The MultiCapital Scorecard

Mark W. McElroy and Martin P. Thomas
Thomas & McElroy LLC, Thetford Center, Vermont, USA

Abstract

Purpose – The purpose of this paper is to disclose a new performance accounting method called the MultiCapital Scorecard, which makes it possible to measure, manage and report Triple Bottom Line performance relative to organization-specific norms for impacts on multiple capitals.

Design/methodology/approach – The authors set out to expand a pre-existing multiple capital accounting system known as Context-Based Sustainability. Whereas Context-Based Sustainability assesses the social and environmental performance of organizations relative to norms for impacts on non-economic capitals, the MultiCapital Scorecard adds economic performance to the mix.

Findings – The authors find that it is indeed possible to measure and report the social, environmental and economic performance of an organization in an integrated, context-based way relative to norms for impacts on multiple capitals. The MultiCapital Scorecard is the result.

Practical implications – The MultiCapital Scorecard is an open-source methodology that any organization can use. For managers or accountants interested in testing, evaluating or adopting multiple capital accounting, it provides a practical and systematic solution.

Social implications – The MultiCapital Scorecard is transformational, in that it holds organizations and commerce writ large accountable to the limits in, and demands for, vital capitals in the world on a fair and proportionate basis. No other method does this, and yet it must be done if there is to be sustainability in the conduct of human affairs.

Originality/value – The paper describes the world's first multiple capital, context-based accounting system that organizations can use to measure, manage and report their Triple Bottom Line performance in integrated and quantitative terms. The MultiCapital Scorecard is the authors' original creation.

Keywords Triple bottom line, Sustainability performance, Context-Based Sustainability, Integrated measurement and reporting, Multiple capital accounting, Six capitals

Paper type Viewpoint

A capital theory of performance

Along with the rise of multiple capital theory as a rubric for assessing the performance of organizations has come a growing need for guidance on how to do so (GRI, 2013a; Eccles and Krzus, 2015). Even the International Integrated Reporting Council's (IIRC) *<IR> Framework* for integrated reporting (IIRC, 2013) and the Global Initiative for Sustainability Ratings' (GISR) *Ratings Standard* (GISR, 2013), two new standards that explicitly call for capital-based measures of organizational performance, are principles-based and non-prescriptive in this regard. Organizations and their advisors, instead, have been left to their own devices.

Addressing this need raises some basic questions about the substance of multiple capital theory and how it can or should be operationalized. What does it mean, for example, to assess performance in terms of multiple capitals and how might one do so in a formal or structured way? What exactly is the capital theory of performance and what are its practice implications? Is it even possible to operationalize the Triple Bottom Line (Elkington, 1997)?

Sustainability Accounting, Management and Policy Journal
Vol. 6 No. 3, 2015
pp. 425-438

2040-8021
DOI 10.1108/SAMPJ-04-2015-0025

In response to these questions, we have developed a system called the MultiCapital Scorecard[1], a methodology informed by the view that the performance of organizations can and should be assessed in terms of what their impacts on vital capitals are (Elkington, 1997; Porritt, 2005; McElroy *et al.*, 2007; McElroy, 2008; McElroy and Van Engelen, 2012; Gleeson-White, 2014). This, of course, is not an entirely new idea, as financial performance has always been looked at in this way; non-financial performance, however, almost never has and yet the same principles can be applied. In a very real sense, then, the state-of-the-art for non-financial accounting is only just now catching up to what financial managers have known all along: that performance is a function of impacts on capital – albeit economic capital, only, in the case of financial reporting.

With the MultiCapital Scorecard, we simply extend this idea to assessing the social and environmental performance of a firm as well. And when we do, only the capitals and the stakeholders involved change. Instead of focusing only on a firm's impacts on economic capital for the sake of its shareholders, we assess impacts on all vital capitals for the sake of all stakeholders. This, we believe, is the fundamental essence of integrated measurement and reporting, without which there can be no integrated thinking or management. It is a body of theory and practice that we call *multicapitalism* (Thomas & McElroy LLC, 2014; McElroy, 2014a).

Apart from capital theory, the MultiCapital Scorecard is grounded in an approach to performance measurement and reporting known as Context-Based Sustainability[2] (McElroy and Van Engelen, 2012). Context-Based Sustainability was originally developed as a means of assessing the sustainability performance of organizations, whereby such performance was defined in non-financial terms only (i.e. social and environmental performance with financial performance being specifically excluded). The MultiCapital Scorecard, by contrast, includes all three dimensions of performance and, in that regard, is a comprehensive Triple Bottom Line measurement and reporting system.

