Environmental management systems standards facing natural capital accounting: ISO 14007 & ISO 14008

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Abstract

The global environmental crisis has prompted the development of a wide range of tools to define firms' relation with nature, such as environmental management systems standards. Few studies have so far explored the puzzle raised by the development of natural capital accounting methodologies. Such instruments aim at assigning a book value to nature, which allows an environmental costs and benefits analysis. The International Organization for Standardization (ISO) is currently setting standards for such methodologies (ISO 14007 & ISO 14008). Other actors, including the Big Four accounting and auditing firms – Deloitte, E&Y, KPMG and PwC –, and the Natural Capital Coalition, already developed their own methodologies outside the scope of ISO. This paper examines why and how ISO develops natural capital accounting standards that are likely to compete with other arenas. We build from semi-structured interviews with key stakeholders of ISO. We suggest that the development of ISO 14007 & ISO 14008 compete with the existing methodologies of the first-movers, in particular on concerns regarding transparent documentation and reporting. We build our argument on international political economy approaches to emphasise the link between technical specifications and power relations in contemporary capitalism.

Keywords: ISO 14007, ISO 14008, natural capital accounting, environmental management systems standards, transnational private governance, international political economy

Introduction

Martin Baxter, Chair of the technical committee (TC) 207, subcommittee (SC) 1, environmental management systems of the International Organization for Standardization (ISO) recently claimed that "[t]here is a growing drive towards valuing natural capital, as well as a need to undertake a monetary assessment of an organization's environmental aspects and impacts (…) having a set of standardized, harmonized methods becomes important"[1]. Such emphasis reflects the near completion of two significant ISO International Standards offering guidance in this domain (ISO 14007 - Environmental management: Determining environmental costs and benefits; ISO 14008 - Monetary valuation of environmental impacts and related environmental aspects). Such methodologies for natural capital accounting allow multinational corporations (MNCs) to monetise their environmental impacts and undertake what is often referred to as an environmental costs and benefits analysis.

Other actors have already engaged into natural capital accounting, in order to measure in monetary terms their corporate social responsibility (CSR) indicators. Such accounting scheme allows to directly link and compare firms' financial performance and their environmental impacts. It has been promoted as a key tool to integrate businesses with the Sustainable Development Goals (SDGs) (Goodrich, 2018). For instance, the Natural Capital Coalition, an international private initiative supported by very large MNCs, non-governmental organizations (NGOs), states, academia and United Nations (UN) bodies aims at developing a "standardized framework for business to identify, measure and value their impacts and dependencies on natural capital" (Natural Capital Coalition, 2018b). The Big Four accounting and auditing firms – Deloitte, E&Y, KPMG and PwC – (the Big Four), are key stakeholder within this Coalition. They have had a prominent role in the CSR consulting market for many years and already developed their own methodologies to identify, quantify, value and compare the environmental impacts of MNCs. However, they refused to take part in the work of ISO, while representatives of the Natural Capital Coalition have only been passively involved. This paper examines why and how ISO develops natural capital accounting standards that are likely to compete with other arenas.

Natural capital accounting standards – ISO 14007 & ISO 14008 – are part of the ISO 14000 series (environmental management systems standards). ISO 14000 series is described by Grolleau and Mzoughi (2005) as an institutional dispositive reducing transaction costs, or by Clapp (1998, p. 302) as a hybrid private-public regime "dominated by private industry interests, particularly those in industrialised countries". Scholars have explored the relationship between environmental and economic performance, i.e., the impact of such standards respectively on nature and MNCs (Clapp, 2001, p. 2001; de Vries, van der Wiele, & Bayramoglu, 2012; Zobel, 2017). Others have analysed the reason why MNCs certify to ISO 14001 (Darnall, 2006; Grolleau, Lamri, & Mzoughi, 2008), the only standard of the ISO 14000 series "for which firms receive certification" (Prakash & Potoski, 2006, p. 88). Some suggest that ISO 14001 has become a *de facto* mandatory standard, a condition to compete in the global marketplace (Clapp, 1998, p. 299; Heras-Saizarbitoria, 2017). Busch specifies that *de facto* standards must be followed in order to participate in a given market (Busch, 2011, p. 26), while David (1985)

[1] Interview of Martin Baxter given to Rick Gould for the online website of ISO. Available at: Gould, R. (2018, May 8). The secret to unlocking green finance. Accessed the 16 April 2019: http://www.iso.org/cms/render/live/en/sites/isoorg/contents/news/2018/05/Ref2287.html

and Mattli & Büthe (2003) acknowledge the importance of path-dependent sequences (the so-called "first-mover's advantage"). Finally, Graz (2018, p. 449) underlines the competition taking place between different standards, which relates to a "hybrid governance over which global corporations have much hold".

Few studies in environmental humanities (Sullivan, 2014; Sullivan & Hannis, 2017) or accounting and economics (Agarwala, Atkinson, Baldock, & Gardiner, 2014; Barker, 2019) have so far explored the puzzle raised by the development of natural capital accounting methodologies for MNCs. None have analysed their standardization within ISO[2], neither the competition it raised with existing initiatives and arenas. We suggest that the development of ISO 14007 & ISO 14008 competes with the existing methodologies of the first-movers, in particular on concerns regarding transparent documentation and reporting. We build on international political economy (IPE) approaches to understand the authority of standards and technical specifications in the globalisation of markets, as well as its relation with global environmental governance (Falkner, Clapp, & Meckling, 2013; Graz, forthcoming; Green, 2014; Levy & Newell, 2005; Murphy & Yates, 2019).

