Moreover, this 60% almost surely contains institutional investors who voted in support of the Aiming for A resolutions at BP and Shell, which raises significant fiduciary duty concerns. While there may be other explanations, the most logical and likely explanation for this confoundingly inconsistent voting would seem to be: lack of the kind of independent thinking required by fiduciary duties of care and loyalty.[168]

Preventable Surprises launched the #Missing60 campaign to draw attention to this potential hypocrisy, and to encourage investors to support <2°C resolutions in the 2017 proxy season (and beyond.)[169] At the same time, Preventable Surprises also launched a campaign to target utilities with resolutions seeking the publication of transition plans to <2°C business models, while also publishing a transition plan guidance note for utilities.

The Preventable Surprises strategy represents a dual-target of companies to conduct scenario analyses and publish transition plans to <2°C business models, and asset owners & managers to support <2°C scenario analysis / transition plan resolutions. As well, Preventable Surprises plans to assess published plans and business models against templated benchmarks for strong reporting, transition planning and business modeling on a sector basis.

This strategy carries data systems implications on at least two levels:

- First, such advocacy and assessment requires access to data on company practice, policies, plan ning and performance;
- Secondly, the assessment process would create its own collection of source documents to serve as examples, providing an opportunity for archiving these plans into a repository, which in turns spawns engagement opportunities -- for example, crowdsourcing feedback to the plans.

These dynamics and opportunities will be covered in more depth in the Reporting 3.0 *New Business Models Blueprint*.

## 6.4. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: OPEN DATA PLATFORMS

The disparate production of data results in largely dis-aggregated data. For financial data, in most jurisdictions, federal securities regulations and stock exchange listing requirements call for robust disclosure of data, most often submitted to a central repository -- for example, the SEC's EDGAR database in the US. However, sustainability reporting lacks an analogous requirement / mechanism, and the GRI database includes only topline information on reports, not actual indicator-level data.

This dis-aggregation creates a market for data aggregators, such as Bloomberg,[170] and other value-add businesses that must of course gather the data before they can add value. However, this market-based aggregation essentially creates a "class" bifurcation of the audience for this data into those who can and can't afford access to this aggregation. So what results is publicly available data that's not publicly available (at least in an aggregated form.) In particular, this creates barriers for context-driven stakeholders who are most inclined to "activate" the data through advocacy engagement -- namely, NGOs and citizens.

WikiRate, a European Commission-funded non-profit open data platform, is addressing this issue through a pilot project with Reporting 3.0 under the *Data Blueprint*. This pilot project, dubbed DATA-ASC (Data Activation Through Aggregation, Accessibility & Sustainability Contextualization), seeks to demonstrate the value of gathering data into a central, open repository where it can be filtered through context-based metrics and engaged with by diverse stakeholders to conduct evidence-based advocacy.

**DATA-ASC Pilot Project**

*"We need to unlock the power of sustainability performance data, allowing it to be accessed and shared in a variety of new ways...Sustainability data must be liberated from the sustainability reports."*[171]

Michael Meehan, Former Chief Executive, Global Reporting Initiative

*Corporate sustainability data should be placed "within the context of environmental limitations identified by scientific evidence, enabling a more accurate reflection of the company's contribution to sustainable development."*[172]

Ligia Noronha, Director, Division of Technology, Industry and Economics, UNEP

Corporations are producing terabytes of sustainability data, but the full value of this information remains untapped for three key reasons:

- The data is locked in individual company reports and websites or proprietary data bases, hampering easy access, comparison, and collaborative appraisal by stakeholders; and
- Company-level data is largely divorced from the broader ecological and social con

text, inhibiting assessment of company contributions to achieving the Sustainable Development Goals (SDGs) and the COP21 Paris Agreement.
- Stakeholder demand for such context-based data has generally lagged.

The Reporting 3.0 *Data Blueprint* Project seeks to fill this gap with this subproject on Data Activation through Aggregation, Accessibility & Sustainability Contextualization (DATA-ASC). The pilot project comprises three primary components:

- **Aggregate** sustainability data by liberating it from individual company reports, web sites and other sources - making this available on an open, public platform;

- **Contextualize** the data by comparing performance between companies and against science-based targets and thresholds. For example, contextualizing climate data through a carbon metric that compares company-level carbon footprints to their fair share portion of the global carbon budget, applying science-based thresholds aligned with the IPCC goal of limiting global warming to 1.5° - 2° Celsius enshrined in the Paris Agreement (thereby applying the GRI Principle of Sustainability Context);

- **Activate** the data through engagement by context-driven stakeholders conducting evidence-based advocacy, as exemplified by the Oxfam Behind the Brands campaign targeting the "Big 10" food & beverage companies that assessed the science-based targets for GHG emissions of General Mills and Kellogg.[173]

WikiRate and Reporting 3.0 will collaborate on this Pilot Project under the *Data Blueprint*.

The Arabesque S-Ray data platform cited in the previous chapter also has the potential to fulfill this purpose, as it includes open data (as well as proprietary data.) The key is whether there's sufficient perceived value from such information formats by those who would benefit from it.

This points to another realm of public data that's effectively sequestered from view through lack of open aggregation, there is another class of "dark data" as described by CSRHub CEO Bahar Gidwani: "Dark energy, as you probably know from astronomy, is the stuff the binds all the universe together. And yet we don't seem to know very much about it. It's out there, and every part of the universe is affected by it; we feel its gravitational pull." Likewise, he says, "there's a ton of information that's exchanged between companies, and between companies and their government, and sometimes between companies and their employees, that is very interesting from a sustainability point of view but that is not visible outside of those exchanges. That's the dark data. My hope would be that we can make it economically favorable and socially positive, something that's socially demanded even, to have more and more of that data exist."[174]

Assuming there may be valid reasons for some "dark data" to be behind firewalls (or at least assuming that the data will remain "dark" for the foreseeable future), are there ways to create smart interlinkages that retain the confidentiality of dark data while also enabling engagement with light data?

## 6.5. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: XBRL

XBRL -- or eXtensible Business Reporting Language, a tagging taxonomy system for tagging corporate data invented in 1998 -- has shown promise for revolutionizing sustainability reporting for over a decade, as evidenced in this SocialFunds article from April 2007.

> "If you tag it, it will be used," said Bill Cunningham, founding president of socially responsible investing (SRI) advisory firm Creative Investment Research, riffing on Kevin Costner's "if you build it, they will come" line from *Field of Dreams*. "If it is used, it will encourage companies to consider the social and environmental impact of their business operations. If we want a set of social and environmental data that is as good as the financial data, we need to codify the procedures for obtaining it," Mr. Cunningham told SocialFunds.com.
>
> Mr. Cunningham has long recognized the value of applying XBRL to corporate social and environmental data. He filed a letter with the SEC in October 2006 that included a visual framework for organizing such data. He also sent a letter to [then SEC] Chairman Cox ... suggesting "the XBRL initiative create a subclass of tags specifically for data items of interest to social investors [such as] environmental impact and carbon emission related data, diversity related data, supply chain data... [175]

GRI has released taxonomies for its Guidelines in 2006 (for G3), in 2012 (for G3.1), and in 2013 (for G4, G3.1 and G3).[176]

> "Creating the taxonomy is the easy part, in a way, because XBRL is a relatively flexible language--XBRL is just a way to label things, so you can put almost anything you want into XBRL," said Sean Gilbert, GRI's director of technical development. "The big challenge for bringing XBRL to sustainability information is that you have to account for the fact that the information won't necessarily be presented in the exact same order as the [GRI] guidelines."[177]

However, a number of organizations -- including SAP, The World Bank, Ernst & Young, and Deloitte -- have issued XBRL-tagged GRI-based reports. During that decade that GRI XBRL Taxonomies have been available, there have been 10 GRI-based reports that have employed XBRL tagging, according to the GRI Website.[178]

Other sustainability-oriented organizations have extolled the virtues of XBRL-tagged data. For example, in 2012, CDP released a Climate Change Taxonomy, and the next year it commissioned a study by Jackie Cook of Climate Risk Disclosure to conduct an analysis asking the question, *Can XBRL tagging improve climate risk disclosure in SEC filings?*[179]

> An analysis of the climate change disclosures made by large oil and gas companies in their 2012 annual SEC filings points to the potential value of a structured approach to securities-related disclosure of the risks and opportunities posed by climate change. We considered the quality of SEC climate disclosures in terms of structure, completeness, comparability, accessibility and found that the present model of unstructured narrative disclosure is not optimal for large-scale consumption of this information by investors and analysts.

## 6.6. CONTEXT-DRIVEN STAKEHOLDERS & DATA ACTIVATION: BLOCKCHAIN

While blockchain technology is most closely associated with Bitcoin, its potential ranges much further than cryptocurrency. In the realm of corporate sustainability data, it shows promise for tracking transaction chains to enhance accountability and enable contextulalized assessment of impact. "Because of its distributed nature, a blockchain enabled social contract for sustainability inherently provides transparency, neutrality, near zero transaction costs, and real-time insight into sustainability," say Neils Faber and Henk Hadders in a concept paper.[180]

> We consider new business models to be an instantiation of some first, important steps towards such new social contracts for sustainability. New business models aim to create multiple values simultaneously (Jonker, 2014). Also, they take shape around a set of constituents (or stakeholders) who together form a community that supports them. As such, new business models seem to be a replacing traditional organizations and institutions. In this transition, the trend of 'disintermediating' is sensed; people find new, true connections and relationships with other people to solve problems together in a direct way, thereby surpassing old mainstream bureaucratic and power institutions like political parties, banks, local governments etcetera. The formation of new social contracts in practice seems to become apparent in new, nonhierarchical ways of organizing.
>
> Two conditions are identified that need to be satisfied for the new social contract for sustainability to come into effect. First, the new social contract requires some instrument that enables the accounting and reporting of multiple values i.e., the impact of activities on multiple capitals, by and between contract parties. Second, this instrument also should facilitate coordination and decisionmaking amongst these parties in relation to these capitals
>
> The emerging paradigm shift towards multicapital accounting in combination with the blockchain technology may lead to a distributed public ledger (Swan, 2015), where the pro rata allocations of (private, public and common) nonfinancial vital capitals to human individual and collective actors from civil society, state, market or scientific community will be administered, together with their transactions in use, executed both directly or via smart contracts. These smart contracts need to deal with multiple values simultaneously and enable decision-making and coordination. More precisely, they need to meet the criteria of: (i) materiality of impacts on vital capitals; (ii) assess performance relative to standards, and (iii) enforce strong sustainability. Here, we address how blockchain technology can be used to meet these criteria.[181]

What is the viability is creating a blockchain system for tracking the sustainability of transactions? What are the data, infrastructure, business, investment, and political needs of achieving such a vision?

To explore these questions, Reporting 3.0 is launching two pilot projects integrating context-based, multicapital accounting into blockchain: one with Noorden Duurzaam and Radboud University in the Netherlands, and one with Guard Global.

**Blockchain for (Context-Based) Sustainability: Place-Based Pilot Project**
Noorden Duurzaam and Radboud University

The goal of this project is to research, propose, and test how blockchain technology can integrate context-based sustainability performance metrics into multicapital accounting and reporting.