Importantly, the hallmark of Context-Based Sustainability is that it assesses performance relative to limits and thresholds in the carrying capacities of capitals (Fisher, 1906; Boulding, 1949, 1966; Daly, 1977, 1996; Wackernagel and Rees, 1996; Meadows, 1998; McElroy, 2008, 2013; Rockström *et al.*, 2009; McElroy and Van Engelen, 2012; Raworth, 2012; Steffen *et al.*, 2015). The ontology of multicapitalism, therefore, consists of:

(1) stocks and flows of vital capitals in the world;
(2) organizations and their impacts on the capitals;
(3) other parties (i.e. stakeholders) whose well-being depends on the capitals; and
(4) norms, standards or thresholds for what organizations' impacts on the capitals must be, or not be, to be sufficient, sustainable and duly supportive of stakeholder well-being (McElroy, 2008; McElroy and Van Engelen, 2012).

What is capital?

For our purposes, we adopt a definition of capital that follows from those of many others (Boulding, 1949; Costanza and Daly, 1992; Ekins, 1992; Wackernagel and Rees, 1996; Costanza *et al.*, 1997; Porritt, 2005; McElroy, 2008; Stiglitz *et al.*, 2010; McElroy and Van Engelen, 2012):

> Capital is a stock of anything that yields a flow of valuable goods or services important for human well-being.

Here, we hasten to add that from our perspective, the sufficiency of vital capitals for *non*-human well-being – natural capital, in particular – is itself vitally important for human well-being. Because of that, we see nothing unduly anthropocentric in our definition; well-being means survival in an empirically sustainable context, nothing more. It offers no promise of maintaining current levels of comfort or over-indulgence.

On the extension of the term capital from its original economic context to the broader one we cite above, Costanza and Daly (1992) had this to say:

> Since "capital" is traditionally defined as produced (manufactured) means of production, the term "natural capital" needs explanation. It is based on a more functional definition of capital as "a stock that yields a flow of valuable goods and services into the future".

While many now hold to the view that there are six broad categories of vital capitals to consider, we prefer to regard one of them (intellectual capital) as being variously embedded in the other five. We also take one of the other five (economic capital) and break it out into two forms (internal and external), which leaves us with six categories ourselves, two of which are economic. That said, the capital definitions we rely on are as follows:

(1) Natural capital:
   - *Natural resources*: Consist of air, land, water, minerals, flora, fauna, ecosystems and other natural biophysical resources that humans and non-humans alike rely on for their well-being.
   - *Ecosystem services*: Consist of services or functions provided by ecosystems that humans and non-humans alike rely on for their well-being.

(2) *Human capital*: Consists of knowledge, skills, experience, health, values, attitudes, motivation and ethical entitlements of individuals (includes their intellectual capital).

(3) *Social and relationship capital*: Consists of teams, networks and hierarchies of individuals working together and their shared knowledge, skills, experience, health, values, attitudes, motivation and ethical entitlements (including their shared intellectual capital).

(4) *Constructed capital*: Consists of material objects, systems or ecosystems created and/or cultivated by humans, including the functions they perform. It is the world of human design in which intellectual capital may also be embedded and/or expressed.

(5) Internal economic capital:
   - *Financial*: Consists of the pool of funds available to an organization, including debt and equity finance. This description of financial capital focuses on the sources of funding, (liabilities on the balance sheet) rather than its application, which usually results in the acquisition of assets, such as land, buildings, plant and inventories or other forms of capital (e.g. intellectual property).
   - *Non-financial*: Consists of assets not recognized in internal financial capital. They may or may not be monetized. An example is the value of brands that

have been developed organically internally, but not recognized in the financial accounts.

(6) External economic capital:
- *Financial*: Consists of all financial funds available to parties outside an organization.
- *Non-financial*: Consists of externally held capitals of a non-financial nature, which nevertheless have economic value to others.

As the above classifications sometimes contain overlaps with weak borders between them, we treat them as guidelines and not strict definitions of hermetically sealed silos. Avoidance of double counting is best conducted by inspection on a case-by-case basis.

The MultiCapital Scorecard in practice

As noted above, the MultiCapital Scorecard is an evolution of a system previously developed for the purpose of making literal measures of organizational sustainability – or *sustainability performance* – possible (i.e. Context-Based Sustainability). That move, in turn, was at least partly inspired by a desire to operationalize the *Sustainability Context Principle* in the Global Reporting Initiative (GRI), the world's leading international standard for measuring and reporting the sustainability performance of organizations. In the latest version of GRI's *Guidelines,* that Principle is explained as follows (GRI, 2013b):

Sustainability context

> *Principle*: The report should present the organization's performance in the wider context of sustainability.
>
> Information on performance should be placed in context. The underlying question of sustainability reporting is how an organization contributes, or aims to contribute in the future, to the improvement or deterioration of economic, environmental and social conditions, developments, and trends at the local, regional or global level. Reporting only on trends in individual performance (or the efficiency of the organization) fails to respond to this underlying question. Reports should therefore seek to present performance in relation to broader concepts of sustainability. This involves 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.

