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*Du calcul biophysique à l'évaluation des risques financiers. Trois mondes de la comptabilité de la nature*

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**Sylvain Maechler and Valérie Boisvert**

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## EDITOR'S NOTE

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## Introduction

- 1 The pictures painted by accounting must be very partial pictures –it can only recognise those things which can be measured, which can be measured in prices, and which are exchanged for prices. Insofar as accounting is an important source of information about organisations, this partiality may be very dangerous. [...] With regard to (for example) the environment it is obvious the accounting picture is one from which essential elements are missing and, if used as a basis for action and decision, must mislead. (Gray, 1990, p. 31-32)
- 2 The quotation above from *The Greening of Accountancy*, published in 1990 by the Chartered Association of Certified Accountants (ACCA), makes a seemingly unassailable and common-sense observation, one that has been explicitly endorsed by a growing

number of actors over the past four decades: the interactions between the economy and nature are imperfectly reflected in the management tools of capitalism. According to the dominant narrative underpinning approaches to accounting for nature<sup>1</sup> the environmental impacts of economic activities remained largely ignored in routine decision making. However, meeting this computational and informational challenge is widely considered feasible, provided that nature is included in both public and private accounting. This has been the agenda of the many actors who, convinced that this integration of nature into accounting can make environmental damage visible and create awareness, have become involved in the vast domain of “socio-environmental accounting” over the past four decades (Bebbington *et al.*, 2021; Feger & Mermet, 2021; Maunders & Burritt, 1991; Pearce, Markandya & Barbier, 1989; Richard & Rambaud, 2020). Economic actors would allegedly no longer be able to ignore the (potentially monetary) information thereby made available on the values of nature.

- 3 While there is a plethora of critical literature denouncing the commodification or financialization of nature (Barral, 2021; Bracking, 2020; Kemp-Benedict & Kartha, 2019; Tordjman, 2021), there has been comparatively little interest in nature accounting projects. Only a few commentators see it as a singular step in the expansion of capitalism to the living world rather than a mere symptom of that process (Levidow, 2020; Sullivan & Hannis, 2017). And yet, research work on accounting has emphasized how intrinsically political it is, from the negotiations preceding and surrounding the development of accounting standards through to the power relations observed when those standards are applied and then verified by certified auditors (Capron, 2005; Ramirez, 2013). As calculative infrastructure, accounting cannot be understood as the neutral expression of some objective economic reality. Accounting is instead the result of social choices and shape the way reality is represented. It must therefore be studied, as both political and performative (Chiapello, 2008; Maechler, 2023; Mennicken & Miller, 2012). Regulationist approaches have taken little interest in accounting and even less in how it relates to environmental issues, themselves too seldom considered (Zuindeau, 2007; Brand & Görg, 2008; Boisvert & Vivien, 2012; Cahen-Fourot, 2020; Görg *et al.*, 2020). The aim of the present paper is to highlight the growing importance of accounting in regulating the relationship between capitalism and nature over the last few decades. Taking a chronological perspective, we examine how three distinct approaches to linking accounting to nature have developed over time and co-exist today. We propose to call them “accounting worlds” after Boltanski and Thévenot’s (1991) “common worlds”, in the sense that they take the form of a set of (accounting) practices underpinned by representations, norms and values shared by a community of actors, supported by a narrative of the deterioration of nature and the means to remedy it, and giving rise to enforcement mechanisms and institutions. They rest upon different ontologies and interpret nature in different senses, at different scales and from different angles. Although they share the ambition of giving greater visibility to the environment when calculating or evaluating economic performance, they are also characterized by the specific social and political spaces where they are deployed and by the audiences they address. In short, they represent alternative ways of ensuring the visibility of “nature” –understood in various senses to serve a variety of projects– through accounting. Unlike the regimes identified and analysed in science studies (Pestre 2006), the “accounting worlds” presented here do not strictly constitute successive historical sequences, though they did appear in distinct periods. Some of them have been largely eclipsed at times, without vanishing completely. Today, they

co-exist without real competition or seeming hierarchy other than in terms of visibility, and without much permeability in the sense that each is highly situated. Driven by different actors, they take place in different arenas. Each of them sketches out a framework for regulating and governing the relationship between capitalism and the environment; but none of them has imposed itself as a hegemonic structuring and exhaustive approach. None has yet led to the establishment of mandatory standards for economic actors. The third form of accounting under study here, which has emerged only recently, could yet fulfil this role, although without actually undermining the other two.