Organizations are now mostly judged by financial metrics disclosed in traditional reports and securities filings, which are highly structured and regulated, in contrast to sustainability reporting, which remains largely voluntary and much less structured. Reporting 3.0 aims to change this by designing a framework for context-based multicapital accounting and reporting. In addition to disclosing impacts on financial and economic capital, Reporting 3.0 also advocates for reporting on impacts on the multiple capitals (natural, human, social, built, and financial) within their carrying capacities. Only a framework that looks at all these capitals in the context of their mutual relationships can help determine how much value an organization creates (or depletes).

The discovery of double entry bookkeeping made companies with capital stock possible, and with that monocapitalism. Context-based, multicapital accounting will help create a more sustainable form of multicapitalism.

The advent of blockchain technology enables the emergence of a shared ledger for "triple entry accounting" - where each transaction is registered at the two parties and in the public ledger. The trustworthiness and transparency of a blockchain are promising aspects when dealing with accountability.

Blockchain-enabled multicapital accounting can create a whole new ecosystem of organizations and institutions, just like double entry bookkeeping has done.

Deliverables

Reporting 3.0 will launch this pioneering pilot project, with its first phase focused on further exploring the above ideas. Within a year's time, the project aims to produce:

- **Proof of Concept (PoC);** a (technical) proof that context-based, multicapital accounting on a blockchain is a feasible idea in principle and practice;
- **Pilot Description:** a focused project that will be complete (and big) enough to apply the PoC in a meaningful way, but also concrete (and small) enough to execute and evaluate in a period to be determined;
- **Stakeholder involvement**

Workstreams

- **Pilot-localisation:** Localising the future place-based pilot (in two countries). Reporting 3.0 has close ties with the society Noorden duurzaam in the Netherlands, so it makes sense to look there for a suitable case;
- **Case Description:** Description of the case in term of the Blueprints (and with coop

eration) of the Reporting 3.0 movement;

- **Proof of Concept:** Selecting a suitable form of blockchain-technology and drafting a theoretical and technical proof (proof of concept);
- **Implementation Plan:** Drafting of a project plan and a declaration of intentions in which all parties will implement and use the selected blockchain technology in a trial period to be determined.

Implementation

The project is closely aligned with the issue of value creation and sustainability in the Northern part of The Netherlands and the development of a "New Economy for the Common Good". Sustainability asks for us to live with the resources we have, within scientific and ethical boundaries. The performance and impact of many actors and organizations on the resources which others need for their well-being is not sustainable. Reporting 3.0 wants to contribute to a better infrastructure and method of sustainability measurement and reporting by using a "Capital Theory Approach" and "Measurement in Context": Context based Sustainability (CBS).

The project wants to create change and corresponding innovations in the domains: sustainability measurement and reporting, performance management, social contracts and multicapital scorecards, knowledge management, the new internet (of things), business ethics, new business models and governance system (with a regeneration of the Commons). The primary target group are organizations in the broadest sense of the word.

A central issue is the transition towards a place-based "shared impact measurement" with a multicapital social contract and scorecard. It builds upon the blockchain technology to be able to develop a distributed governance model for decentralized value creation and distribution with a fair allocation, distribution and monitoring of available resources within a living social system. This solution is thereby of great interest for all citizens, corporations, government and science.

Innovation

The social contract between Market, State and the Commons is broken. We need a new social contract for sustainability and a new inclusive, regenerative economy. This also begs for a new ecosystem around sustainability and for breakthrough projects around data, reporting, accounting and new business models. Central is the transition towards a context-based and multicapital approach to sustainability and integral accounting and reporting.

The project is aimed at (a) the exploration of the use cases of multicapital blockchain(s) around the integration and contextualization of capital resources and (b) the use of distributed blockchain-enabled smart (social) contracts. The implementation of multicapital accounting in blockchain technology has not yet been done before.

This Reporting 3.0 Blockchain Pilot Project builds upon and is connected with the following local and international developments:

- **New economy;** Via the University of Groningen and Radboud University the project is connected with knowledge and research groups focused on new circular economies, new business models and the development of a multicapital scorecard and social contract;
- **Sustainability;** The project is standing in the tradition of Northern initiatives like NIDO, CODIN, de WaddenAcademie and Noorden Duurzaam (and here closely founded and connected with the Northern Business world). The project builds upon the method developed by McElroy (University of Groningen) of Context-Based Sustainability and is closely connected with the international "Sustainability Context" movement. The project will take place under the umbrella and closely aligned with the Repirting 3.0 movement.
- **Blockchain;** The project is via ThesisOne closely connected with the growing community of Groningen entrepreneurs and creative breeding places with experience and know how around Ethereu, smart contracts etc. It is not without a reason that the European Blockchain Hackathon took place in the Big Building in Groningen.

Knowledge dissemination.

The outcome of the project will be open-source. A website will be created where the progress of this project can be followed and results are shared publicly. Content will also be added to the Internet Archive. Specific knowledge dissemination will take place with Universities and other knowledge institution. Also plans will be developed to create a *R 3.0 Sustainability Blockchain Academy* to help educate the general public and business organizations.

Similarly, Guard Global, a corporate sustainability data firm, is piloting a blockchain implementation geared to the investor community.

**Blockchain for (Context-Based) Sustainability: Investment Pilot Project**
Guard Global

To automate the fast, accurate and assured incorporation of non-financial information into the Sustainable Investing process, it is imperative to use standardized formats, techniques and methodologies for reporting both financial and non-financial data. The two must work together on a level playing field.

As an example, three approaches have been identified and used to illustrate how potential investors are provided with clear, trusted non-financial and financial information at the point of making a Sustainable Investment decision. It must however be noted that even though the technologies exist today, they have not been exploited to maximise their beneficial use. The three approach, along with their respective advantages are:

- XBRL (e.g. GRI G4 Taxonomy developed by Deloitte)
  - Provides a structured environment where all sustainability reporting information is precisely tagged and allows storage and retrieval of the information in various digital formats
  - Enables the exaction and comparison of associated information over multiple reporting periods
  - Allows the automated comparison and analytics of relevant pieces of financial and non-financial information in an integrated way

- Blockchain technology (e.g. currently available, open-source, decentralised infra structures)
  - Ensures assurance of information viewed by the user
  - Trusted smart-contracts can be agreed between the information providers and consumers
  - Facilities the traceability and auditing of information provided
  - Blockchain public/private keys can be embedded directly into XBRL fields as required and thus allow Blockchain utilities to be used in conjunction with reports
  - Low cost, open-source blockchain infrastructures are already available for use with XBRL such as cryptocurrencies

- Real-time data feed (e.g. Bloomberg)
  - Provides fast, reliable, non-financial and financial information to be distributed, in the form of real-time feeds, to all relevant stakeholders simultaneously
  - Can distribute structured non-financial and financial information (incorporating XBRL and Blockchain technologies)
  - Applications can be developed to consume data from and produce value-add date to the feeds – for further dissemination

The following example shows how online Tear-Sheets developed by an investment management firm can provide investors with combined or integrated financial and non-financial information. The diagram below illustrates the flow of non-financial and financial information in a structured, trusted way from organisations seeking investment to potential investors via the investment management firm:

- The investment firm can engage on subjects including corporate governance, the environment, transparency, remuneration, health & safety, and human rights in a more collaborative and trusted manner with organisations seeking investments and potential investors
- Engagement processes are made more efficient and speedy by getting companies to report directly through online tools conforming to GRI, CDP and other standards, generating comparable and reusable information and then making the information available through feeds
- Faster and more accurate tracking and monitoring of Impact Investment and Socially Responsible Investment (SRI) funded projects. These can include:
  - Calculation of Investment Rates of Returns (IRR)
  - Analysis of Social & Environmental Profit and Loss account (SEP&L)
  - Easier automated incorporation of ESG ratings into Credit Analysis Tear-Sheets

- Control and management of changes in ESG information requirements in Tear-Sheets across large numbers of companies can be performed quickly and accurately with minimised human intervention.

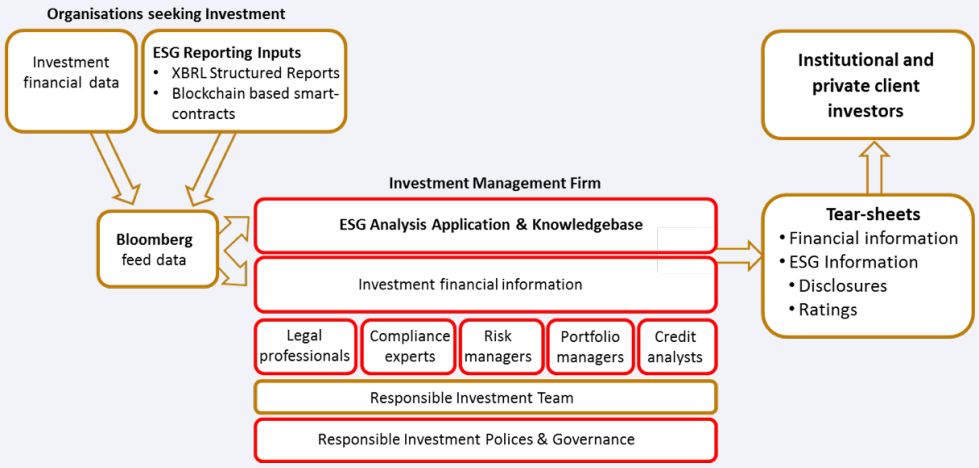



**Figure 49:** Blockchain for context-based sustainability tracking in investment value chains. (Source: Jiro Olcott, Guard Global.)

Many quick-wins that can be realised by developing an application that is able to readily consume the ESG feed data provided by firms like Bloomberg. These include:

- The Rapid development of custom reports for both internal and external organisations

- Adjust ESG aspects according to different clients (and other stakeholders) in different countries having differing views on Responsible Investment themes:
  - Fine-tune ESG disclosures and values according to ESG factors that may be interpreted differently depending on the specific circumstances of an investment case: Client/culture, geographic location/local regulations

- Facilitate reporting engagement and accuracy with External Fund Managers:
  - Standardised, single point of access of sustainability reporting for External Managers
  - Standardise reporting of Carbon Foot printing:
  - Standardise information collecting: Scope 1,2 & 3
  - Make comparisons against KPIs on emissions reductions
  - Track emissions reduction targets and goals
  - Set uniform standards for Scope 3 emissions
  - Develop impact models for possible introduction of carbon tax/trading schemes

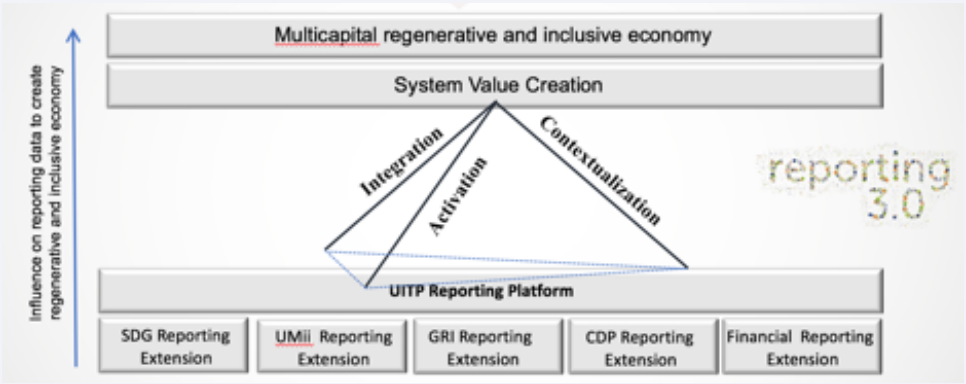



**Figure 50:** Blockchain implementation for context-based sustainability in investment value chains.

## 6.7. IMPLICATIONS OF ACTIVATION, CATALYSIS & ACCELERATION

Most discussions of data overlook the purpose of data: which is to inform human decision-making. This Reporting 3.0 *Data Blueprint* differs, by placing the human decision-maker at the core, one of three key focal points of data architecture.