The MultiCapital Scorecard, too, can be seen as an implementation of GRI's *Sustainability Context Principle*, but goes beyond its scope to address financial performance as well. As such, it is a fully integrated measurement and reporting system that more than complies with both GRI's *Guidelines* and the IIRC's <IR> *Framework* for integrated reporting.

In practice, the MultiCapital Scorecard follows a three-step process:

(1) Scoping and Materiality;

(2) Areas of Impact (AOI) Development; and

(3) Scorecard Implementation.

Each of these steps is explained below.

Scoping and materiality

In this step, the boundaries of an organization or entity to be assessed using the MultiCapital Scorecard are defined, as the relevant and material AOIs are to be considered. AOIs, as constructs, are the fundamental units of interest in the MultiCapital Scorecard toward which all of our attention is directed. In the MultiCapital Scorecard, AOIs are defined as *the discrete impacts of organizations on vital capitals*. The referents of interest to us are *impacts on capitals*.

That said, we are only interested in those impacts for which corresponding duties or obligations to stakeholders exist (Rawls, 1971; McElroy, 2008; McElroy and Van Engelen, 2012). An organization's impacts on water resources, for example, are nearly always of interest because of their importance to others. In other words, the fact that a resource that an organization is using is being shared with others gives rise to a duty or obligation to manage its impacts accordingly (i.e. with their interests in mind). The resource of interest in this example is, of course, water, which is a form of natural capital.

Not all impacts on capitals of importance to the well-being of others, however, are necessarily material in the eyes of the MultiCapital Scorecard (Thomas & McElroy LLC, 2015a). Materiality only confers to impacts on capitals that are of importance to stakeholders. In the MultiCapital Scorecard, a stakeholder is anyone to whom a duty or obligation is owed by an organization to manage its impacts on vital capitals in ways that can affect their well-being (McElroy, 2008; McElroy and Van Engelen, 2012; Thomas & McElroy LLC, 2015b). In some cases, such a duty can arise by virtue of the impacts an organization is already having (e.g. the water case above). In other cases, stakeholders receive their standing as a consequence of contracts or agreements they have entered into (e.g. employment agreements, purchase agreements, etc.) or as bestowed upon them by morality or law. In all cases, material AOIs are organization-specific and are determined by their managers and directors themselves, with the input and involvement of others as they see fit (McElroy and Van Engelen, 2012; Eccles and Krzus, 2015).

Materiality determinations in the MultiCapital Scorecard therefore:

- only applies to AOIs; and
- can only result in the designation of AOIs as *material* in cases where the interests of bona fide stakeholders are involved to whom corresponding duties or obligations are owed by an organization to manage its impacts on capitals in some way.

The fiduciary duties most have to manage their impacts on financial capital, for example, for the benefit of shareholders is one such duty. Obeying the law and fulfilling the terms of agreements with employees, customers and suppliers are some others.

AOI development

Once a material set or portfolio of AOIs has been identified for an organization, each of the associated AOIs must be further researched and developed in preparation for the role it will play in measurement and reporting. This has two parts to it. First is the specification of sustainability norms or goals and second is the development of an associated data collection protocol.

We define *Sustainability Norms* (SNs) as standards of performance for what an organization's impacts on vital capitals must be in order to be sufficient, sustainable and supportive of stakeholder well-being. As indicated above, an SN for water use might be that an organization's consumption of water be no more than its fair and proportionate share. But that is an inadequate specification for measurement and reporting purposes because it begs the question of how much water would, in fact, be fair and proportionate as opposed to too much. A more useful specification of an SN for water use would be expressed in terms of, say, gallons – a not-to-exceed threshold, that is, for how much water an organization should be allowed to use, if only on a self-imposed basis. Its fair and proportionate share, in turn, might be determined by reference to its contribution to gross domestic product (GDP) or some other measure of its socio-economic value added or claim to entitlement (McElroy, 2008; McElroy and Van Engelen, 2012; Randers, 2012).

Sometimes, the SNs identified by an organization for particular AOIs will not be achievable anytime soon, in which case the MultiCapital Scorecard allows for the specification of *Trajectory Targets* (TTs) as interim goals. This is often the case for impacts on the climate system by way of greenhouse gas emissions, which science tells us ought to be zero until such time as the climate system has recovered from anthropogenic interference[3]. Most organizations and businesses in general, however, do not have the luxury of making such a change all at once, and so TTs must be defined in a way that provides a transition pathway, or trajectory, from some current state of affairs to the target state represented by an SN.