We develop a case study based on qualitative material, including primary and secondary sources. The paper builds on preliminary findings from semi-structured interviews with four members of the two working groups in charge of setting the standards in ISO, in particular the two convenors of ISO 14007 & ISO 14008[3]. Semi-structured interviews were adopted to "capture their voices and give meaning (or interpret) to their experience" (Rabionet, 2009, p. 563) and to "obtain the testimony of individuals who were most closely involved in the process of interest" (Tansey, 2007, p. 769). We also make use of other primary sources: formal documents from ISO including the two standards, informal documents provided by interviewees, and documents produced by the Big Four and the Natural Capital Coalition. From this, we use a non-causal process-tracing methodology to contextualise different mechanisms studied "in action", and to explore the relationships that exist between a set of factors and results (Bezes, Palier, & Surel, 2018, p. 962).

The first section of this paper examines the authority of environmental management systems standards in contemporary capitalism. The second section describes the growing importance of monetary valuation to define MNCs' relation with nature. It then explains the content of ISO 14007 & ISO 14008. The third section discusses the conflicts and power relations taking place both within and outside ISO in relation to the development of ISO 14007 & ISO 14008. We conclude this paper with some limitations and possible future research.

1. The authority of environmental management standards

In this section, we first discuss why and how standards materialise a non-conventional form of power in which private actors have much hold. We then examine the growing importance of ISO environmental management systems standards for MNCs in order to compete in the global marketplace.

1.1 The world of standards

[2] A book chapter mentions these standards in the broader discussion of the monetisation of environmental and social aspects. See: Morel, S., Traverso, M., & Preiss, P. (2018). Discussion Panel—Assessment of Externalities: Monetisation and Social LCA. In E. Benetto, K. Gericke, & M. Guiton (Éd.), *Designing Sustainable Technologies, Products and Policies: From Science to Innovation* (p. 391-396). https://doi.org/10.1007/978-3-319-66981-6_43

[3] Two face-to-face interviews and two skype interviews were conducted. One interviewee asked to be anonymized.

The global environmental crisis has prompted the rise of transnational private regulations such as environmental standards and certifications (Clapp & Dauvergne, 2011; Falkner, 2003; Green, 2014). MNCs have actively participated in the development and use of such regulatory tools, including enterprise risk management plans, sustainability assessments, accounting, and reporting (Maas, Schaltegger, & Crutzen, 2016, p. 237). According to Graz and Nölke (2011, p. 2), such transnational private governance refers to the "ability of non-state actors to cooperate across borders in order to establish rules and standards of behaviours accepted as legitimate by agents not involved in their definition".

Standardization has become a real issue for global economic relations, involving a full range of stakeholders (Dudouet, Mercier, & Vion, 2006, p. 368). IPE scholars emphasise the importance of private actors in shaping the global political economy (Cutler, 2010), considering MNCs as "an intrinsic part of the fabric of environmental governance, as rule maker, and often rule enforcer" (Levy & Newell, 2005, p. 330). ISO is a noteworthy case in point regarding the ability to bring public and private actors together. Private actors take part in the different working groups setting new standards or revising older ones. But they can also set standards outside such traditional arenas, and develop market-based *de facto* standards, what Belleflamme describes as "unfettered market processes" (Belleflamme, 2002, p. 154, see also; Egyedi, 2005; Farrell & Saloner, 1988; Keil, 2002; Ruwet, 2017). Therefore, a full range of potential standards and different actors compete with each other, leading to what Shapiro and Varian (1999, p. 8) describe as "standards battles in today's economy". As Schepel (2005, p. 3) points out, "standards hover between the state and the market" and their development implies interrelations between public and private spheres. In the same vein, Busch underlines that "private standards and public regulations are two similar and sometimes overlapping forms of governance" (Busch, 2011, p. 127). Finally, Graz (forthcoming, p. 9) describes such conundrum as the transnational hybrid authority of standards, in which "alternative form[s] of authority [are] based on the juxtaposition of instances of power transforming the relation between transnational capitalism and territorial sovereignty".

Standards play a key role in the field of sustainability, in order to regulate firms' behaviour in the context of the global environmental crisis. They provide global voluntary regulatory tools to firms committed to "assume social and political responsibilities" (Scherer & Palazzo, 2011, p. 899). According to Murphy and Yates (2009, p. 2) ISO standards "may have had more impact than any of the UN-sponsored agreement of the 1990s". Such an approach acknowledging the political role of business is usually preferred by market liberals, since "it shifts the burden of regulation from the State to the firm, which can monitor environmental performance much more efficiently" (Clapp & Dauvergne, 2011, p. 175). Dauvergne (2018) adopts a more critical stance by describing such tools as "eco-business" practices for communication and public relations. In the same vein, Bair and Palpacuer (2015, p. S3) argue that these instruments aim at promoting the ethical image of MNCs, by absorbing and anticipating criticisms, resistances, and contestations. Whatever that may be, standards and private regulations blur the boundaries between what is political on one hand, and what is a-political and purely technical on the other (Porter, 2005). However, much literature assumes that standards reflect and materialise power relations in their quest of regulation (Graz, 2018; Hallstrom, 2004; Murphy & Yates, 2009). They are thus part of "the technical, political, social, economic, and ethical infrastructure that constitutes human societies" (Busch, 2011, p. 13). What Weber (1922, p. 226) calls the "exercise of power by way of knowledge" highlights the relations between politics and expertise, since the latter integrates scientific knowledge into a political decision-making process (Granjou, 2003). As Mattli and Büthe (2011, p. 11) point out, "standards do not embody some objective truth or undisputed scientific wisdom professed by experts". On the contrary, standards often create winners and losers (Busch, 2011, p. 13) and result from conflicts and

power relations. It is from this understanding that standards materialise a "non-conventional form of power in the organisation of contemporary capitalism" (Graz, forthcoming, p. 8).