- 4 The earliest attempts to establish physical accounting in economics sought to reveal forms of exploitation that were masked by the monetary encoding of economic activity, providing new insights on exchange relations and relativizing the dominant evaluative framework of yields and productivity. At the macroeconomic level, this accounting was meant to reveal ecologically unequal exchange between nations. Other projects relating to what has been called natural capital accounting were gradually developed in parallel. Their stated objective is to internalize environmental externalities once made visible through monetary valuation. This goal, first limited to national accounts, rapidly spread to the private accounting of companies. However, operationalizing this type of accounting has proven difficult. It relies primarily on grand narratives rather than on any actual ecological, statistical or economic accounting technique: The promise of internalizing externalities has thus not been kept (Maechler & Boisvert, 2023a). The latest avatar of nature accounting is based on a financial risk management perspective centred around the accounting concept of the “materiality” of risks. Its purpose is not to measure the impacts of economics on nature but the risks that nature poses to the economic and financial performances of businesses. Arguing that the sectors most affected by climate –and by extension ecological– risks are also likely to be those that most affect nature, because they depend closely on it, the proponents of this form of accounting claim that it could favour the reallocation of investments towards less exposed sectors. They therefore contend that it could benefit nature conservation. This form of accounting, advocated by the traditional operators of (financial) accounting standardization, ultimately has little to do with nature as such: indeed, nature is approached only through its possibly very indirect economic effects (Maechler, 2023). On the whole, these three accounting projects attest to the difficulty in understanding and accounting for nature from the perspective of economic valuation. Apart from the commonly reported difficulty of selecting an appropriate metric (Salzmann & Ruhl, 2000), the delimiting of commensurable entities, of units and of equivalence classes raises such challenges that it is often circumvented. Apart from the natural resources directly exploited, it is the rights of access, use or ownership pertaining to nature that are generally the subject of economic exchange. Accordingly, the observation of economic exchange provides only an indirect and partial estimate of the actual values at stake. Similarly, the deterioration of nature is assessed exclusively through the prism of the costs and risks it entails for economic activity. Like other attempts at putting a figure on nature, the accounting projects do not address it directly but seek to capture it through a series of approximations.
- 5 Starting from an analysis of these three worlds, we suggest that the increasing hold of accounting concepts and practices over nature, and above all in their most recent forms, is leading less to a commodification or financialization of nature than to its “invisibilization”, or its dilution in the logic of reproduction of financial capitalism.

Whereas their proponents refer to the necessity to make nature visible for capitalism and to its institutions to justify their respective undertakings, neither the biophysical measurement of the main economic aggregates, nor evaluations of “natural capital” or of financial risks due to climate change take nature as their true subject matter. Beyond the diversity of their metrics, scales and approaches, all these accounting worlds emphasize the dependence and vulnerability of economies and business models. This article aims to provide a broader perspective on the capacity of the calculative and managerial tools put in place by and for actors in global capitalism to transform the practices of these very actors by revisiting the context in which they have been developed, their effects and the actual extent of their deployment.

- 6 Our analysis rests upon three types of materials and methods: a review of the grey literature, primarily of standards, protocols, case studies and consultation documents; participant observation; and interviews conducted in meetings devoted to developing, standardizing, promoting and disseminating the three systems of accounting instruments set out above. One of the authors attended 24 face-to-face or virtual meetings of a duration of one hour to several days, between March 2019 and November 2021, that were emblematic or constitutive of the three accounting worlds. Some of the meetings were part of the first accounting world, such as the activities of the London Group of national and international experts within the United Nations Statistics Division. The second accounting world was addressed through participation in drafting the International Standardization Organization (ISO) standards for the monetary valuation of nature (ISO 14008 & ISO 14007), and by observing the development of the different standards proposed by the Natural Capital Coalition and their promotion to businesses, in particular at dedicated annual summits (European Business & Nature Summit). Finally, our analysis of the third accounting world was based on the observation of the consultation processes around the development of new accounting standards. These observations made it possible to “open up the black box” of these various arenas and to “combine the viewpoints of the actors revealing the multiple strategies and the divergent interests in the production of a global discourse” (Maertens, 2016, p. 3). In addition, we conducted 12 semi-structured interviews with various people involved in these regimes: UN and nature conservation organization staff, mainly statisticians and economists, as well as accountants and other private-sector consultants.
- 7 After presenting the key concepts upon which our analysis and our distinction between the three accounting worlds are based, examine them as outlined above. Finally, we explore the effects and challenges of this accounting thinking and practice applied to the nature, and discuss the possibility of the emergence and stabilization of a regime in this domain.