Once SNs and TTs have been defined for individual AOIs, data collection protocols for each must be developed. A data collection protocol is a system for gathering the data required to describe an organization's impacts, which such data can then be used to populate a MultiCapital Scorecard. In general, a protocol will have people, process and technology dimensions. The people dimension will identify the parties responsible for gathering the data; the process dimension will determine when and how the data should be collected; and the technology dimension will specify the role of technology, if any, in capturing, computing and reporting the data required.

Once the SNs, TTs and data collection protocols for each AOI have been defined, the results are recorded as shown in Table I (i.e. for each AOI). The example provided here consists of greenhouse gas emissions over a five-year period, for which the corresponding AOI of interest is *The Climate System*.

As Table I shows, the SN for greenhouse gas emissions is "0" emissions in all years. To get to that level, though, a steady progression of decreases in emissions is required over time as specified in science-based models over multiple decades if not longer. The example included here simply shows the application of such a model to the first five years of a strategy starting with a baseline year of 2015. Incremental decreases in allowable emissions are then identified as TTs for the four years that follow. The "GHG emissions (tonnes)" row then reports actual emissions for a five-year period as of the end of 2019.

Table I. Performance goals and scores for a climate system AOI

The climate system	2015	2016	2017	2018	2019
Sustainability norm (SN)	0	0	0	0	0
Starting point (tonnes)	25,000				
Trajectory targets (TTs)		23,333	21,667	20,000	18,333
GHG emissions (tonnes)	25,000	24,100	21,650	20,000	18,300
Progression score	0	1	2	2	2

The lower-most "Progression score" row next comes into play as an illustration of how we score performance against SNs and TTs in the MultiCapital Scorecard. We refer to these scores as Progression Scores because they tell us how an organization's actual impacts on vital capitals compare to the SNs and TTs that we have defined for each AOI. The indicators we use to do so comprise a seven-point scale or progression scoring schema as shown below:

- 3 = Meeting or exceeding the SN.
- 2 = Meeting or exceeding the year's TT, but falling short of the SN.
- 1 = Improving upon the previous year's performance, but not meeting the period's TT, or any period of improving performance while having no such targets at all (SN or TT).
- 0 = Maintaining the previous year's performance, while not meeting the period's TT.
- −1 = A one-year regression in performance and not meeting the period's TT.
- −2 = A two-year regression in performance and not meeting the period's TT.
- −3 = A three-or-more year regression in performance while not meeting the period's TT, or any period of worsening performance while having no such targets at all (SN or TT).

As the example in Table I shows, the hypothetical case that we present here features scores of no better than "2" in any given year, since at no time were actual greenhouse gas emissions "0" tonnes or less. Short of that, the best an organization can do is score a "2", which is defined as "Meeting or exceeding the year's Trajectory Target, but falling short of the Sustainability Norm".

Scorecard implementation

Once SNs, TTs, data collection protocols and progression scores have been obtained for each AOI, it is time to integrate and report them in a MultiCapital Scorecard of the sort shown in Figure 1. For demonstration purposes, we include a fully configured scorecard for a fictitious organization (Company ABC) in the year 2019.

The Scorecard shown in Figure 1 illustrates a case in which Company ABC has identified nine AOIs for which duties and obligations to manage its impacts on vital capitals exist. The nine AOIs, in turn, have been arranged in terms of the three "Bottom Lines" they correspond to. In Figure 2, we show the basis for making these associations (Elkington, 1997; McElroy and Van Engelen, 2012; Thomas & McElroy LLC, 2015a, 2015b).

To further explain the calculations shown in Figure 1, we direct the reader's attention to the "The Climate System" row at the bottom of the Scorecard. It picks up where we left off in our discussion above of how the SN and TTs were developed for that AOI (Table I). Starting with the "Progression Score" column, Company ABC more than met its TT in 2019 by reducing its emissions to a level that fell below allowable limits. It thereby earned a score of "2" for that year as defined in the progression scoring schema set forth above.