The implications are significant, as this approach essentialy "bakes" into its process a consideration of the scalability of its solutions, calling for assessment of the effectiveness of "activation" of those directly accountable for their primary impacts, as well as "catalysis" of those more indirectly accountable yet possibly more significant as this indirect mechanism holds the potential to influence exponentially.

And the ability to accelerate solutions is key at this historical juncture, as the problems stemming from corporate impact rise to the scale of geologic epochs (direct and indirect corporate impacts are largely responsible for entering the Anthropocene.) So the urgency of scaling up solutions is commensurate with the urgency of the problems.

### 6.7.1. CONSEQUENCES FOR THE REPORTING REGIME

The reporting regime bears primary responsibility for entrenching the current incrementalism, and so also bears accountability for shifting itself toward transformative influence. The focus on "activation" requires reporting entities to look beyond their external audience, and additionally focus on the implications for their own actions and behaviors. In other words, the act of reporting holds potential to "activate" transformative change for the reporting company itself.

A properly designed and enacted reporting regime also, of course, holds potential for influencing the external audience to transform itself as well, via catalysis.

The act of transformation is accompanied in significance with the rate of transformation, as the problems we collectively face are time-bound in their exposure of successful solutions.

### 6.7.2. CONSEQUENCES FOR LEADERSHIP BEHAVIOR

Leadership in data architecture is no longer passive, but rather requires active attention to the outcomes, impacts, and beneficial / detrimental nature of reported information. Therefore, leaders will focus not only on their own actions and accountability, but also on their power to influence and catalyze change in others in their spheres of influence.

## 6.8. RECOMMENDATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Identify opportunities to activate sustainability progress within direct spheres of influence<br><br>2 – Identify opportunities to catalyze sustainability progress through indirect spheres of influence |
| ADVOCATE | 1 – Harmonize context-based multicapital data across geographic scopes, from global to national to regional to local<br><br>2 – Reconcile / harmonize between public sector and private sector approaches and methodologies for multicapital contextualized data<br><br>3 – Use open data platforms to display & benchmark company-level performance across multiple capitals against sustainability thresholds<br><br>4 – NGOs should embrace evidence-based, context-driven advocacy, and investors should embrace forceful stewardship |
| ACCELERATE | 1 – Investors can drive demand for multicapital, context-based blockchain implementations that track financial & sustainability performance across value chains<br><br>2 – Track regional sustainability impacts using blockchain implementations that enact smart social contracts for preserving common capital resources<br><br>3 – Set more aggressive goals than simply aligning with sustainability thresholds to build buffer zones<br><br>4 – Support <2°C scenario analysis and transition planning to <2°C business models |

### 6.8.1. REPORTING STANDARD SETTERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Add focal attention to the impacts of reporting, both for the reporting entity and its primary stakeholders / rightsholders, as well as for less direct impacts that nonetheless hold scalable transformative potential |
| ADVOCATE | 1 – Use open data platforms to display & benchmark company-level performance across multiple capitals against sustainability thresholds<br><br>2 – Expand the scope of attention to include not only the reporting entities but also their sphere of impact and influence in their ability to drive change. |
| ACCELERATE | 1 – Attend to scalability of reporting solutions across both time (pace) and space (reach). |

### 6.8.2. GOVERNMENTS, LEGISLATORS AND MULTILATERIAL ORGANIZATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Enhance relationships with those in the reporting community to build deeper partnership in identifying scalable solutions |
| ADVOCATE | 1 – Harmonize context-based multicapital data across geographic scopes, from global to national to regional to local<br><br>2 – Reconcile / harmonize between public sector and private sector approaches and methodologies for multicapital contextualized data |
| ACCELERATE | 1 – Governments can use legislative, regulatory, and other “softer” mechanisms to enhance the scalability of reporting solutions. |

### 6.8.3. CORPORATIONS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Identify opportunities to activate sustainability progress within direct spheres of influence<br><br>2 – Identify opportunities to catalyze sustainability progress through indirect spheres of influence |
| ADVOCATE | 1 - Reconcile / harmonize between public sector and private sector approaches and methodologies for multicapital contextualized data |
| ACCELERATE | 1 - Set more aggressive goals than simply aligning with sustainability thresholds to build buffer zones |

### 6.8.4. INVESTORS & BROADER STAKEHOLDERS

| STAGE | RECOMMENDATION |
|---|---|
| EDUCATE | 1 – Investors and other broad stakeholders need to build awareness of their significant influence in driving change in reporting and the chains / cycles of impact / influence. |
| ADVOCATE | 1 – Investors can drive demand for multicapital, context-based blockchain implementations that track financial & sustainability performance across value chains<br><br>2 – Investors should embrace forceful stewardship<br><br>3 – NGOs should embrace evidence-based, context-driven advocacy |
| ACCELERATE | 1 – Support <2°C scenario analysis and transition planning to <2°C business models |

## 7. CONCLUSIONS

*We face an existential risk to our survival from human-induced climate change. That is to say, a risk with large negative consequences where an adverse outcome would annihilate life or permanently curtail its potential. The time for action is running out… At the core of the crisis is our model of economic growth, and globalization, as well as the failure of governments to take adequate and timely action… The present path of slow, incremental improvements in energy and resource efficiency, the "greening" of the economy and reliance on markets alone, are not enough: we need rapid transformational change. Our leaders must be held accountable for their inaction; they should take real action now to preserve the prospects, safety and hopes of our children, and of succeeding generations throughout the world. The future of humanity is at stake. We must safeguard it with new initiatives as current processes are not working fast enough.*
Expert Group Call to Action, The Rome Symposium on Climate Change, May 2017[182]

The quote opening this chapter isn't directly about data; it's more about contextualization, activation, acceleration – and transformation. This is purposeful, because this *Data Blueprint* isn't so much about data, *per se*, as it is about getting the right design so our information systems tell us consistently that our current efforts simply aren't anywhere near sufficient in the face of the *existential* crises we face. Interpreted accurately, through clear eyes, the data tell us that we are on a suicide path. But the prevailing data, actions, mindsets, and paradigms, pay little heed to the cold facts of a warming planet.

### 7.1. OVERALL CONCLUSIONS

The primary conclusion of the Reporting 3.0 *Data Blueprint* is that the current data infrastructure in corporate financial and sustainability reporting has largely cemented in place the status quo of incremental change, and thus is not fit-to-purpose for countering the existential threats we face. What's needed instead is to spur the emergence of truly regenerative, green, inclusive and open economy, given the challenges. The Blueprint therefore proposes a general specification for a data architecture and information systems that align with the "future we want" of regenerative economics and distributive inclusion.

More specifically:

- **Integration** of the multiple capitals is needed, in order to paint a holistic picture that accounts for the dynamic interactions and synergies between these capital resource stocks and flows.
- **Contextualization** of company impacts at the micro level, industry and portfolio impacts at the meso level, and systemic impacts at the macro level is needed, in order to reveal the influence of micro- and meso- level actions of systems level changes, which is the most important scale of change. Nature works in cycles that preserve stocks and enable ongoing flows, so data must track this and information systems must mimic these dynamics that can nurture ongoing viability *ad infinitum*, instead of our current approach of triggering exponential erosion of stocks and flows.
- **Activation** of contextualized, multicapital data is needed, by we human agents who are called to act by the meaning embedded in such information. These responses need to be **accelerated** to meet the pace and scale of action demanded by such data. And not only direct activation, but also indirect **catalysis** is needed, to migrate transformative change across value chains and cycles.
- **Positive mavericks** must proliferate to shift from being an exception to becoming the norm, acting with the integrity demanded by the science and ethics of our current global situation.

- **A seamless flow** of contextualized, multicapital data needs to be designed, engineered, and implemented, such that the right information is available at the moment and place it's needed to feed the needed decisions.

## 7.2. NEXT STEPS

The *Reporting Blueprint* is one of the four Blueprints in the work ecosystem of Reporting 3.0. Together with the *Data Blueprint* they are the first two Blueprints available by end of May 2017. The *Accounting Blueprint* is expected to be released in December 2017, the *New Business Model Blueprint* is expected for release in March 2018. After the release of all 4 Blueprints, Reporting 3.0 will produce a summary synthesis report and will lay out the process for the next round of Blueprint elaboration. We expect the field covered by our work ecosystem to be of vibrant change due to many factors: political climate, data explosion, increasing clarity about the design of a green, inclusive and open economy, increased level of convergence and collaboration, and a growing Reporting 3.0 community wanting to actively participate.

In the summer of 2017 Reporting 3.0 will bind feedback processes on the existing Blueprints together into one major program, the Reporting 3.0 Beta Testing Program. The start of a second round of Blueprints, taking into account to potentially add additional Blueprints, is expected to start in 2019.