1.2 ISO and environmental management systems

Environmental management systems are "formal structured framework of policies, procedures, and practices to manage and reduce an organization's environmental impact" (Sardá & Pogutz, 2018, p. 150), providing MNCs with a standardized framework for the protection of the environment (Neves, Salgado, & Beijo, 2017, p. 253). During the 1980s and 1990s, some MNCs established the first voluntary codes of conduct to define their relation with the environment and improve their environmental performance. It aimed at responding to several environmental catastrophe in the 1980s and to the 1992 Rio Earth Summit, in which industries played a key role by supporting the development of different "voluntary" or "best practice" codes (Clapp & Dauvergne, 2011, p. 175; Sardá & Pogutz, 2018, p. 148). Published in 1996, ISO 14001 was largely based on the British Standard 7750 of 1994. It was revised in 2015, to ensure that "the standards are [still] updated and relevant for the marketplace" (Ciravegna Martins da Fonseca, 2015, p. 43), and adapted to the latest trends in this domain. ISO 14001, the only certifiable standard of the ISO 14000 series, is often portrayed as the "Global Green Standard" (Heras-Saizarbitoria, 2017, p. 4), i.e., the "world's most used standard supporting the development of appropriate environmental policies and ensuring their implementation in all types of organizations" (Sardá & Pogutz, 2018, p. 150). It is worth noting that two decades ago, Clapp already anticipated the future importance of ISO 14000 series of standards when she stressed that they would "become a condition for firms that wish to compete in the global marketplace" (Clapp, 1998, p. 299).

While Prakash and Potoski identify a number of framework conditions likely to help ISO 14001 to effectively induce "firms to pollute less and better comply with governmental regulations" (Prakash & Potoski, 2006, p. xii), others have more doubts regarding the standards' effectiveness besides their use as a tool to compete in the global marketplace (Krut & Gleckman, 1998; Ma & Yin, 2009). Whatever that may be, the importance of ISO 14001 in contemporary capitalism should be understood in the wake of the success of management systems standards such as ISO 9000 series first published in 1987. The main principle behind such management systems standards is "continual improvement", which needs to be measured, objectified and thus documented. To achieve this goal, the other standards of the ISO 14000 series provide "practical tools for companies and organizations of all kinds looking to manage their environmental responsibilities" (ISO, 2018a). Thus, in contrast to certifiable standards such as ISO 14001, international standards ISO 14007 & ISO 14008 cannot be used in certified conformity assessment. They remain, however, key tools designed to help organization effectively identify, measure, describe and monitor their environmental impacts.

2. Standardizing natural capital accounting

2.1 Mainstreaming the monetary valuation of nature

Natural capital accounting is a tool to measure the monetary value of nature. Valuing in monetary terms allows to compare environmental and financial data. It provides a standardized measure of the sustainability of an organization based on metrics that include "environmental information into standard economic measurement and accounting" (Obst, 2015, p. 14). Natural capital accounting builds on the relationship between "ecosystem services" on one hand, usually defined as "the benefits people obtain from ecosystems" (Millennium Ecosystem Assessment, 2005), and "environmental accounting" on the other. The latter provides accounts

of the "environmental events which arise as a result of, and are intimately tied to, the economic actions of entities" (Bebbington & Thomson, 2007, p. 42).

The UN already developed in 1993 and continue to improve a System of Environmental-Economic Accounting, an "international statistical standard for environmental-economic accounting" (United Nations, 2014, p. vii). While the latest version of the methodology published in 2012 is viewed as having "the same authority and weight as the System of National Accounts" (Hamilton, 2016, p. 27), its scope is in the domain of the accounting of states' environment rather than corporate accounting. Still at the intergovernmental level, the Organisation for Economic Co-operation and Development (OECD) published several reports on this topic. The first released in 2004 was about "Measuring Sustainable Development", presenting the transformation of environmental units into monetary data (OECD, 2004). It was followed in 2006 by another one on "Cost-Benefit Analysis and the Environment" (OECD, 2006). The main author of the latter was David Pearce, also involved in the so-called "Pearce Report", or officially "Blueprint for a Green Economy" (Pearce, Markandya, & Barbier, 1989), which gave rise to one of the first modern forms of environmental accounting and reporting. In 2018, a new OECD report on this topic was released, providing an in-depth explanation of the latest methods and techniques on environmental accounting (OECD, 2018).