Next, we see that a "Weight" of 5 has been assigned to the Climate System AOI, which was taken from a scale of 1 to 5, according to which 1 is a low priority and 5

2019 – Company ABC

Bottom Line	Areas of Impact/(Capitals)	Progression Score (A)	Weight (B)	Weighted Score (C) A x B	Fully Sustainable Score (D) B x 3	Gap to Fully Sustainable D - C	Area of Impact Bottom Line C / D	Triple Bottom Line
Social	**Living Wage** (H)	3	1	3	3	0	100%	
	Workplace Safety (H,S,C)	3	5	15	15	0	100%	**83%**
	Innovative Capacity (H,S,C)	1	2	2	6	4	33%	
Economic	**Equity** (IE:F)	3	5	15	15	0	100%	
	Borrowings (IE:F)	2	1	2	3	1	67%	**90%**
	Competitive Practices (EE:F & EE:NF)	2	1	2	3	1	67%	
Environmental	**Water Supplies** (N)	3	3	9	9	0	100%	
	Solid Wastes (N)	2	2	4	6	2	67%	**77%**
	The Climate System (N)	2	5	10	15	5	67%	
		Overall Performance		62	75	13		**83%**

Notes

Capitals Legend:
C = Constructed Capital*
EE:F = External Economic: Financial Capital*
EE:NF = External Economic: Non-Fin. Capital*
H = Human Capital*
IE:F = Internal Economic: Financial Capital*
N = Natural Capital
S = Social & Relationship Capital*

*Usually includes Intellectual Capital of some kind

Figure 1.
An annual MultiCapital Scorecard

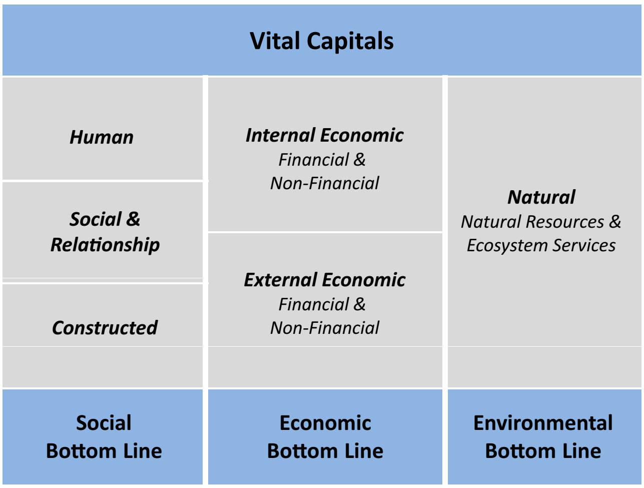

Figure 2.
Vital capitals and their respective bottom lines

is a high priority. This is a decision that would have been made during the construction of Company ABC's Scorecard, if not beforehand, as the overall mix of its AOIs was coming into view. In our example, we also started with a budget of 25 total "Weighting Points" which were then allocated to all of the AOIs in such a way as to neither exceed the budget nor assign any more than a value of "5" to any one of them.

Next, we compute the "Weighted Score" for each AOI, which for the Climate System was 10 (Progression Score of 2, multiplied by a Weight of 5). After that, we compute the maximum possible "Fully Sustainable Score" for each AOI, which for the Climate System is 15 (best possible Progression Score of 3, multiplied by a Weight of 5), and then, we compare the Weighted Score with the Fully Sustainable Score to determine the size of the gap between them, if any. In the case of the Climate System, there is a gap of 5 points. In terms of its actual performance relative to the SN for impacts on the Climate System, Company ABC earned a score of 67 percent (10 out of 15 possible points).

Beyond providing scores for each AOI in the ways described above, the MCS also calculates performance scores by "Bottom Line" and for organizations as a whole. For Bottom Line calculations, we simply total up all Weighted and Fully Sustainable Scores in each case, separately, and then express them as the quotient of the one over the other (Weighted Score Total/Fully Sustainable Score Total). That gives us quantitative performance scores for each Bottom Line (McElroy, 2008; McElroy and Van Engelen, 2012; Thomas & McElroy LLC, 2015b). We then do the same thing for the entire portfolio and out of that comes an overall score for the organization as a whole (83 percent in the case of the example shown in Figure 1).

The MultiCapital Scorecard and leading standards

Regarding international standards for measurement and reporting, there are three of them to be considered in light of the functionality of the MultiCapital Scorecard:

(1) the GRI *G4 Guidelines* for sustainability reporting (GRI, 2013b);

(2) the IIRC *International <IR> Framework* for integrated reporting (IIRC, 2013); and

(3) the GISR *Sustainability Ratings Standard* for rating the sustainability performance of listed companies (GISR, 2013).

How, one might ask, does the MultiCapital Scorecard stack up against them?

Insofar as the MultiCapital Scorecard is explicitly capital-based, only the IIRC and GISR standards are similarly framed. That said, the IIRC *Framework* does not mandate reporting relative to impacts on vital capitals and, instead, defers to the reporting organization to make that decision itself. The GISR standard, however, is much less indifferent, although still not complete. It remains to be seen, then, just how strict its makers will be in requiring performance assessments to be expressed in capital-based terms using capital- and context-based metrics (McElroy, 2008; McElroy and Van Engelen, 2012; Thomas & McElroy LLC, 2015b). For its part, the MultiCapital Scorecard is unequivocal on the subject: performance reporting *must* be capital-based in all cases. Absent references to vital capitals, performance disclosures lack foundation (McElroy, 2014b).