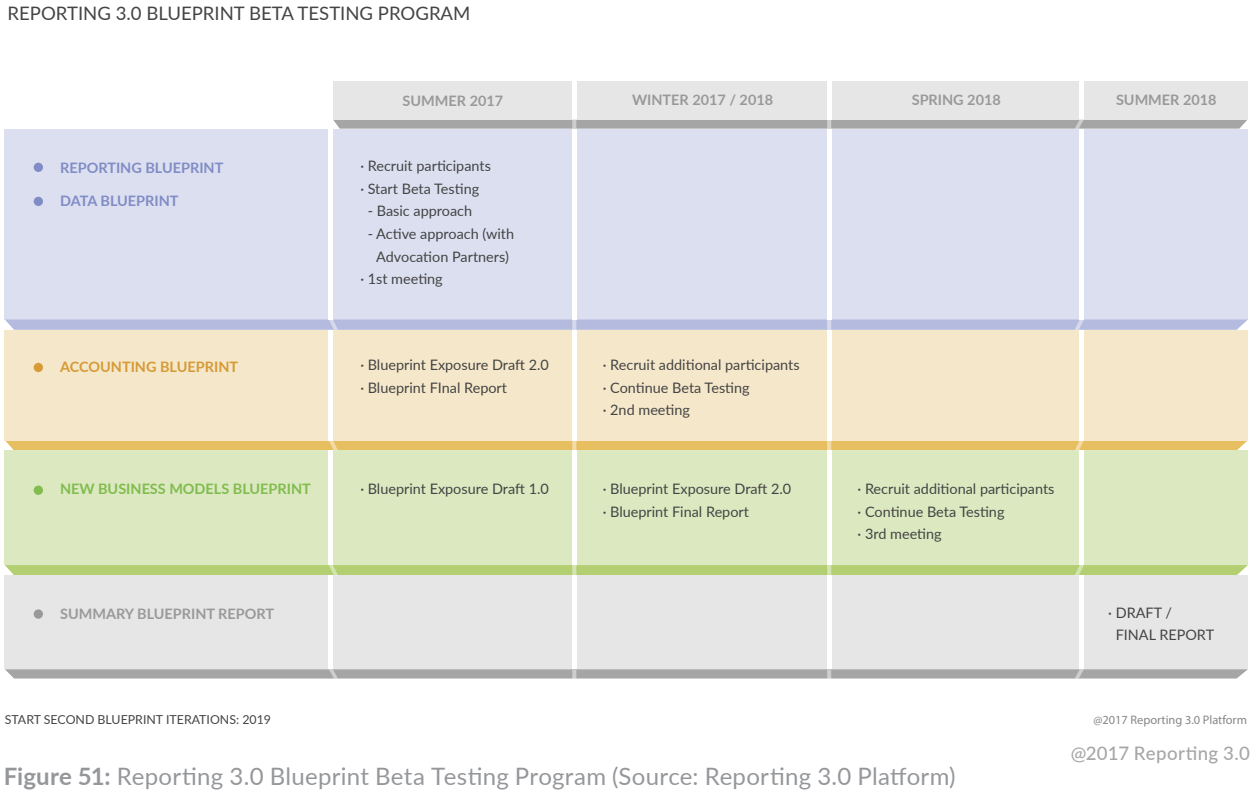





**Figure 51:** Reporting 3.0 Blueprint Beta Testing Program (Source: Reporting 3.0 Platform)

Parallel to the further development of the Blueprints Reporting 3.0 is also clustering interest in working with us in various additional ways:

- We see a lot of interest from academic institutions to further collaborate with us, based on their individual research or as an additional area of future research. We are offering an open oppor-

tunity to join the ‘Reporting 3.0 Academic Alliance’ and seek various opportunities for joining existing projects of Reporting 3.0 or designing specific areas of mutual interest for students and researchers.

- We are offering interested parties to become a part of the ‘Reporting 3.0 Advocation Partner ship’. Advocation partners can join Reporting 3.0 events free of charge, can join projects, and will have an 80/20 revenue share in supporting the active approach of the Beta Testing Program with their clients, while we are offering an 20/80 revenue share in support of fundraising the necessary resources Reporting 3.0 needs to further prosper institutionally and programatically. Advocation partners commit to organize a regional event for Reporting 3.0 during each Blueprint Development Cycle and potentially offer meeting space for working groups where feasible and needed.

- Additional R&D trajectories, alliances and collaborations with various sectors are envisaged, e.g. governments, the investor community, multilateral organizations and civil society.

## 8. ONLINE REPOSITORY

During the development process of the Blueprints Reporting 3.0 has been developing a repository structure including all publicly available resources that supported the development of the blueprints. In total, more than 1.000 documents were scanned, assessed and clustered. This process will continue during the full Blueprint development cycle. Reporting 3.0 aims at making the resources available to put the repositories online in the near future.

# 9. ANNEXES

## 9.1. AUTHOR

As an internationally recognized expert on ThriveAbility, Sustainability Context, and Online Stakeholder Engagement, Bill Baue designs systemic transformation at global, company, and community levels. A serial entrepreneur, he's co-founded a number of companies and initiatives:

- ThriveAbility Foundation, which is designing a multi-capital operating system for a regenerative, inclusive global economy;
- Convetit, an online stakeholder engagement platform;
- Sustainability Context Group, a global community of thought leaders and practitioners who advocate for Context-Based Sustainability; and
- Sea Change Radio, a globally syndicated podcast on sustainability.

Baue serves on the Steering Board and Operations Team of the Reporting 3.0 Platform, which is curating a multi-stakeholder, collaborative, pre-competitive space to co-create the design needs and pilot new best practices for future-fit reporting and help catalyze the trigger-function of reporting to spur the emergence of a regenerative and inclusive global economy.

Baue has worked with diverse organizations including AccountAbility, Allstate, Audubon, Ceres, Cabot Creamery Cooperative, GE, Harvard, Merck, UNCTAD, UNEP, Walmart, Worldwatch Institute. He serves on the Technical Advisory Group of the Science Based Targets initiative and is a Senior Advisor to Preventable Surprises. He blogs for Sustainable Brands, where he also co-curates the #NewMetrics Channel.

He lives in a cohousing community in the Pioneer Valley of Western Massachusetts with his wife Jiyanna, where his daughters Clara, Emma, and Aoife visit on college breaks.

## 9.2. WORKING GROUP PROCESS & ONLINE VIRTUAL DIALOGUE

| | |
|---|---|
| Felipe | Arango |
| Scott | Barlow |
| David | Baxter |
| Renilde | Becqué |
| Claudine | Blamey |
| Roland | Bulten |
| Louis | Coppola |
| Jed | Davis |
| Sheer | El Showk |
| Niels | Faber |
| Susanna | Fieber |
| Glenn | Frommer |
| Julie | Gorte |
| Noam | Gressel |
| Beat | Grüninger |
| Henk | Hadders |
| Julia | Hameister |
| Leah | Haygood |
| Christian | Heller |
| Reiner | Hengstmann |
| Josephine | Herzig |
| Gerd | Hofielen |
| Ann | Hoogenboom |
| Paul | Hurks |
| Rob | Jacobs |
| Vishal | Kapadia |
| Bernd | Kasemir |
| Mairead | Keigher |
| Hala | Khalaf |
| Bruce | Klafter |
| Brett | Knowles |
| Marek | Kosycarz |
| Monika | Kumar |
| Zoe | Le Grand |
| Brendan | LeBlanc |
| Sanford | Lewis |
| Li | Li |
| Désirée | Lucchese |
| Laren | Maas |
| Ethan | McCutchen |
| Mark W. | McElroy |
| Hans | Meves |
| Christian | Meyn |
| Richard | Mills |
| Michiyasu | Nakajima |
| René | Orij |
| Dan | Osusky |
| Mirella | Panek-Owsiańska |
| Penny | Prasad |
| Martina | Prox |
| Jakob | Raffn |
| Kurt | Ramin |
| Eric | Reynolds |
| Eric | Reynolds, |
| Julia | Robbins |
| Ellen | Santamaria |
| Christina | Schampel |
| Cory | Searcy |
| Flo | Segura |
| Neil | Shorter |
| Maria | Sillanpaa |
| Claire | Sommer |
| Martin | Staeheli |
| Dominic | Tantram |
| Kees | Tesselhof |
| Peter | Teuscher |
| Hanna | Thorsteinsdottir |
| Cornis | Van Der Lugt |
| Simon | van Renssen |
| Ambreen | Waheed |
| Linda | Wedderburn |
| Karen | Wendt |
| Allen | White |
| Martin Z. | Wilderer |
| Bob | Willard |
| Robin Lincoln | Wood |
| Jennifer | Woofter |
| Thomas | Wunder |
| Natan | Zaidenweber |

## 9.3. WORKING GROUP MEMBERS

The Working Group members of the Reporting Blueprint in alphabetical order:

| | |
|---|---|
| Bill Baue | Convetit, Sustainability Context Group |
| Louis Coppola | Governance & Accountability Institute |
| Jed Davis | Cabot Creamery |
| Niels Faber | Radboud University |
| Johannes Friedrich | World Resources Institute |
| Leo Bonanni | Sourcemap |
| Julie Gorte | Pax World Investments |
| Jeff Gowdy | PivotGoals |
| Henk Hadders | University of Groningen |
| Ann Hoogenboom | Cabot Creamery |
| Sheer El Showk | Lore AI |
| Vishal Kapadia | WikiRate |
| Tariq Khokhar | World Bank |
| Monika Kumar | World Bank |
| Brendan LeBlanc | EY |
| Sanford Lewis | Sanford J. Lewis Attorney |
| Mark McElroy | Center for Sustainable Organizations |
| Jiro Olcott | Guard Global |
| Stephen Russell | World Resources Institute |
| Emma Stewart | Autodesk |
| Andrew Winston | PivotGoals |

## 9.4. STEERING BOARD

Members of the Reporting 3.0 Steering Board in alphabetical order:

| | |
|---|---|
| Bill Baue | Convetit, Sustainability Context Group |
| Claudine Blamey | The Crown Estate |
| Sarah Grey | International Integrated Reporting Council |
| Mairead Keigher | Shift |
| Brendan LeBlanc | Ernst & Young |
| Stephen Russell | World Resources Institute |
| Peter Teuscher | BSD Consulting |
| Ralph Thurm | A\|HEAD\| ahead |
| Cornis Van der Lugt | Stellenbosch University |

## 9.5. ABOUT ONCOMMONS

OnCommons is a Berlin-based not-for-profit, legally registered as a gGmhH (gemeinnützige Gesellschaft mit beschränkter Haftung), aiming at making contributions to the development of transparency, disclosure and collaboration through global public goods. Reporting 3.0 is the flagship program of OnCommons.

OnCommons carries out research, development, testing and training activities aimed at three major dissemination levels: educate (for starters in the various focus areas), advocate (for implementers of relevant approaches in organizations) and accelerate (for those convinced of external scaling of necessary solutions deemed at increasing the micro-meso-macro links designing a green, inclusive and open economy).