Global actors as diversified as the World Wide Fund for Nature, the World Bank, the World Business Council for Sustainable Development or the International Federation of Accountants stress the need to translate environmental data into monetary units in order to face the global environmental crisis (Pittini, 2011; The Association of Chartered Certified Accountants, Fauna & Flora International, & KPMG International Cooperative, 2012; WBCSD, 2011; WWF International, 2014). Several consulting firms have been recently created to offer natural capital accounting services to MNCs, such as "True Price", "Trucost" or "eCountability". As seen above, the Big Four are at the leading edge of the development of such methodology, since accounting for MNCs' environmental impacts fits perfectly into their business model. Ernst & Young points out that "it is time for our profession to play a leadership role in accounting for the relationship between the business world and the natural world" (Ernst & Young, International Federation of Accountants, & Natural Capital Coalition, 2014, p. 3). These actors meet within the Natural Capital Coalition, a private multi-stakeholder initiative located in the United Kingdom. The latter developed the Natural Capital Protocol, which officially aims at standardizing such methodology. However, as Barker (2019, p. 70) points out, the Natural Capital Protocol is not "a 'how to' guide for natural capital accounting; instead it is an eclectic mix of different approaches, applied in different ways to varying ends—more a 'take your pick' document than an accounting standard". The concrete activity of the Natural Capital Coalition consists in the promotion of such practices: it unites leading initiatives and OECD under "a common vision of a world that conserves and enhances the natural capital" (Natural Capital Coalition, 2018a). For this purpose, they organize presentations and meetings during which companies present their results and promote the usefulness of such an approach for their business.

The ultimate aim of such tools is to make the future state of nature knowable, comparable and thus governable, by valuing both positive and negative externalities of economic activities. The "True Value" methodology document of the audit and accounting firm KPMG points out that:

> "What executives need is a method to understand and quantify their externalities and the likelihood they will affect their company's earning capability and risk profile in the future (…) to help businesses combine financial earnings data with monetized externality data and quantify the likelihood and potential impact of the latter coming to influence the former.

> Ultimately, we need a standardized approach to measure societal value creation" (KPMG International Cooperative, 2014, p. 5).

KPMG's methodology aims at measuring in monetary terms the "societal value creation", i.e., the environmental but also economic and social externalities[4]. It allows to compare very different data into a common unit. This practice is part of the broader objective of quantifying the relationships between capitalism – its actors – and the world in which they operate. Focusing on the environmental side, the PwC methodology aims at the quantification and valuation of the firm's "environmental impacts associated with its operations and entire supply chain" (PricewaterhouseCoopers, 2015). To achieve this goal, it represents nature as a "liability" or an "asset" into corporate extra-financial reporting of firms.

Natural capital accounting is based on the leitmotiv that "we don't protect what we don't value" (Myers & Reichert, 1997), following a narrative pointing out that "once nature and the service it provides are valued as market goods (…) nature will have a fighting chance" (Ervine, 2018, p. 159). Helm (2016, p. 4) argues that "refusing to price or place an economic value on nature risks environmental meltdown". Therefore, it is often portrayed as making "environmental concerns compatible with economic growth within predominantly capitalist markets and states" (Dempsey, 2016, p. 237). But from a critical perspective, it relates to the fabrication of 'nature' as 'natural capital', trough the integration of economic theory into environmental issues (Akerman, 2003; Sullivan, 2017).

Monetary valuation of nature thus raised many criticisms (see: Common, 2007; Kosoy & Corbera, 2010; Spash & Vatn, 2006). As discussed above regarding standards and expertise, some argue that such "standardized science-based measurements" (Turnhout, Neves, & Lijster, 2014, p. 581) subscribe to a depoliticisation of environmental governance and regulations, transforming political concerns into economic and technical solutions, or what Felli (2015, p. 1743) calls "the neoliberal depoliticisation of environmental policy". For instance, Apostolopoulou and Adams (2017) criticises the technicisation of nature's protection trough "biodiversity offsetting", a tool which aims to measure and exchange biodiversity "to compensate for adverse and unavoidable impacts of projects" (IUCN, 2016, p. 1). Such market-based instrument raises concern about the "expansion of market valuation to spheres that were formerly unaffected by commerce" (Gómez-Baggethun & Ruiz-Pérez, 2011, p. 619), and more broadly, about the "neoliberalisation of environmental regulation, management, and governance" (Castree, 2010, p. 1). Sullivan and Hannis (2017, p. 1470) argue that nature is thus "conceptualised and qualified as service-providing capital (...) being quantified, accounted for and exchanged as such". However, such criticisms often build on an ill-defined or unclear definition of "neoliberalisation" of nature (Levrel & Missemer, 2018). Boisvert and her colleagues (2013, p. 1123) underline the "gap between discourse and practice" about market-based instruments for nature.

Despite criticisms and debates, natural capital accounting is now the subject of a broad multi-stakeholder consensus in global governance, bringing governments, businesses, international and NGOs together, in the same way as with other case of environmental governance (Guerry et al., 2015; Maljean-Dubois, 2017; Newell, Pattberg, & Schroeder, 2012). In December 2015, ISO started the development of standards on natural capital accounting (ISO 14007 & ISO 14008, to be published in 2019). Those two standards have been conceived to complement one another by allowing "decision-makers to make informed choices in a way which is more likely