Regarding the requirement that measurement and reporting be "context-based" (i.e. that performance be expressed relative to contextually relevant SNs, standards or thresholds), only the GRI and GISR standards have taken this position. Both, that is, explicitly call for consideration of Sustainability Context as a matter of principle in measurement and reporting. The IIRC, however, has not. Here again, the

MultiCapital Scorecard is unequivocal on the subject: performance reporting *must* be context-based in all cases. Without context, performance disclosures lack meaning (McElroy, 2014b).

With respect to integration (i.e. that financial and non-financial reporting be combined in some way), only the IIRC standard addresses integrated reporting as such. And while the MultiCapital Scorecard, too, is an integrated measurement and reporting system, it differs from the IIRC standard in that the standard is primarily aimed at providers of financial capital as its audience. Its materiality criteria, therefore, give priority to impacts on non-financial capitals only insofar as they might affect the financial value of a firm. A company's ecologically unsustainable greenhouse gas emissions, for example, might be regarded as immaterial under the IIRC standard, as in most cases they are perfectly legal and do not yet have an impact on a firm's finances. The MultiCapital Scorecard, by contrast, *requires* disclosure in such cases, as the impacts involved exceed contextually relevant ecological thresholds and put human well-being at risk. The MultiCapital Scorecard, as well, provides an integrative process (i.e. the three-step process described above), which the IIRC standard lacks.

Summary and conclusions

It should be clear from the discussion above, we hope, that the MultiCapital Scorecard inhabits a space of its own, both as a methodology and a doctrine. As a methodology, it is the first and still only capital- and context-based integrated measurement and reporting system extant. As a doctrine, it relies on a sustainability interpretation of performance (multicapitalism), whereby performance is assessed relative to impacts on vital capitals and with reference to organization-specific norms that function as *standards of performance*. This is done by determining whether or not impacts, if generalized and continued indefinitely, would put either the sufficiency of vital capitals or the well-being of those who depend on them (i.e. stakeholders) at risk (Kant, 1785; Rawls, 1971). Thus, it explicitly addresses the questions of "Are we sustainable?" and "How much is enough?" for individual firms.

And because the MultiCapital Scorecard is in fact a *stakeholder-based multiple capital* integrated measurement and reporting system, not a *shareholder-based financial-capital-centric* one, we can also say that there now appear to be two faces of integrated reporting (McElroy, 2015). The first is the one advocated by the IIRC, which is a shareholder-centric approach that prioritizes impacts on financial performance and downplays sustainability considerations. The second is a more stakeholder-focused one and relies on Context-Based Sustainability as a means of defining organization-specific performance norms, as exemplified by the MultiCapital Scorecard. It is the second one, then, that places impacts on *all* vital capitals on behalf of *all* stakeholders on a level playing field, and thereby reports performance in a more thorough and robust form. This was the original vision of integrated reporting, and it is the vision we have tried to adhere to in our design of the MultiCapital Scorecard (Institute of Directors in Southern Africa and the King Committee, 2009; McElroy, 2014c).

Finally, there is nothing in the design of the MultiCapital Scorecard that calls for the monetization of impacts on capitals other than for financial capital itself. Instead, we call for the identification of capital limits and thresholds in their own terms (e.g. gallons of water, tonnes of greenhouse gas emissions, product safety levels, conformance to ethical standards, etc.). Whether or not the use of natural capital is occurring at a sustainable rate, for example, may not necessarily be reflected in the price we put on it and instead will have everything to do with biophysical limits. The same is true for the other capitals and their own stocks and flows. Indeed, all capitals are limited and should be measured in terms of their carrying capacities, as should standards of performance be expressed for what an organization's impacts on them must be to be sufficient, sustainable and duly supportive of stakeholder well-being. It is the sustainability of impacts upon the carrying capacities of vital capitals that lies at the heart of organizational performance, and the sooner we come to terms with that in our mainstream accounting methods, the better off we will be.

Notes

1. The MultiCapital Scorecard is an open-source methodology developed by Thomas & McElroy LLC (www.multicapitalscorecard). Although the methodology is open-source, the name itself is trademarked and should only be used with attribution and never in a commercial form without permission from Thomas & McElroy LLC. End-user applications of the method are otherwise encouraged without restriction.
2. www.sustainableorganizations.org/context-based-sustainability.html
3. www.ipcc.ch/report/ar5/

References

Boulding, K. (1949), "Income or welfare?", *Review of Economic Studies*, Vol. 17 No. 2, pp. 77-86.