## 1. Distinguishing “accounting worlds”

- 8 In general terms, accounting lies neither entirely within the domain of the market nor of the state, but of a hybrid transnational community of actors (Graz, 2019; Perry & Nölke, 2006). This is particularly true of nature accounts which are drawn up by public administrations, scholars, and actors in the worlds of conservation and business. Although this is a highly technical area requiring specialized expertise, the development and dissemination of accounting instruments presupposes they can be

transposed into motivating formulas and narratives to promote their appropriation by a wide audience. This calls on other skills. Accordingly, the different actors involved play a variety of roles that we analyse using the concept of “policy entrepreneur”. This term refers to individuals who are able to propose and/or influence decisions, and to translate ideas into policy innovations and practices (Mintrom, 2019). We identify two types of policy entrepreneurs, while recognizing that the two categories are permeable, given many actors’ hybridity and multiple positioning. The first are “technical entrepreneurs”, who contribute to the development of knowledge and work at the science-policy interface. The second are “meaning entrepreneurs” (Maor, 2017) who are able to impart a wider meaning to this technical knowledge and translate it into “simple but powerful ideas” (Lordon, 2000, p. 185).

- 9 From a technical perspective, the establishment of nature accounting rests on the prior adoption of equivalence conventions, a second key concept in the analysis presented here. The role of quantifying mechanisms in making visible the previously unseen has been regularly underscored (Lovell & MacKenzie, 2012; Mennicken & Espeland, 2019). These mechanisms, which have been proliferating recently, form genuine instruments of biopower in the Foucauldian sense insofar as they enable actors and institutions not only to count but also and most importantly to monitor and govern (Mennicken & Miller, 2012; Miller & O’Leary, 1987). The advocates of nature accounting suggest, unsurprisingly, that such systems are the most effective way to reveal the hidden values of nature, a necessary prelude to them being taken into account by economic actors. This, they argue, is what is needed to allow those actors to transform the multiple, previously incommensurable forms of value at stake in the environmental crisis into quantified, and thus governable risks (Maechler, 2021; Maechler & Graz, 2022). And yet, perhaps paradoxically, when applied to nature, quantification can render invisible the very objects that it seeks to bring to light, obscuring their singularities and subsuming them under general concepts and abstract categories whose meaning and coherence are based on considerations external to ecology. Natural features are gauged, sorted and classified in terms of their contribution to the economy, the well-being of human societies or the profits of firms.
- 10 Governing by numbers involves producing nomenclatures, typologies, and classes, as well as a postulate of equivalence between initially heterogeneous phenomena that are included in the same class (Mennicken & Espeland, 2019; Supiot, 2015). Both the economics of conventions (Boltanski & Thévenot, 1991; Diaz-Bone, 2017) and, closer to our present subject matter, the work of the sociologist and historian of statistic Alain Desrosières (2008a, 2008b) have shown that the production of quantitative and objective evidence relies on the collective development of measurement conventions, categories, taxonomies and classifications. The conventions we are interested in here express the diversity and complexity of nature and of the relations that societies, and more specifically economies, maintain with nature in one or more standardized metrics. Those conventions are thus embodied in standards that are, in the words of Loconto & Busch (2010, p. 526-527), constitute “the values against which people, practices and things are measured” and thus in terms of which they can be compared. Policy entrepreneurs who contribute to developing nature accounting must therefore come up with nomenclatures and typologies, construct classes of phenomena and homogeneous and representative objects, and then define and apply suitable metrics. In doing so, they may draw on inventories of natural entities or processes, or on the

collection of environmental data that already rely on such operations. They must then recompose them into categories and units that are visible from the point of view of the economy, thereby creating resonance with the reference frames of the target public in order to encourage the adoption of their system. However, despite the *institutionalization* of accounting worlds for apprehending nature, that is, the creation of dedicated arenas, ritualized meetings, the attribution of human and financial resources, and the construction of an enveloping narrative, their dissemination and influence in accounting practices remain essentially confined to the communities that constituted them. To date, these standards have been applied only on a voluntary basis in pilot experiments or one-off evaluations, although the last of the three accounting form studied here may ultimately spread more widely, insofar as it may become obligatory. The Table 1 sets out the relationships between our theoretical framework and the three accounting worlds that shall be presented in turn below.