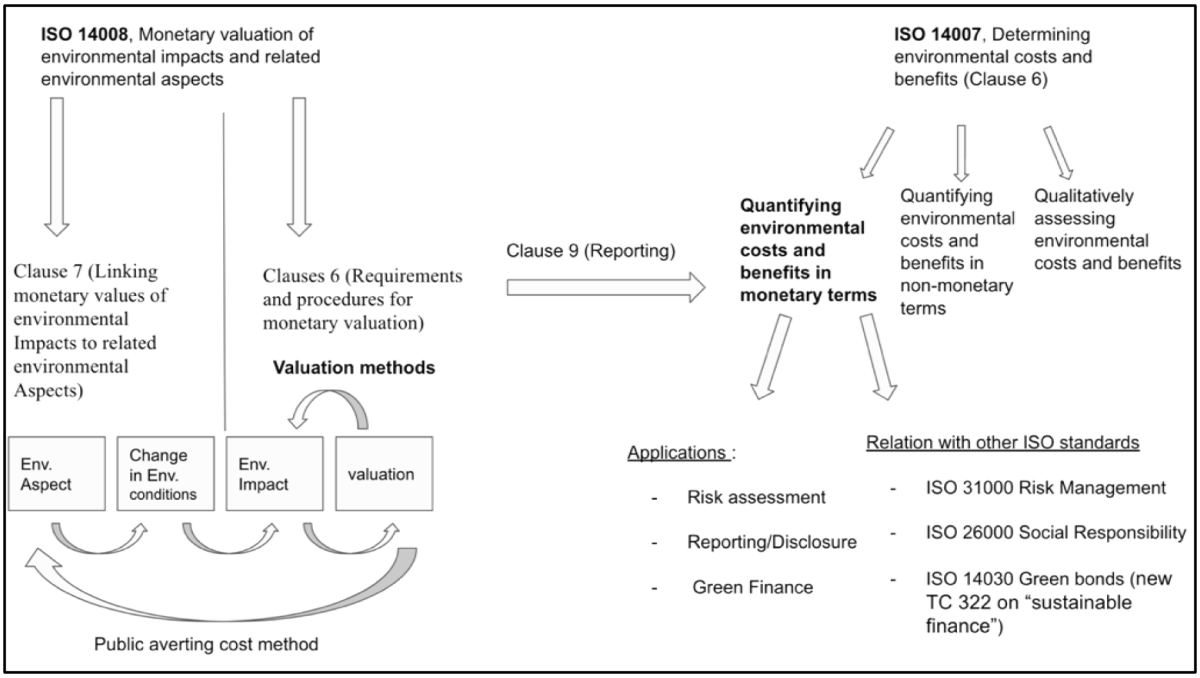
[4] A "Social and Human Capital Protocol" has been recently launched. It follows the same purpose, concepts and principles than the Natural Capital Protocol: measuring and valuing externalities of business.

to be economically and environmentally sustainable" (Gould, 2018). This is what we now look at in more detail.

2.2 ISO 14007 & ISO 14008

Both the monetisation of the environment and its further costs and benefits analysis are included in the broader concept of natural capital accounting. ISO 14008 - Monetary valuation of environmental impacts and related environmental aspects – allows the further use of ISO 14007 – Environmental management: Determining environmental costs and benefits.

While ISO recognises a strong trend in monetary assessments (ISO, 2018b), some views point out that the transparency of such methodologies is yet often very low. Thus, both ISO 14008 and ISO 14007 underline the importance of transparent documentation and reporting. The main purpose of ISO 14008 is to "increase the awareness, comparability and transparency of the monetary valuation of environmental impacts and related environmental aspects. It demonstrates the benefits that monetary valuation methods offer to users. To achieve this purpose, standardized and transparent documentation of the methods, data and assumptions used to derive monetary values is essential" (ISO 14008). On its side, ISO 14007 provides "guidance on determining and documenting (…) environmental costs and benefits in a comprehensive and transparent way". It also helps "organizations disclose and exchange relevant information in a transparent way" (ISO 14007).



ISO 14007 & ISO 14008 (Inspired by a figure and related explanations provided by one member of the working groups).

ISO 14008 makes a distinction between an environmental impact and aspect. An environmental impact can be caused by a human activity. Such activity that leads to the impact is defined by the standard as an environmental aspect. This environmental aspect provokes a change in environmental conditions, e.g., a change in the concentration of carbon dioxide in the air, which then impacts the natural environment and society. These impacts are valued in monetary terms according to clause 6 of the standard ("requirements and procedures for monetary valuation"), which provides different economic methods of valuation: market prices of traded goods and labour, revealed preference methods or stated preference methods. It is also possible to skip

these valuations techniques by directly linking valuation and environmental aspects trough the so-called "public averting cost method" based on targets at the administrative level. The value is thus calculated according to the "cost of the last (most expensive) averting action to comply with a policy target", i.e., the "marginal abatement cost" (ISO 14008). Moreover, ISO 14008 also provides guidelines to weight the monetary valuation according to different individuals or populations marginal utility of income or consumption (equity weighting), or to different points in time (discounting). Finally, clause 7 of ISO 14008 links the environmental impact with its aspect[5], because "an environmental aspect can cause one or more environmental impacts" (ISO 14008).

Therefore, ISO 14008 provides a monetary value from an environmental impact or directly from an environmental aspect. The reporting of the monetary valuation (clause 9) allows the further use of ISO 14007. ISO 14007 suggests that the costs and benefits analysis can also be expressed in qualitative way or in quantitative non-monetary term (e.g., number of species loses, number of death/years). Indeed, some countries like France are more reluctant than other to monetise the environment. However, according to our interviewees, ISO 14007 has clearly been initially developed to be linked with ISO 14008 and thus expressed in monetary terms. As pointed out by the convenor of ISO 14007 also part of the working group developing ISO 14008, "the logic would have been only one standard", because "ISO 14008 is clearly the lower level of ISO 14007"[6]. Such possibility of direct comparison of environmental and financial data is in line with the standard itself, which aims at creating "a better understanding of issues such as the financial implications related to the environment of a given site, the organization as a whole, or along the organization's value chain" (ISO 14007).