Boulding, K. (1966), "The economics of the coming spaceship earth", in Jarrett, H. (Ed.), *Environmental Quality in a Growing Economy*, Johns Hopkins University Press, Baltimore, MD.

Costanza, R. and Daly, H. (1992), "Natural capital and sustainable development", *Conservation Biology*, Vol. 6 No. 1, pp. 37-46.

Costanza, R., Cumberland, J., Daly, H., Goodland, R. and Noorgard, R. (1997), *An Introduction to Ecological Economics*, CRC Press LLC, Boca Raton, FL.

Daly, H. (1977), *Steady-State Economics*, Freeman, San Francisco.

Daly, H. (1996), *Beyond Growth*, Beacon Press, Boston.

Eccles, R. and Krzus, M. (2015), *The Integrated Reporting Movement*, John Wiley and Sons, Hoboken, NJ.

Ekins, P. (1992), "A four-capital model of wealth creation", in Ekins, P. and Max-Neef, M. (Eds), *Real-Life Economics*, Routledge, London.

Elkington, J. (1997), *Cannibals With Forks – The Triple Bottom Line of 21st Century Business*, Capstone Publishing, Oxford.

Fisher, I. (1906), *The Nature of Capital and Income*, Macmillan, New York, NY.

GISR (2013), "Sustainability ratings standard", available at: http://ratesustainability.org/wp-content/uploads/2013/12/gisr-component1-principles-full-REV1-3apr14.pdf (accessed 18 April 2015).

Gleeson-White, J. (2014), *Six Capitals or Can Accountants Save the Planet?*, W. W. Norton & Co., New York, NY.

GRI (2013a), "The sustainability content of integrated reports – a survey of pioneers", available at: www.globalreporting.org/resourcelibrary/GRI-IR.pdf (accessed 18 April 2015).

GRI (2013b), "G4 sustainability reporting guidelines – reporting principles and standard disclosures", available at: https://www.globalreporting.org/resourcelibrary/GRIG4-Part1-Reporting-Principles-and-Standard-Disclosures.pdf (accessed 18 April 2015).

IIRC (2013), "The international <IR> framework", available at: www.theiirc.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf (accessed 18 April 2015).

Institute of Directors in Southern Africa and the King Committee (2009), "King report on governance for south africa – 2009", available at: www.library.up.ac.za/law/docs/king111report.pdf (accessed 18 April 2015).

Kant, I. (1785), *Groundwork for the Metaphysics of Morals*, in Abbott, T. (translation by), Broadview Press, Peterborough, Ontario.

McElroy, M. (2008), "Social footprints – measuring the social sustainability performance of organizations", available at: www.rug.nl/research/portal/publications/pub(cff80cf2-04f3-4848-8626-c59520b7197c).html (accessed 18 April 2015).

McElroy, M. (2013), "The carrying capacities of capitals", available at: www.greenbiz.com/blog/2013/06/18/carrying-capacities-capitals (accessed 18 April 2015).

McElroy, M. (2014a), "Sustainability and multicapitalism – together at last!", available at: www.sustainablebrands.com/news_and_views/next_economy/mark_mcelroy/sustainability_multicapitalism_–_together_last (accessed 18 April 2015).

McElroy, M. (2014b), "Can there be meaningful integrated reporting?", *Part* 1, available at: www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/can_there_be_meaningful_integrated_reporting_part_1_2, and Part 2, available at: www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/can_there_be_meaningful_integrated_reporting_part_2_2 (both accessed 18 April 2015).

McElroy, M. (2014c), "Has integrated reporting thrown sustainability under the bus?", available at: www.greenbiz.com/article/has-integrated-reporting-thrown-sustainability-under-bus (accessed 18 April 2015).

McElroy, M. (2015), "Multicapitalism and the two faces of integrated reporting", available at: www.sustainablebrands.com/news_and_views/new_metrics/mark_mcelroy/multicapitalism_two_faces_integrated_reporting (accessed 18 April 2015).

McElroy, M. and Van Engelen, J. (2012), *Corporate Sustainability Management – The Art and Science of Managing Non-Financial Performance*, Earthscan, London.

McElroy, M., Jorna, R. and Van Engelen, J. (2007), "Sustainability quotients and the social footprint", *Corporate Social Responsibility and Environmental Management*, Vol. 15 No. 4, pp. 223-234.

Meadows, D. (1998), "Indicators and information systems for sustainable development", available at: www.donellameadows.org/archives/indicators-and-information-systems-for-sustainable-development/ (accessed 18 April 2015).

Porritt, J. (2005), *Capitalism as if the World Matters*, Earthscan, London.