ON COMMONS WORK ECOSYSTEM

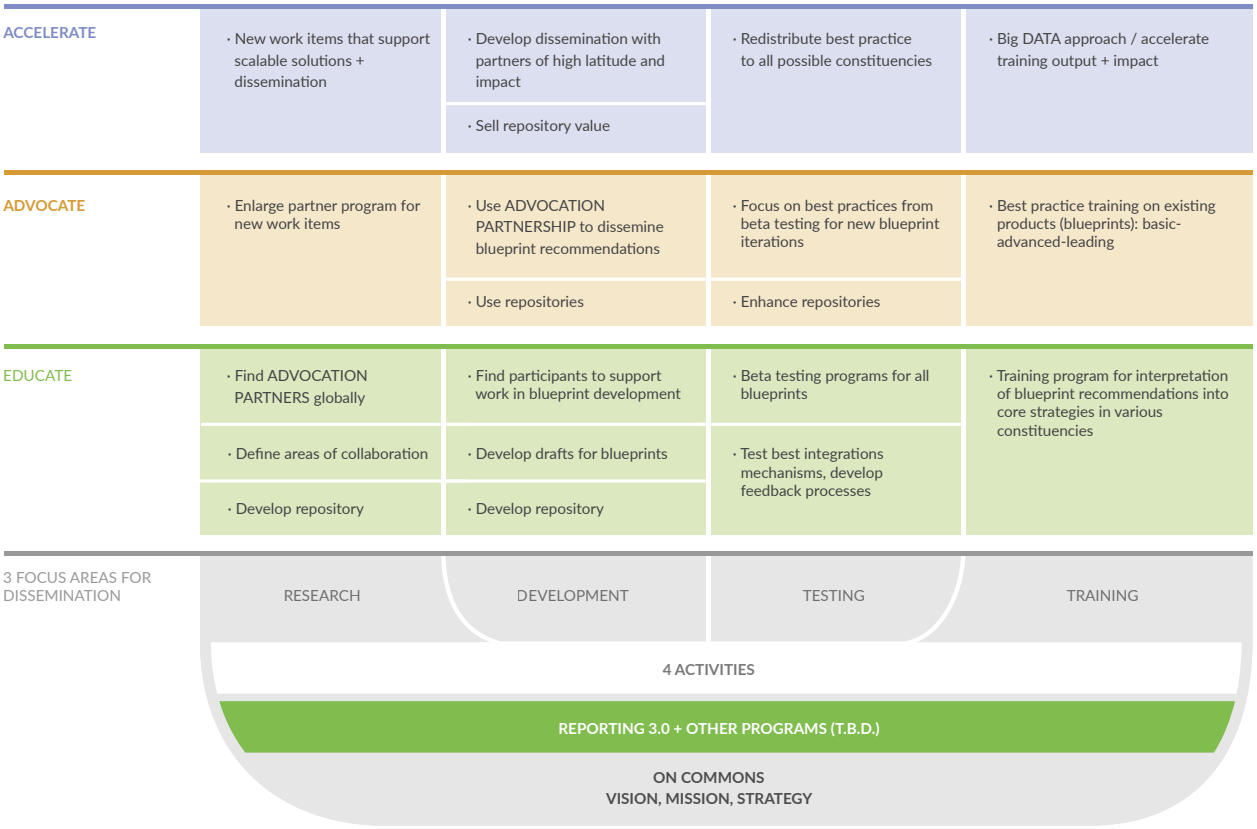





**Figure 52:** OnCommons Work Ecosystem (Source: Reporting 3.0 Platform)

## 10. ENDNOTES

[1] See http://www.reporting3.org for conference reports of 2014 and 2015. The 2013 conference was held in German language only.

[2] United Nations General Assembly, *The Future We Want*, 27 July 2012. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E

[3] Global Reporting Initiative, *Sustainability Context* Principle, https://g4.globalreporting.org/how-you-should-report/reporting-principles/principles-for-defining-report-content/sustainability-context/Pages/default.aspx

[4] Bill Baue and Allen White, "#SustyGoals 2: A Dialogue with Allen White Of GISR, The Godfather Of Sustainability Context," *Next-Generation Sustainability Targets: Toward Big, Context-Based Goals, Sustainable Brands*, 2014. http://e.sustainablebrands.com/resources-ebook-next-generation-sustainability-targets.html

[5] WBCSD, Sustainability and Enterprise Risk Management – The First Step Towards Integration. http://www.wbcsd.org/Projects/Non-financial-Measurement-and-Valuation/Resources/Sustainability-and-enterprise-risk-management-The-first-step-towards-integration

[6] We acknowledge that the term 'North Star' is more come in the Northern hemishere, whereas the 'Southern Cross' might be better fitting in the Southern hemisphere.

[7] Network for Sustainable Financial Markets (NSFM), *Submission to Members of the Task Force on Climate-Related Financial Disclosures (TCFD) in response to Public Consultation on Task Force Recommendations*, 12 February 2017 http://www.sustainablefinancialmarkets.net/wp-content/uploads/2009/02/SFM-Submission-TCFD-Final-02122017-v3-with-supplemented-signatories.pdf

[8] Future Fit Business Benchmark, *Creating System Value*, Concept Note, April 2017. http://futurefitbusiness.org/wp-content/uploads/2017/04/Future-Fit-Business-Benchmark-Creating-System-Value-Concept-Note-V1.pdf Accessed 20 May 2017.

[9] CDP, The Nature Conservancy, UN Global Compact, WRI, WWF, *Establishing Context-Based Water Stewardship Targets: A Discussion Paper*, 22 August 2016. http://ecological.panda.org/wp-content/uploads/sites/6/2016/08/Context-Based_Corporate_Water_Target_Setting_Discussion_Paper-Provisional_Draft_8-22-16.pdf Accessed 8 October 2016.

[10] Seneca, *Moral letters to Lucilius*, Letter 45. Loeb Classical Library, 1917. https://en.wikisource.org/wiki/Moral_letters_to_Lucilius/Letter_45 Accessed 5 May 2017.

[11] Donella Meadows, *Indicators and Information Systems for Sustainable Development*, The Sustainability Institute, 1998. http://donellameadows.org/wp-content/userfiles/IndicatorsInformation.pdf Accessed 11 October 2016.

[12] Jeff Bladt and Bob Filbin, "Know the Difference Between Your Data and Your Metrics," *Harvard Business Review*, 4 March 2013. https://hbr.org/2013/03/know-the-difference-between-yo Accessed 5 May 2017.

[13] *Op cit*.

[14] Alissa Lorentz, "With Big Data, Context is a Big Issue," Wired, April 2013. https://www.wired.com/insights/2013/04/with-big-data-context-is-a-big-issue/ Accessed 5 May 2017.

[15] Sheelah Kolhatkar, "Bluegrass and Big Data," *The New Yorker*, 10 October 2016. http://www.newyorker.com/magazine/2016/10/10/bluegrass-and-big-data Accessed 10 October 2016.
Note that her tenure there extended beyond the Global Financial Crisis of 2007 – 2008.

[16] Tamay Kiper, "Reporting 3.0: Progress Toward a More Common Definition of True Materiality," *Sustainable Brands*, 22 November 2016. http://www.sustainablebrands.com/news_and_views/new_metrics/tamay_kiper/reporting_30_progress_toward_more_common_definition_true_mate Accessed 7 May 2017. The quote above, shared directly with the author of this Blueprint, differs slightly from the version in this article; in both instances, LeBlanc riffs on the quote, "the great menace to progress is not ignorance but the illusion of knowledge" in Daniel J. Boorstin, *Cleopatra's Nose: Essays on the Unexpected*, Vintage, 1995.

[17] ABInBev, *2016 Better World Report* http://www.ab-inbev.com/content/dam/universaltemplate/ab-inbev/BetterWorld2/reporting/better_world_report/ABInBev_2016BWR.pdf Accessed 7 May 2017.

[18] Reporting 3.0 uses the term "rightsholders" in place of stakeholders, as we believe that stakeholders actually have the right of access to sufficient and sustainability levels of vital capitals in the commons that they rely on for their wellbeing – and that companies also rely on for their commercial and financial wellbeing. This relationship of common dependence means that companies have duties and obligations to manage their impacts on these common capitals in ways that ensure against overdrawing (as do the rightsholders.)

[19] Katrin Winkler, "Why we need context-based strategies," GreenBiz, 9 May 2017. https://www.greenbiz.com/article/why-we-need-context-based-strategies Accessed 15 May 2017.

[20] James Hansen et al, "Target atmospheric CO2: Where should humanity aim?" *Open Atmospheric Science Journal*, vol. 2, pp. 217-231, 2008. https://arxiv.org/abs/0804.1126 Accessed 7 May 2017.

[21] Mission 2020, 2020: *The Turning Point*, http://www.mission2020.global/2020%20The%20Climate%20Turning%20Point.pdf Accessed 7 May 2017.

[22] Business & Sustainable Development Commission, *Better Business*, *Better World*, January 2017. http://report.businesscommission.org/uploads/BetterBiz-BetterWorld_170215_012417.pdf Accessed 7 May 2017.

[23] Donella Meadows, *Indicators and Information Systems for Sustainable Development*, The Sustainability Institute, 1998. http://donellameadows.org/wp-content/userfiles/IndicatorsInformation.pdf Accessed 11 October 2016.

[24] Meadows, *op cit*.

[25] *Indicators and Information Systems for Sustainable Development* "grew out of a five-day workshop on sustainable development indicators attended by a small subset of the two hundred members of the Balaton Group. The Balaton Group, founded in 1981, is an international network of scholars and activists who work on sustainable development in their own countries and regions. We come to our work from a cross-disciplinary, whole-systems perspective. Individually and jointly we have been thinking about and testing indicators of sustainable development in local, national, or international contexts for many years." Meadows, *op cit*, p iii.

[26] Meadows, *op cit* p 41.

[27] Meadows, *op cit* p 47.

[28] Martin Thomas & Mark McElroy, "Does Sustainable Performance Mean Abandoning Capitalism?" *The World Financial Review*, 2 June 2016. http://www.worldfinancialreview.com/?p=5572 Accessed 1 March 2017. For further background on the historical development of (multi)capital theory, see Mark McElroy & Jo Van Engelen, "The Relevance of Capital Theory," *Corporate Sustainability Management: The Art and Science of Managing Non-Financial Performance*, Earthscan, 2012. See also Mark McElroy, *Some Important Works in the Literature On The Capital Theory Basis of Sustainability*, http://www.sustainableorganizations.org/Capital-Theory-References.pdf Accessed 19 October 2016. Other key references in multicapital theory include Kenneth Boulding, "The economics of the coming spaceship earth," in H. Jarrett (ed), *Environmental Quality in a Growing Economy*, Johns Hopkins Press, Baltimore, 1966. https://www.kth.se/itm/inst/2.4721/2.38541/db/utb/mj2694/pdf/Boulding.pdf Accessed 7 March 2017; Paul Ekins, "A four-capital model of wealth creation," *Real-Life Economics*, Ekins and Maxine (eds), Routledge, London, 1992; and Jonathon Porritt, "The Five Capitals Framework," *Capitalism as if the World Matters*, Earthscan, London, 2005.

[29] Meadows, *op cit*. Emphasis added.

[30] Forum for the Future, *The Five Capitals*, https://www.forumforthefuture.org/project/five-capitals/overview Accessed 12 March 2017.

[31] Forum for the Future, *op cit*.

[32] Meadows, *op cit*. Emphasis added.

[33] Meadows, *op cit*. Emphasis in original.

[34] Global Reporting Initiative (GRI), *Sustainability Reporting Guidelines* (G2), 2002. http://www.epeat.net/documents/EPEATreferences/GRIguidelines.pdf Accessed 1 March 2017.

[35] Martin P. Thomas and Mark W. McElroy, *The MultiCapital Scorecard: Rethinking Organizational Performance*, White River Junction, VT: Chelsea Green, 2016, p 9. See also Mark McElroy & Jo Van Engelen, *Corporate Sustainability Management: The Art and Science of Managing Non-Financial Performance*, New York: Earthscan, 2012, pp 80-81.

[36] Global Reporting Initiative (GRI), *GRI's History*. https://www.globalreporting.org/information/about-gri/gri-history/Pages/GRI's%20history.aspx Accessed 3 March 2017.

[37] Global Reporting Initiative (GRI), *Sustainability Reporting Guidelines* (G2), 2002. http://www.epeat.net/documents/EPEATreferences/GRIguidelines.pdf Accessed 1 March 2017. Emphasis added.

[38] Ralph Thurm, *Integral Thinking & True Materiality: A new impetus embracing purpose, success and scalability for thriving organizations*, Sustainable Brands, March 2016. https://s3.amazonaws.com/SustainableBrands/files/content/sb-ebook-integral-thinking.pdf Accessed 4 March 2017. "Discussions in recent years show progress on defining 'micro-macro' links between companies' impacts and the health of the broader systems they operate within."

[39] GRI, 2002, *op cit*.