Regarding ISO 14007, the environmental costs and benefits can be internal or external to the organization. Internal environmental costs or benefits influence negatively or positively an organization's performance. Such impacts thus directly affect the organization and should be "part of its financial and nonfinancial accounting" (ISO 14007). In contrast, external costs are "borne by parties external to the organization", i.e., society and nature. The key issue here is the internalisation of what is generally referred to as "environmental externalities". Externalities are positive or negative depending of the benefit enjoyed or the cost suffered by a third-party as a result of economic activities (Hussen, 2000, p. 78-79). Pigou was the first in 1912 in his book "Wealth and Welfare" to clearly introduced "the distinction between private and social marginal costs and benefits as well as the concept of external effects" (Sandelin, Trautwein, & Wundrak, 2008, p. 56). Pigou points out that externalities can be understood as followed: the "essence of the matter is that one person A, in the course of rendering some service, for which payment is made, to a second person B, incidentally also renders services or disservices to other persons (not producers of like services), of such a sort that payment cannot be extracted from the benefited parties or compensation enforced on behalf of the injured parties" (Pigou, 2013, p. 183). It is from this understanding that ISO 14007 stresses that externalities occur when "the organization is neither penalized nor compensated for these environmental costs and benefits through markets or regulatory mechanisms" (14007).

Finally, as any other guidance standards, the first aim of ISO 14007 & ISO 14008 is to objectify standards that require certification, in particular ISO 14001. But they can also be used in relation with other management standards, such as ISO 31000 (Risk management), to objectify environmental risks, or with other guidance standards, in particular ISO 26000 – Social responsibility, to define the relation between an organization, the society and its environment, increasing the transparency and comparability of CSR reporting. Finally, they can provide key

[5] For instance, it objectifies the link between the number of premature death and a particular air emission.
[6] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).

tools for future standards that will be developed within a new TC on sustainable finance (ISO/TC 322 - Sustainable finance), on which we will come back later on. ISO 14007 & ISO 14008 thus provide organizations with a "toolbox" for transparent natural capital accounting.

3. Conflicts and power relations

Busch (2011, p. 33) stresses "the importance of power with respect to standards (…) reflected in the fact that the emergence of standards is almost invariably the result of conflict or disagreement". This section explores the conflicts underlying the development of ISO 14007 & ISO 14008. These conflicts materialise power relations and oppositions both within and outside ISO. A common concern has been underlined by the analysis: the requirement of transparent documentation and reporting.

3.1 The conflicts within ISO

In this subsection, we distinguish three conflicts representing three "moments" in the standard-setting process: before approval of the project, during the development of the standard and during the final approval process. We focus on ISO 14008, whose project has been approved six months before ISO 14007, in December 2015, and its final text approved in February 2019. The two standards followed the same institutional path and have been developed by the same "leading experts", raising similar debates, conflicts and disagreements.

ISO 14008 was initially submitted to SC5, which sets standards in the field of life-cycle assessment (LCA). Bengt Steen, a chemical engineer who proposed the new item agenda also took part in the development of ISO 14040 on LCA within SC5 during the 1990s. He pointed out that "the good thing with SC5 is that it contains a lot of engineers, while other SCs contain more people from a management background"[7]. But SC5 was opposed to monetary valuation practices and refused to host it. In contrast, SC1 accepted to host the future standard. This SC is constituted of many environmental economists, usually committed to the cause of valuation of nature. What may seem anecdotal reflects the broader disagreements regarding the monetary valuation of nature discussed above[8]. As a result, the working groups are constituted of experts from two distinct disciplinary backgrounds: life-cycle assessment and environmental economics[9]. Even though the interviewees underlined that the working groups "were agreed 90% of the time"[10], such distinct disciplinary background raised particular debates regarding the issue of the discount rate.

Natural capital accounting helps to compare future benefits (or costs) against any action that an organization may take in the present. This means that these future costs and benefits have to be converted into a present value. The usual assumption is that "the social or shadow price of a unit of consumption in the future is lower than the price of a unit of consumption today" (OECD, 2018, p. 197). ISO 14008 thus points out that "when the monetary values are applied to environmental impacts or aspects that occur at different points in time, discounting shall be performed" (ISO 14008). While LCA uses a constant discount rate of 0%, which means that future and present generations are valued equally (Hickel, 2018), environmental economists usually use a positive figure: they value the present more than the future. For instance, Costanza

[7] Skype Interview with Bengt Steen, Convenor of ISO 14008 (26 November, 2018).
[8] In such context, it is interesting to note that ISO 14008 underlines in its first paragraph that "using monetary valuation does not mean that money is the only metric of value" (ISO 14008).
[9] As it is generally the case in ISO technical standardisation, states including national standard institutions, academic scholars, consultants and MNCs (e.g., Veolia) all joined the two working groups.
[10] Interview with Naji Tannous, member of the two ISO working groups, Geneva, Switzerland (26 November, 2018).