Randers, J. (2012), "Greenhouse gas emissions per unit of value added ('GEVA') a corporate guide to voluntary climate action", *Energy Policy*, Vol. 48 No. 1, pp. 46-55.

Rawls, J. (1971), *A Theory of Justice*, Harvard University Press, Cambridge, MA.

Raworth, K. (2012), "A safe and just space for humanity: can we live within the doughnut?", available at: www.oxfam.org/sites/www.oxfam.org/files/dp-a-safe-and-just-space-for-humanity-130212-en.pdf (accessed 18 April 2015).

Rockström, J., Steffen, W., Noone, K., Persson, A., Chapin, F., Lambin, E., Lenton, T., Scheffer, M., Folke, C., Schellnhuber, H., Nykvist, B., de Wit, C., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R., Fabry, V., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P. and Foley, J. (2009), "A safe operating space for humanity", *Nature*, Vol. 461 No. 24, pp. 472-475.

Steffen, W., Richardson, K., Rockström, J., Cornell, S., Fetzer, I., Bennett, E., Biggs, R., Carpenter, S., de Vries, W., de Witt, C., Folke, C., Gerten, D., Heinke, J., Mace, G., Persson, L., Ramanathan, V., Reyers, B. and Sörlin, S. (2015), "Planetary boundaries 2.0 – new and improved", Science.

Stiglitz, J., Sen, A. and Fitoussi, J. (2010), *Mis-Measuring Our Lives – Why GDP Doesn't Add Up*, The New Press, New York, NY.

Thomas & McElroy L.L.C. (2014), "Multicapitalism – a new economic doctrine for sustainability in commerce", available at: www.multicapitalism.com/Multicapitalism.pdf (accessed 18 April 2015).

Thomas & McElroy L.L.C. (2015a), "Making materiality determinations in the multicapital Scorecard", available at: www.multicapitalscorecard.com/wp-content/uploads/2015/01/Materiality_in_MCS.pdf (accessed 18 April 2015).

Thomas & McElroy L.L.C. (2015b), "An overview of the multicapital scorecard", available at: www.multicapitalscorecard.com/wp-content/uploads/2015/01/Overview_of_MCS.pdf (accessed 18 April 2015).

Wackernagel, M. and Rees, W. (1996), *Our Ecological Footprint – Reducing Human Impact on the Earth*, New Society Publishers, Gabriola Island, BC.

About the authors

Mark W. McElroy is an accomplished innovator, consultant, author and educator in the theory and practice of Corporate Sustainability Management. He is the Founder and Executive Director of the Center for Sustainable Organizations. He is particularly well known for his development of Context-Based Sustainability (CBS), an approach to sustainability measurement, management and reporting in which performance is seen as a function of what an organization's impacts are and/or ought to be on vital capitals. Dr McElroy is also a long-time veteran of management consulting, having spent much of his career at Price Waterhouse, KPMG Peat Marwick – where as a partner he led a national practice – and IBM Consulting. More recently, he created and led Deloitte Consulting's Center for Sustainability Performance in Boston, MA, a think-tank dedicated to the study of sustainability measurement, management and reporting. Dr McElroy earned his PhD in Economics and Business from the University of Groningen in The Netherlands in 2008, and currently teaches sustainability theory and practice in the *MBA in Managing for Sustainability* program at Marlboro College in Vermont. He is the Board Chair Emeritus at the Donella Meadows Institute, also in Vermont, where he continues to serve on the Advisory Board. Dr McElroy is a co-founding principal of Thomas & McElroy LLC. Mark W. McElroy is the corresponding author and can be contacted at: mmcelroy@vermontel.net

Martin P. Thomas came to sustainability thinking after completing his MSc in Consulting & Coaching for Change, chairing The Change Leaders (tCL) and 34 years in Unilever. He headed Unilever's global strategic planning activities and then had responsibility for several mergers,

acquisitions, disposals and international ventures in various countries at different times. His work was international, mainly at subsidiary executive board level, conducted in four languages and living consecutively on four continents. Since 1999, he has been consulting as call4change and has taken on interim management assignments in various organizations. Thomas' publications include chapters on "Scenarios in Venezuela", in "Business Planning for Turbulent Times" (Earthscan 2008) written by members of the Oxford Futures Forum and on "Performance that Lasts" in "New Eyes" published by The Change Leaders (2013). His focus on measuring organizational performance toward sustainable futures started in 2007 when he decided to complement the activities of tCL colleagues in New Angles by operationalizing the "triple bottom line" concepts. While presenting to The Centre for Social & Environmental Accounting Research at St Andrews, Martin linked up with Mark McElroy. Since 2011, they have been extending Context-Based Sustainability principles and practices to include financials. Thomas is a co-founding principal of Thomas & McElroy LLC.