[40] Mark McElroy, "The carrying capacities of capitals," GreenBiz, 18 June 2013. https://www.greenbiz.com/blog/2013/06/18/carrying-capacities-capitals Accessed 1 March 2017.

[41] Center for Sustainable Organizations, *Context-Based Sustainability*, http://www.sustainableorganizations.org/context-based-sustainability.html Accessed 4 March 2017.

[42] Martin P. Thomas and Mark W. McElroy, *The MultiCapital Scorecard: Rethinking Organizational Performance*, White River Junction, VT: Chelsea Green, 2016, p 9. See also Mark McElroy & Jo Van Engelen, *Corporate Sustainability Management: The Art and Science of Managing Non-Financial Performance*, New York: Earthscan, 2012, pp 80-81.

[43] Mark McElroy, "The carrying capacities of capitals," GreenBiz, 18 June 2013. https://www.greenbiz.com/blog/2013/06/18/carrying-capacities-capitals Accessed 1 March 2017. This piece fits into the much bigger picture of McElroy's positing of "Context-Based Sustainability" as a framework for implementing the *Sustainability Context* Principle.

[44] "[S]ome capitals are actually anthropogenic: humans create them and can even create more of them when needed (i.e., they are anthro capitals)." McElroy 2013, op cit. See also: Center for Sustainable Organizations, *The Social Footprint Method: Measuring Social Sustainability as Impacts on Anthro Capitals*, Draft 10.0, March, 2014. http://www.sustainableorganizations.org/Social-Footprint.pdf Accessed 4 March 2017.

[45] Meadows, op cit. Emphasis added.

[46] Meadows, op cit.

[47] Reporting 3.0, REPORTING 3.0 Reporting & Data Blueprint Exposure Draft 2.0 Review, https://convetit.com/Reporting3.0-reporting-data-blueprint-exposure-draft-20-review-697.html Accessed 12 May 2017.

[48] Bob Willard, email to author, 2 April 2017.

[49] Kate Raworth, *Doughnut Economics: 7 Ways to Think Like a 21st Century Economist*, White River Junction: Chelsea Green, 2017, p 11.

[50] Raworth, *op cit*, p 20.

[51] Johan Rockström et al, "A Safe Operating Space for Humanity," *Nature*, Vol 461, 24 September 2009. www.nature.com/nature/journal/v461/n7263/full/461472a.html Accessed 12 May 2017.

[52] Raworth, *op cit*. P 20-21.

[53] Meadows, *op cit*.

[54] While the term "Circular Economy" is currently in vogue, this diagram suggests that "Cyclical Economy" would be a more accurate term for describing the mechanisms of exchange between ecological and social resources in dynamic markets and interactions. In particular, the Circular Economy as currently conceived doesn't attend to ecological and social sustainability thresholds, whereas a Cyclical Economy as represented in the Daly Hourglass would by definition would.

[55] Rudyard Kipling, "The Ballad of East and West," https://en.wikipedia.org/wiki/The_Ballad_of_East_and_West Accessed 4 March 2017.

[56] CDP, The Nature Conservancy, UN Global Compact, WRI, WWF, *Establishing Context-Based Water Stewardship Targets: A Discussion Paper*, 22 August 2016. http://ecological.panda.org/wp-content/uploads/sites/6/2016/08/Context-Based_Corporate_Water_Target_Setting_Discussion_Paper-Provisional_Draft_8-22-16.pdf Accessed 8 October 2016.

[57] Meadows, *op cit*. Emphasis added.

[58] *One Report: Integrated Reporting for a Sustainable Strategy* by Bob Eccles and Mike Krzus, the first book-length treatment of integrated reporting, was published in 2010.

[59] International Integrated Reporting Council, International <IR> Framework, December 2013. http://integratedreporting.org/wp-content/uploads/2015/03/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf Accessed 9 March 2017.

[60] BASF, *We create value*. https://www.basf.com/en/company/sustainability/management-and-instruments/quantifying-sustainability/we-create-value.html Accessed 28 May 2017.

[61] Donella Meadows, *Leverage Points: Places to Intervene in a System*, Sustainability Institute, 1999. http://donellameadows.org/wp-content/userfiles/Leverage_Points.pdf Accessed 5 March 2017.

[62] International Integrated Reporting Council, *Towards Integrated Reporting – Communicating Value in the 21st Century*, Discussion Paper, September 2011. http://integratedreporting.org/wp-content/uploads/2011/09/IR-Discussion-Paper-2011_spreads.pdf Accessed 4 March 2017.

[63] Sustainability Context Group, Public Comment to the IIRC re: its April 16, 2013 Consultation Draft of the International Integrated Reporting <IR> Framework, 8 July 2013. http://sustainableorganizations.org/SCG-IIRC-Comment.pdf Accessed 6 March 2017.

[64] Francesca Rheannon "The IIRC Integrated Reporting Framework & Context-Based Sustainability: A Conversation with Bill Baue," *CSRwire*, 30 July 2013 http://www.csrwire.com/blog/posts/952-the-iirc-integrated-reporting-framework-context-based-sustainability-a-conversation-with-bill-baue Accessed 6 March 2017; Mark McElroy, "Multicapitalism and the Two Faces of Integrated Reporting," *Sustainable Brands*, 27 February 2015. http://www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/multicapitalism_two_faces_integrated_reporting Accessed 6 March 2017; Mark McElroy and Martin Thomas, "With the Changing of the Guard at the IIRC, a Challenge to Richard Howitt," *Sustainable Brands*, 23 January 2017 http://www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/changing_guard_iirc_challenge_richard_howitt Accessed 6 March 2017; Richard Howitt, "Richard Howitt on a Sustainability-Inclusive IIRC: I'm Up for the Challenge!" *Sustainable Brands*, 15 February 2017. http://www.sustainablebrands.com/news_and_views/new_metrics/richard_howitt/richard_howitt_sustainability-inclusive_iirc_im_challenge Accessed 6 March 2017.

[65] Jane Gleeson-White, *Six Capitals, or Can Accountants Save the Planet? Rethinking Capitalism for the Twenty-First Century*, New York: Norton, 2014 p 282.

[66] Robin Lincoln Wood and the ThriveAbility Foundation Team, *A Leader's Guide to ThriveAbility: A Multi-Capital Operating System for a Regenerative, Inclusive Economy*, Bloomington, IN: Authorhouse, 2015.

[67] "Integral Data" in this usage is to be distinguished from the INTEGRAL (or The INTErnational Gamma-Ray Astrophysics Laboratory) Data project of the European Space Agency (ESA). See http://sci.esa.int/integral/ and https://heasarc.gsfc.nasa.gov/docs/integral/inthp_analysis.html

[68] Financial Stability Board Task Force on Climate-related Financial Disclosures, *Recommendations of the Task Force on Climate-related Financial Disclosures*, 14 December 2016 https://www.fsb-tcfd.org/wp-content/uploads/2016/12/TCFD-Recommendations-Report-A4-14-Dec-2016.pdf Accessed 11 March 2017.

[69] Network for Sustainable Financial Markets (NSFM), *Submission to Members of the Task Force on Climate-Related Financial Disclosures (TCFD) in response to Public Consultation on Task Force Recommendations*, 12 February 2017 http://www.sustainablefinancialmarkets.net/wp-content/uploads/2009/02/SFM-Submission-TCFD-Final-02122017-v3-with-supplemented-signatories.pdf Accessed 11 March 2017.

[70] International Energy Agency, *Energy, Climate Change & Environment: 2016 Insights*, 2016, p 22. http://www.iea.org/publications/freepublications/publication/ECCE2016.pdf Accessed 11 March 2017.

[71] NSFM, *op cit*.

[72] Art Kleiner, "Elliott Jaques Levels With You," *strategy+business*, 1 January 2001, https://www.strategy-business.com/article/10938?gko=f119b Accessed 14 May 2017.

[73] NSFM, *op cit*.

[74] Michel Bauwens & Vasilis Niaros, *Value in the Commons Economy: Developments in Open and Contributory Value Accounting*, Heinrich Böll Foundation & P2P Foundation, 1 February 2017. https://www.boell.de/sites/default/files/value_in_the_commons_economy.pdf Accessed 11 March 2017; David Bollier, *Re-imagining Value: Insights from the Care Economy, Commons, Cyberspace and Nature*, Heinrich Böll Foundation & Commons Strategies Group, 7 March 2017. https://www.boell.de/sites/default/files/re-imagining-value-report.pdf Accessed 11 March 2017.

[75] Bill Baue, "Capitals & Commons: A Dialogue with David Bollier", Parts One & Two, *Sustainable Brands* 9 & 10 October 2013 http://www.sustainablebrands.com/news_and_views/new_metrics/capitals-commons-dialogue-david-bollier-part-one http://www.sustainablebrands.com/news_and_views/new_metrics/capitals-commons-dialogue-david-bollier-part-two Accessed 11 March 2017.

[76] The Crown Estate, *How we measure value*, https://www.thecrownestate.co.uk/our-business/how-we-measure-value/ Accessed 26 October 2016.

[77] Direct email communication with Claudine Blamey, 26 October 2016. Blamey is a member of the Reporting 3.0 Steering Board.

[78] The Crown Estate, *Everything is Connected: Total Contribution Report 2017* https://www.thecrownestate.co.uk/media/1023085/crown-estate-aw-1412-mb.pdf Accessed 9 March 2017.

[79] Carol Adams, ed, *Sustainability Accounting, Management and Policy Journal*, Special Issue: "True" Value and value to whom? Volume 7 issue 4, 2016. http://www.emeraldinsight.com/toc/sampj/7/4 Accessed 10 March 2017; KPMG International, *A New Vision of Value: Connecting corporate and societal value creation*, 2014. https://assets.kpmg.com/content/dam/kpmg/pdf/2014/10/a-new-vision-of-value-v1.pdf Accessed 10 March 2017.

[80] Carol Adams, "KPMG's approach to valuing externalities: better decisions or fundamentally flawed?" 10 November 2016. https://drcaroladams.net/kpmgs-approach-to-valuing-externalities-better-decisions-or-fundamentally-flawed/ Accessed 10 March 2017; Bernd Hendriksen, Jeroen Weimer, Mark McKenzie, (2016) "Approaches to quantify value from business to society: Case studies of KPMG's true value methodology", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 Iss: 4, pp.474 - 493. http://dx.doi.org/10.1108/SAMPJ-07-2015-0062 Accessed 10 March 2017.

[81] KPMG International, *op cit.* p 44.

[82] Adams, op cit. Andrea B. Coulson (2016) "KPMG's True Value methodology: A critique of economic reasoning on the value companies create and reduce for society", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 Iss: 4, pp.517 - 530. http://dx.doi.org/10.1108/SAMPJ-05-2016-0027 Accessed 10 March 2017.

[83] Adams, Op cit. Nick Barter (2016) "A review of "A New Vision of Value" – old wine, new bottle", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 Iss: 4, pp.531 - 538. http://dx.doi.org/10.1108/SAMPJ-12-2015-0111 Accessed 10 March 2017.

[84] KPMG International, op cit. p 44.