and his colleagues who did the first global monetary assessment of nature's value from an environmental economics perspective used a discount rate of 5% in order to convert stock values into annual flows (Costanza et al., 1997). At the level of public policy, this means that we should not reduce our environmental impacts too quickly on the assumption that "the economic cost to people today will be higher than the benefit of protecting people in the future" (Hickel, 2018)[11]. Our interviewees underlined that most disagreements within the working group concerned this single issue. They pointed out that if a fixed discount rate had been prescribed, no consensus would have been possible. There is no consensus in the WG on the numbers but there is a consensus that there is a price. ISO 14008 leaves the choice of the discount rate open, but asks for full transparency: "the process of discounting and the discount rates used, including when performed with a zero-discount rate, shall be documented and justified" (ISO 14008). Such decision reflects the great emphasis on transparent documentation and reporting.

The final text of ISO 14008 has been approved on 4 February, 2019. Forty-three states' representatives approved, twenty-two abstained and two disapproved (India and France). These oppositions focused on the issue of transparent documentation and reporting. The expert of India pointed out that "data is readily not available to organization per se industries to correlate the environmental impact in terms of its time, effect (…) with its monetary value". The transparency required is thus not possible and the "results of monetary valuation should not be used for decision making" (ISO, 2019). The expert of France underlined that the standard is "too much prescriptive with regard to the choice of evaluation methods and how to apply them", which leads to discourage organization to undertake such valuation. In this context, while the standard asks to be fully transparent at all steps of the valuation process, France's representative proposed to require such transparency only "if information is available" (ISO, 2019), and to replace the term "shall" by "should" or "may" regarding the documentation and the related justification.

3.2 ISO and the first-movers

It is important to remind that ISO does not invent anything new. The convenor of ISO 14007 himself pointed out that "ISO is only based on existing practices, follows what already exists"[12]. Therefore, ISO standards often face "first-movers", and try to impose their own standards thanks to the legitimacy of the institution based on a multistakeholder consensus (Hahn & Weidtmann, 2016).

The Natural Capital Coalition was formed in 2014 and launched its Natural Capital Protocol in 2016. This document provides a general guidance on how to measure impacts and dependencies on nature capital (Natural Capital Coalition, 2018b), but is way too vague to be applied as a standard (Barker, 2019). As seen above, the Big Four took the lead in such development. Since 2013, they published a full range of documents available online in which they describe their methodologies and illustrate them with case-studies with MNCs[13]. However, as pointed out by interviewees, they do not share their full data and methodology because this is part of their business model[14]. In contrast, these documents emphasis the relevance for business of taking

[11] This is for instance what suggests William Nordhaus, laureate of the 2018 Nobel Memorial Prize in Economic Sciences, who hardly criticised the use of a low discount rate of 1.4% in the famous "Stern Review", an economic report on climate change (Nordhaus, 2007, p. 686; Stern, 2006).
[12] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).
[13] For instance, PwC collaborates with Kering to apply its Environmental Profit & Loss methodology, while LafargeHolcim uses the KPMG "True Value" methodology to calculate the "positive and negative value contribution of business activities to society in monetary terms" (Carrillo & Kingma, 2018, p. 22).
[14] Skype interview with a member of the two ISO working groups (14 December, 2018).

account of nature capital and thus encourage the use of such tools. For instance, a document published by Ernst & Young, the International Federation of Accountants and the Natural Capital Coalition called "Accounting for Natural Capital: The elephant in the boardroom" illustrates such "selling strategy". It underlines that "natural capital is still largely hidden from view and absent from the corporate narrative. This situation is no longer acceptable if organization are to become truly sustainable" (Ernst & Young et al., 2014, p. 1, 3).

There is a clear interconnection between the accounting market and official standardization bodies in traditional accounting standards (Ramirez, 2013). Moreover, the Big Four are members of the national standardization bodies like the British Standards Institution. However, none of them participated in the ISO working groups despite an explicit invitation to do so from the convenor of ISO 14008. Our analysis suggests that the transparency required by the standard is likely to have been a tipping point regarding the non-involvement of the Big Four regarding ISO 14007 & ISO 14008. According to some views, they are wary of any standard that could modify their "business plan" regarding their own methodology[15], and they might only use the standard if this is in their favor. The convenor of ISO 14007 pointed out that "they make business with their own methodologies" and "are not interested that new standard are being developed"[16]. Surprisingly, interviewees also pointed out that the Big Four do not consider that these two standards will affect their practices.

While representatives of the Natural Capital Coalition such as the Policy Director joined the working groups, their participation has remained limited to the firsts meetings. Indeed, they have been marginalised within the working groups. First, their representatives were not sufficiently familiar with the work of ISO, which is "democratic and formalised"[17], in contrast to the Coalition's work. Second, they always made proposal to change the text, to bring in the definitions they use in the Natural Capital Protocol. Thus, they were seen by other members of the working groups as "entrepreneurs building their own agenda"[18]. According to the convenor of ISO 14007, "they were not involved because ISO was taking away attention by the market on their own things". More generally, he stressed the competition between different initiatives in this domain[19].

The relation between ISO and the first-movers could change in the wake of the creation in summer 2018 of a new technical committee 322 on "sustainable finance", in which the Big Four and the Natural Capital Coalition are fully involved. The convenor of ISO 14007, also part of this new TC, pointed out that "it is more than likely that the future standards coming out of this TC will refer to ISO 14007 & ISO 14008, or even could not exist without them"[20]. It is interesting to note that this TC was proposed by the British Standards Institution in the context of "Brexit" and further competition with European initiatives in this domain, in particular the High-Level Expert Group on Sustainable Finance (HLEG) established in 2016 by the European Commission. ISO 14007 & ISO 14008 could also be soon integrated into already existing European legislation. According to some views, the "disproportionate cost principle" included in the European Union Directive on Water (Directive 2000/60/EC) or on Industrial Emissions (Directive 2010/75/EU) might recommend the use of these standards. In such a case, ISO 14007 & ISO 14008 would be on track to become the *de facto* standards for natural capital accounting, at least for MNCs operating in the European Union.

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[15] Skype interview with a member of the two ISO working groups (14 December, 2018).
[16] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).
[17] Skype Interview with Bengt Steen, Convenor of ISO 14008 (26 November 2018).
[18] Skype Interview with Bengt Steen, Convenor of ISO 14008 (26 November 2018).
[19] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).
[20] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).

Conclusion

This paper analysed the recent development of standards on natural capital accounting in the wake of environmental management systems standards. Trough an in-depth explanation of ISO 14007 & ISO 14008, we have first explained how ISO engaged into natural capital accounting. Second, we have shown that such developments must be understood in relation to the growing importance of transnational private regulation in global governance as states have stayed in the background on natural capital accounting and the United Nations limited its System of Environmental-Economic Accounting on states rather than on MNCs. Therefore, it leaves room for private initiatives, such as those taken by the Natural Capital Coalition, or for hybrid bodies such as ISO to develop new international standards. We thus emphasised the multiplicity of actors and initiatives involved in the field of natural capital accounting. We could also have mentioned the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, the Impaakt platform related to business and SDGs, or the Stanford Natural Capital Project in order to raise the growing competition between public, private or hybrid initiatives for environmental regulation in this domain. Therefore, we assume that these initiatives deserve more attention from social science researchers.

Third, we have seen that the work undertaken in ISO lays particular emphasis on the importance of transparency for natural capital accounting methodologies. While it also explains divergence at the level of ISO, it is especially from this perspective that these standards compete with other arenas, in particular the Natural Capital Coalition and the Big Four. Again, our analysis stressed the diversity of actors implicated in such standardization processes. While states, academic scholars, consultants and experts from MNCs all join in the standard-setting processes of ISO, the Big Four rather opt for the work undertaken within the aegis of the Natural Capital Coalition. Even though this Coalition brings a full range of actors together, it seems that the lead has been undertaken by few actors very active in this domain. However, further interviews with the Big Four and the Natural Capital Coalition should provide a better understanding of the interests of these actors in the standardization of natural capital.

Fourth, we have stressed the divergence of views at the level of ISO regarding the monetisation of nature, as well as the issue of the discount rate at the level of the working groups. The latter reflects two distinct disciplinary backgrounds: experts of life-cycle assessment excluding the relevance of taking discount rate on-board on one hand, and environmental economists debating among themselves about the rate of the discount on the other (Hickel, 2018). Ultimately, such debate boils down to whether, and if so, how to value the future in comparison with the present. The outcome of the negotiations leading to the international standard ISO 14008 is a double no, resulting from too much disagreement on the size of the discount rate[21]. As pointed out by one interviewee about this issue, "there is no consensus on the numbers, but there is a consensus that there is a price"[22]. Despite what might look as a significant failure, the standard still provides strong guidance not only on valuation per se, but also on the importance of transparent documentation and reporting.

Fifth, a central point is the non-involvement of the first-movers, i.e., the Big Four and the Natural Capital Coalition. This is not surprising, considering the importance of their own methodologies in their business model. In this situation, the first-movers do not try to impose their standard, since they have no interest in the standard as drafted, or at least keep themselves in a damage limitation strategy regarding transparency. Such a phenomenon has been described by Graz and Hauert (2019, p. 17) regarding the hospitality industry. They point out that the "opposition strategy of the largest players of the hospitality industry with regard to international

[21] Skype interview with a member of the two ISO working groups (14 December, 2018).
[22] Interview with Frank Knecht, Convenor of ISO 14007, Aarau, Switzerland (22 January, 2019).

standardization activities was aimed at preventing any move likely to go down this route". Moreover, we stressed the marginalisation of the representatives of the Natural Capital Coalition within the working groups. Yet, according to some views, this might soon drastically change with the recent creation of TC 322 on Sustainable Finance in which they should be fully present and engaged. Indeed, our interviewees pointed out the close links between the British Standards Institution who has taken the lead in this new TC, and the Natural Capital Coalition also based in London. Further field research is however needed to better map and understand the interests of the Natural Capital Coalition as well as the Big Four within the ISO arena. From this, we can ask how these first-movers will influence the working agenda of this new TC. Whatever that be, our case has stressed that actors interested in natural capital accounting are far from homogeneous. Moreover, experts related to such standardization deal with and highlight political issues, such as the value of the present as compared to the future, or transparency. Proper reporting and documentation of natural capital accounting is not just about market capitalisation on the balance sheet of a firm. It might also, in a near future, be about the ability of tax authorities to ask for evidence in ecological tax compliance procedures. Against such clear political economy power relations, expert debates in ISO arenas may still politicise, rather than depoliticise the future of natural capital accounting.

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