[85] Mark McElroy, *Context-Based Monetization Curves: A Sustainability Model for Assigning Monetary Values to Organizational Impacts on Vital Capitals*, Center for Sustainable Organizations, 2104. http://www.sustainableorganizations.org/Context_Based_Monetization_Curves.pdf Accessed 10 March 2017.

[86] Mark McElroy, *Context-Based Monetization Curves*, 2014. http://www.sustainableorganizations.org/Context_Based_Monetization_Curves.pdf Accessed 28 May 2017.

[87] Mark McElroy, Science- vs. Context-Based Metrics – What's the Difference? Sustainable Brands, 25 May 2015. http://www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/science-_vs_context-based_metrics_%E2%80%93_what%E2%80%99s_difference Accessed 11 March 2017.

[88] Institute of Directors in Southern Africa and King Committee on Corporate Governance in South Africa, *King IV Report on Corporate Governance for South Africa 2016*, November 2016, https://c.ymcdn.com/sites/iodsa.site-ym.com/resource/collection/684B68A7-B768-465C-8214-E3A007F15A5A/IoDSA_King_IV_Report_-_WebVersion.pdf Accessed 10 March 2017.

[89] *Op cit.*

[90] *Op cit.*

[91] Simon Dresner, *The Principles of Sustainability*, London: Earthscan, 2002

[92] McElroy & van Engelen, *op cit.*, p 134.

[93] Direct email communication with Mark McElroy, 12 January 2017.

[94] Martin Thomas & Mark McElroy, "Does Sustainable Performance Mean Abandoning Capitalism?" *The World Financial Review*, 2 June 2016. http://www.worldfinancialreview.com/?p=5572 Accessed 26 October 2016.

[95] Bill Baue and Allen White, "#SustyGoals 2: A Dialogue with Allen White Of GISR, The Godfather Of Sustainability Context," *Next-Generation Sustainability Targets: Toward Big, Context-Based Goals*, Sustainable Brands, 2014. http://e.sustainablebrands.com/resources-ebook-next-generation-sustainability-targets.html Accessed 11 October 2016.

[96] Donella Meadows, *Indicators and Information Systems for Sustainable Development, The Sustainability Institute*, 1998. http://donellameadows.org/wp-content/userfiles/IndicatorsInformation.pdf Accessed 11 October 2016.

[97] Baue and White, *op cit*.

[98] Meadows 1998, *op cit*.

[99] Baue and White, *op cit*.

[100] Mark McElroy, *Social footprints: Measuring the social sustainability performance of organizations*, Thesis, University of Groningen, 2008. http://irs.ub.rug.nl/dbi/492bfcb845ae9; Mark McElroy & Jo van Engelen, Corporate Sustainability Management: The Art & Science of Managing Non-Financial Performance, EarthScan 2012.

[101] Thomas & McElroy, *The MultiCapital Scorecard*, 2016 p 15.

[102] Baue and White, *op. cit*.

[103] UNEP, *Raising the Bar – Advancing Environmental Disclosure in Sustainability Reporting*, 2016. http://unep.org/resourceefficiency/Business/SustainableandResponsibleBusiness/CorporateSustainabilityReporting/MERITAS/RaisingtheBar/tabid/1060852/Default.aspx "Raising the Bar on Corporate Sustainability Reporting to Meet Ecological Challenges Globally" 12 November 2015 http://unep.org/newscentre/Default.aspx?DocumentID=26854&ArticleID=35553&l=en Accessed 11 October 2016.

[104] Anders Bjørn et al. "Is Earth recognized as a finite system in corporate responsibility reporting?" *Journal of Cleaner Production*, 16 January 2016. http://www.sciencedirect.com/science/article/pii/S0959652615019204 Accessed 11 October 2016.

[105] Article 13, *Planetary Boundaries and Social Thresholds: How do companies measure up? A practitioner's perspective*, October 2016. http://www.article13.com/blog/reporting-environmental-impacts-is-all-well-and-good-but-do-com Accessed 11 October 2016.

[106] Jeff Gowdy, "PivotGoals.com: The ESG, Science-Based, and Visionary Targets of the Largest Companies," The North Star of Managing Non-Financial Performance: Science-Based Goal-Setting Analysis Workshop, Sustainable Brands New Metrics Conference, Boston, November 14, 2016. https://www.slideshare.net/sustainablebrands/the-north-star-of-managing-nonfinancial-performance-sciencebased-goalsetting-and-analysis Accessed 12 March 2017.

[107] Meadows 1998, *op cit*.

[108] Baue and White, *op cit*.

[109] Greenhouse Gas Protocol, *About the Greenhouse Gas Protocol: History*, http://www.ghgprotocol.org/about-ghgp Accessed 24 October 2016.

[110] Science Based Targets, *Companies Taking Action*, http://sciencebasedtargets.org/companies-taking-action/ Accessed 15 May 2017.

[111] CDP, *Guidance for companies reporting on climate change on behalf of investors & supply chain members* 2016, https://www.cdp.net/Documents/Guidance/2016/CDP-2016-Climate-Change-Reporting-Guidance.pdf Accessed 12 March 2017.

[112] CDP & We Mean Business, *Out of the starting blocks: Tracking progress on corporate climate action*, October 2016. https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/001/228/original/CDP_Climate_Change_Report_2016.pdf?1477501140 Accessed 26 October 2016.

[113] CDP & We Mean Business, *Out of the starting blocks: Tracking progress on corporate climate action*, October 2016. https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/001/228/original/CDP_Climate_Change_Report_2016.pdf?1477501140

[114] *Op cit*.

[115] CDP, The Nature Conservancy, UN Global Compact, WRI, WWF, *Establishing Context-Based Water Stewardship* Targets: A Discussion Paper, 22 August 2016. http://ecological.panda.org/wp-content/uploads/sites/6/2016/08/Context-Based_Corporate_Water_Target_Setting_Discussion_Paper-Provisional_Draft_8-22-16.pdf Accessed 12 October 2016.

[116] Mark McElroy, Science- vs. Context-Based Metrics – What's the Difference? Sustainable Brands, 25 May 2015. http://www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/science-_vs_context-based_metrics_%E2%80%93_what%E2%80%99s_difference Accessed 11 March 2017.

[117] "Ensure availability and sustainable management of water and sanitation for all" UN Sustainable Development Goal 6. https://sustainabledevelopment.un.org/sdg6 Accessed 12 October 2016.

[118] Pacific Institute et al, *Exploring The Case For Corporate Context-Based Water Targets*, April 2017. http://pacinst.org/app/uploads/2017/04/context-based-targets.pdf Accessed 15 May 2017.

[119] CDP *et al*, *op. cit*. Emphasis added. Bridging this public-private data gap will be addressed in the *Data Blueprint's* Sixth Chapter on Activation & Acceleration..

[120] Meadows 1998 *op cit*. Baue & White, *op cit*.

[121] Samantha Putt del Pino, Cynthia Cummis, Sarah Lake, Kevin Rabinovitch, Paul Reig. "From Doing Better to Doing Enough: Anchoring Corporate Sustainability Targets in Science." Working Paper. Washington, DC: World Resources Institute and Mars Incorporated. 2016. https://www.wri.org/sites/default/files/From_Doing_Better_to_Doing_Enough_Anchoring_Corporate_Sustainability_Targets_in_Science.pdf Accessed 12 March 2017.

[122] *Op cit*. Emphasis added.

[123] *Op cit*.

[124] Personal conversation with Kevin Rabinovitch, GreenBiz Conference, Phoenix, Arizona, 15 February 2017.

[125] Winkler, op cit.

[126] Embedding Project, *The Road to Context: Contextualising Your Strategy & Goals Casebook*, May 2017. https://embeddingproject.org/resources/pathway/plan/practice/strategy/the-road-to-context Accessed 15 May 2017.

[127] Forum for the Future, *The Net Positive Project*, https://www.forumforthefuture.org/project/net-positive-project/overview Accessed 14 March, 2017; The Net Positive Group, http://www.netpositiveproject.org/ Accesses 14 March 2017; Forum for the Future, The Climate Group, WWF, *#NetPositive Principles* https://www.forumforthefuture.org/sites/default/files/The%20Net%20Positive%20Principles.pdf Accessed 14 March, 2017.

[128] Gregory Norris, *A One-Page Introduction to Handprints*, Harvard SHINE, 16 November 2016. http://www.chgeharvard.org/sites/default/files/resources/SHINE-Handprints_0.pdf

[129] Bill Baue and Ralph Thurm, *Hairshirts, Rattlesnakes, And Shoelaces: Toward A Net Positive Movement*, Sustainable Brands, 2015. http://e.sustainablebrands.com/resources-ebook-net-positivity.html Accessed 20 October 2016.

[130] *Op cit.*

[131] *Op cit.*

[132] Dell, *2016 Corporate Social Responsibility Report:* 10 x 20 Goal http://www.dell.com/learn/us/en/vn/corp-comm/cr-report-10x20 Accessed 14 March 2017.

[133] Susan Nickbarg, "What makes BT's Net Good carbon program a game-changer?" 21 August 2014. https://www.greenbiz.com/blog/2014/08/21/what-makes-bts-net-good-carbon-program-game-changer Accessed 19 October 2016.

[134] BT, Our 3:1 methodology http://www.btplc.com/Purposefulbusiness/Energyandenvironment/OuReporting 3.01methodology/ Accessed 19 October 2016.
BT is also a pioneer in context-based metrics and reporting, with its Climate Stabilisation Intensity (CSI) methodology for calculating its own carbon emissions in the context of its fair share allocation of the global carbon budget. Chris Tuppen, *Climate Stabilisation Intensity Targets: A new approach to setting corporate climate change targets* http://www.btplc.com/Purposefulbusiness/Energyandenvironment/OuReporting 3.01methodology/CSI_Methodology.pdf Accessed 19 October 2016.

[135] Bill Baue, "Threading the Needle: How BT Integrates Climate Stabilization with Economic Prosperity" *Sustainable Brands*, 12 September 2012. http://www.sustainablebrands.com/news_and_views/new-metrics/bt-climate-stabilization-economic-prosperity Accessed 20 October 2016.

[136] Future Fit Business Benchmark, *Creating System Value*, Concept Note, January 2017. http://futurefitbusiness.org/wp-content/uploads/2017/04/Future-Fit-Business-Benchmark-Creating-System-Value-Concept-Note-V1.pdf

[137] William Burckart, Steve Lydenberg, Jessica Ziegler, *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*, The Investment Integration Project & IRRC Institute, November 2016. http://3do1ba1rp8zu3wnh9b3b8d2l.wpengine.netdna-cdn.com/wp-content/uploads/2016/11/TIIP-and-IRRCi_FINAL_State-of-Industry_11-2-16_FINAL.pdf Accessed 21 May 2017.

[138] Mark Carney, *Breaking the tragedy of the horizon - climate change and financial stability*, Speech at Lloyd's of London, 29 September 2015. http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx Accessed 21 May 2017. Bank of England, *Systemic Risk Survey*, Survey results | 2015 H1. http://www.bankofengland.co.uk/publications/Documents/other/srs/srs2015h1.pdf Accessed 21 May 2017.

[139] Lydenberg *et al*, *op cit*. Emphasis added.

[140] Lydenberg *et al*, *op cit*.

[141] Arabesque Asset Management, *S-Ray*, http://www.arabesque.com/s-ray/ Accessed 28 May 2017.

[142] Sustainable Brands, "New Transparency Technology Provides Window Into ESG Data for Over 4,000 Companies," *Sustainable Brands*, 12 April 2017. http://www.sustainablebrands.com/news_and_views/ict_big_data/sustainable_brands/new_transparency_technology_provides_window_esg_data_ Accessed 28 May 2017.

[143] Lydenberg *et al*, *op cit*.

[144] Meadows 1998, *op cit*.

[145] CDP et al, *Establishing Context-Based Water Stewardship Targets*, 2016, *op cit*.

[146] Personal exchange with Brendan LeBlanc.

[147] Meadows, op. cit.

[148] Paul Raskin, *Journey to Earthland: The Great Transition to Planetary Civilization*, Tellus Institute, 2016. http://www.greattransition.org/documents/Journey-to-Earthland.pdf Accessed 26 October 2016.

[149] *Op cit*.

[150] Liesen, Andrea and Hoepner, Andreas G. F. and Patten, Dennis M. and Figge, Frank, "Corporate Disclosure of Greenhouse Gas Emissions in the Context of Stakeholder Pressures: An Empirical Analysis of Reporting Activity and Completeness." *Accounting, Auditing & Accountability Journal*, 10 August 2013 https://ssrn.com/abstract=2307876 Accessed 26 October 2016.

[151] Peter Seele, "Envisioning the digital sustainability panopticon: a thought experiment of how big data may help advancing sustainability in the digital age," Sustainability Science, September 2016, Volume 11, Issue 5, pp 845–854. https://www.researchgate.net/publication/304191978_Envisioning_the_digital_sustainability_panopticon_a_thought_experiment_of_how_big_data_may_help_advancing_sustainability_in_the_digital_age Accessed 12 October 2016.

[152] Daniel Aronson, *Catalytics & Net Positive*, Sustainable Brands New Metrics Conference, 6 December 2016. http://www.sustainablebrands.com/digital_learning/slideshow/new_metrics/catalytics_way_net_positive_beyond_high-level_ambitions_towar Accessed 28 May 2017.

[153] Aronson, *op cit*.

[154] United Nations, "National Sustainable Development Strategies (NSDS)," Sustainable Development Knowledge Platform. https://sustainabledevelopment.un.org/topics/nationalsustainabledevelopmentstrategies Accessed 15 October 2016. World Resources Institute, *What is an INDC?* http://www.wri.org/indc-definition Accessed 15 October 2016

[155] Gillian Galford et al, "Bridging the climate information gap: a framework for engaging knowledge brokers and decision makers in state climate assessments," Climatic Change, 23 August 2016. https://www.researchgate.net/publication/306388342_Bridging_the_climate_information_gap_a_framework_for_engaging_knowledge_brokers_and_decision_makers_in_state_climate_assessments Accessed 15 October 2016.

[156] *Op cit*.

[157] Reporting 3.0 Platform, *REPORTING 3.0 Reporting & Data Blueprint Exposure Drafts Review*, Convetit, 31 October 2016 - 4 November 2016.

[158] *Op cit*.

[159] Email exchange with Renilde Becque, 20 December 2016.

[160] Science-Based Targets, "Call to Action Eligibility Criteria," *Commit to Setting Science-Based Targets* http://sciencebasedtargets.org/commit-to-setting-science-based-targets/ Accessed 15 October 2016.

[161] Andrew Winston & Jeff Gowdy, *Evaluation of General Mills' and Kellogg's GHG Emissions Targets and Plans*, Oxfam, 25 May 2016. http://policy-practice.oxfam.org.uk/publications/evaluation-of-general-mills-and-kelloggs-ghg-emissions-targets-and-plans-indepe-610586 Accessed 12 October 2016.

[162] Jan Bebbington & Carlos Larrinaga-González, "Carbon Trading: Accounting and Reporting Issues," *European Accounting Review Vol. 17*, Iss. 4, 2008. http://www.tandfonline.com/doi/full/10.1080/09638180802489162 Accessed 15 October 2016.

[163] Andrea Liesen et al, Corporate Disclosure of Greenhouse Gas Emissions in the Context of Stakeholder Pressures: An Empirical Analysis of Reporting Activity and Completeness," *Accounting, Auditing & Accountability Journal*, 10 August 2013. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2307876 Accessed 18 October 2016.

[164] Liesen *et al*, *op cit*.

[165] Winston & Gowdy, *op cit*.

[166] Aiming for A Coalition, *BP Report Annually on Carbon Asset Risk Mitigation*, http://www.ceres.org/investor-network/resolutions/bp-report-annually-on-carbon-asset-risk-mitigation Accessed 14 March 2017.

[167] New York State Common Retirement Fund and the Church of England Endowment Fund, *Exxon Carbon Asset Risk 2016*, http://www.ceres.org/investor-network/resolutions/exxon-carbon-asset-risk-2016 Accessed 14 March 2017.

[168] Bill Baue, Bob Eccles, Julie Gorte, Carolyn Hayman, Stephan Lewandowsky, Thomas O. Murtha, Naomi Oreskes, Rich Pancost, and John Rogers, "The Missing 60%: ExxonMobil, Forceful Stewardship and the 2°C Business Model Imperative," *Huffington Post*, 2 June 2016. http://www.huffingtonpost.com/bill-baue/the-missing-60-exxonmobil_b_10265140.html Accessed 14 March 2017.

[169] Casey Aspin, "The Missing60 are found, yet still are lost," Preventable Surprises, 24 September 2016. https://preventablesurprises.com/blog/the-missing60-are-found-yet-still-are-lost/ Accessed 14 March 2017.

[170] https://www.bloomberg.com/bcause/customers-using-esg-data

[171] Global Reporting Initiative, *The Next Era of Corporate Disclosure*, March 2016. https://www.globalreporting.org/resourcelibrary/The-Next-Era-of-Corporate-Disclosure.pdf Accessed 12 October 2016

[172] UNEP, *op. cit.*

[173] Winston & Gowdy, *op cit.*

[174] Reagan Richmond and Katie Ellman, "CSRHub's CEO: Dark data in sustainability reporting," GreenBIz, October 21, 2016. https://www.greenbiz.com/article/csrhubs-ceo-dark-data-sustainability-reporting Accessed 25 October 2016.

[175] Bill Baue, "If You Tag It, It Will Be Used: Sustainability Reporting in XBRL," SocialFunds.com, 16 April 2007. http://www.socialfunds.com/news/article.cgi/2272.html Accessed 25 October 2016.

[176] Global Reporting Initiative, "FAQs: GRI Taxonomy," https://www.globalreporting.org/information/FAQs/Pages/GRI-Taxonomy.aspx Accessed 26 October 2016.

[177] *Op cit.*

[178] GRI, XBRL Reports Program, https://www.globalreporting.org/services/Analysis/XBRL_Reports/Pages/default.aspx Accessed 26 October 2016.

[179] Climate Disclosure Standards Board, "New technology for climate change reporting now available to trial," 6 November 2012. http://www.cdsb.net/news/uncategorized/132/new-technology-climate-change-reporting-now-available-trial Accessed 26 October 2016. Pedro Faria & Jackie Cook, *Can XBRL tagging improve climate risk disclosure in SEC filings?* CDP, Presented at 26th XBRL International Conference, Dublin, April 18, 2013. http://archive.xbrl.org/26th/sites/26thconference.xbrl.org/files/NONF2_PedroFaria-HighQualityClimateReportingUsingCDPTaxonomy.pdf

[180] Niels R. Faber & Henk Hadders, *Towards a blockchain enabled social contract for sustainability: Creating a fair and just operating system for humanity.* 2016.

[181] Faber & Hadders, *Op cit*.

[182] Statement by the Expert Group, "The World at a Turning Point: Concerted Action for a Stable Climate, Sustainable Human Progress and Peace," The Rome Symposium on Climate Change and World Development, 5 May 2017. http://romesymposium.org/climatechange2017/images/area-stampa/Appello_gruppo_esperti_0517_ENG.pdf Accessed 28 May 2017.

**Claudine Blamey – The Crown Estate**

*"We at The Crown Estate appreciate how the Reporting 3.0 Blueprints both laud our Total Contribution methodology and provide constructive suggestions for improvement, that we look forward to exploring together with R3."*

**Arjan de Draaijer – KPMG**

*"In a society that will increasingly be shaped by planetary boundaries and social floors, business can only thrive if it reexamines how and for whom it creates value and where and when value is at risk. This calls for metrics better describing value for different stakeholder groups, enabling business to understand and improve the way it creates value and how this relates to (long term) financial performance."*

**Niels Faber – Radboud University**

*"Applications of blockchain technology are exploding, including in the realm of sustainability, but none that we know of are embedding a context-based approach that takes sustainability thresholds and allocations explicitly into account. We at Radboud University and Noorden Duurzaam see this as an exciting opportunity to conceptualize and pilot a context-based blockchain application that integrates smart social contracts between companies and the communities they operate in to govern wise management of common resources."*

**Christian Heller – BASF**

*"BASF's Value-to-Society methodology takes a macro-societal perspective and reports not just on outputs and outcomes but also impact and societal benefits and costs, thereby implementing several of the Recommendations in Reporting 3.0's Blueprints."*

**Annemieke Huibrechtse – Deloitte**

*"Creating value is key for every organization. How value is perceived by stakeholders requires up-to-date dialogues. To facilitate dialogues, it helps when all partners have the same basis of information. In times of fake news and information. In times of fake news and information bubbles, we are looking for ways to standardize the trustworthiness of information sources. Exploring on techniques like blokchain and placing those technical methodologies in societal developments, brings new energy to the value reporting discussion."*

**Mark McElroy – Center for Sustainable Organizations**

*"The broad consensus amongst sustainability thought leaders on the need to take a context-based, multicapital approach to corporate measurement, management and reporting is, unfortunately, not matched by the patchwork actions of standard-setters, practitioners, raters, investors, NGOs, and others. Luckily, Reporting 3.0 is filling this gap, forcefully calling for Context and Multicapitalism, among many other things."*

**Kate Raworth**

*"Doughnut Economics aims to meet the needs of all within the means of the planet - and so asks what kinds of companies can contribute to that mission. Reporting 3.0 strikes me as being one of the few initiatives in the corporate and investment space that calls for respect of the Doughnut's planetary boundaries and social foundations at the company, industry, and portfolio levels. It's high time that this approach is embraced across the board."*

**Allen White – Tellus Institute**

*"Sustainability without contextualization within thresholds is inherently flawed. That is why, as GRI's Co-Founder and first Chief Executive, I introduced the Sustainability Context Principle in the early 2000's to explicitly link micro (company) performance with macro (systems-wide) outcomes. Unfortunately, application of Sustainability Context principle remains incipient and uneven. Looking ahead, we do not have the luxury of delaying implementation in light of the mounting ecological, social and economic crises. The time for procrastination has passed; the moment for aggressively shifting to context-based reporting is now. The Reporting 3.0 Platform is poised to play a vital role in accelerating this movement. I urge all companies, standards bodies, investors and other actors to actively embrace the initiative 3.0 as a critical instrument for securing a thriving future."*