Table 1. Three worlds of nature accounting

	Environmental accounting (1)	Natural capital accounting (2)	Financial accounting for nature-related risks (3)
Organizations involved	World Bank, Eurostat, OECD, UN Statistics Division, UNEP, national statistics offices	World Bank, OECD, UNEP, ISO, business coalitions, conservation organizations, consulting firms, Big Four accounting firms	Financial regulatory institutions (EFRAG, IFRS, IOSCO, FSB), Big Four accounting firms
Subject matter	Biophysical dimensions of <i>Economic activities</i> , the environment as an economic sector, natural heritage	Consumption of natural capital by economic activity (resources use and exploitation of the capacities of natural environments) <i>Impacts on nature</i>	Impact of the climate/ecological crisis on the economy (and the financial system) in terms of risks <i>Impacts of nature</i>
Metric	Multiple (physical, energy, monetary)	Monetary	Monetary (or monetizable financial risk)
Target audience	Domestic government departments, international organizations	Businesses	Financial markets (and ultimately businesses)
Type of policy entrepreneur	Technical entrepreneurs (statisticians, national accountants, academics)	Meaning entrepreneurs (consultants, representatives of the worlds of conservation and business)	Technical and meaning entrepreneurs (financial market operators, accounting standards setters)
Narrative presentation (expressed objective)	Reasoned and fair economic and environmental planning (in response to unequal ecological exchanges)	Visibility of nature through money valuation, internalizing of environmental externalities	Reallocation of investments towards sectors less exposed to risks from the climate/ecological crisis also

			thought of as the less impacting sectors
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## 2. Public accounting in biophysical terms

### 2.1. A counterpoint to traditional systems of measurements

- 11 The question of what metric should be used to account for economic activity and its dynamics, and to measure its dependence on natural resources began to be posed in the nineteenth century (Martinez-Alier, 1987). Between 1910 and 1920, what some have called “the other Austrian school of economics” endeavoured to develop a heterodox biophysical approach to economics based on natural resource flow accounting (Franco, 2020). Today, the Vienna school social ecology is pursuing a somewhat similar research agenda, developing an approach in terms of flows, inspired by “Odumian” ecology, in an attempt to establish objective measures of nations’ metabolic relationships with the material environment (Fischer-Kowalski *et al.*, 2011; Haberl, Fischer-Kowalski, Krausmann, & Winiwarter, 2016). These methods allow the gross domestic product (GDP) to be measured against the quantities of material used to produce it. Most importantly, they enable comparisons between nations, and thereby reveal “ecologically unequal exchange” (Hornborg & Martinez-Alier, 2016). They therefore offer a counterpoint to the traditional representations of the wealth of nations, that of their material footprints on the biosphere (weight of nations) (Matthews, 2000). In this type of analysis, economic flows are compared to each other and measured in terms of their mass, expressed in tonnes. Comparable evaluations with flows measured in energy are also performed. These can draw on different scales and metrics commonly used in thermodynamics. More than a relationship to nature, these works seek to capture the pressures exerted on the biosphere viewed as a system producing flows of material and energy, captured and appropriated by different countries or economic sectors. Material and energy flow accounting reflect the energy and material intensity of production and exchanges. It is primarily mobilized in the context of analyses on resource allocation and limits to growth, with a view to fairer and more rational economic and environmental planning.
- 12 Beginning in the late 1980s, academics in regular collaboration with national and international statistics offices, senior civil servants and members of government began to reflect on and experiment with ways of integrating the environment directly into national accounts (Ahmad, El Serafy, & Lutz, 1989; El Serafy, 1997; Kokkelenberg & Nordhaus, 1999; Lutz, 1993; Uno & Bartelmus, 1998). A number of solutions were then considered and discussed in accounting arenas in Europe and the United States, as well as at conferences under the aegis of the World Bank. Early, far-reaching experiments in environmental satellite accounts were conducted especially in Norway and the Netherlands (De Haan & Keuning, 1996). The “environment” was defined in this context as a field of public action (a sector in which spending and investment were carried out, giving rise to subsidies and transfers, to the output of goods and services, etc.) and was valued on this basis. In France, the decision to develop natural heritage accounting was taken in 1978. The system brought together three sub-systems of accounts, devoted



respectively to the elements (underground resources, marine and continental waters, the atmosphere), ecozones (regional development and the state of ecosystems) and agents (in connection with the uses of nature and natural habitats). Much of this last form of accounting was expressed in physical units and authors are generally divided on what metrics should be adopted (Comolet & Weber, 1990; Godard, 1990). Beyond questions of accounting as such, opinions diverge on the appropriateness of systematically valuing nature in monetary terms, questioning the resulting reductionism and distortion of the values of nature through the lens of economics. The first institutionalized forms of accounting for nature were intended primarily to steer public policy, providing an objective basis for decision-making and thus allowing for informed trade-offs. They sought to measure interactions and interdependencies between economic systems and the biosphere, quantify pressures and evaluate the effectiveness of environmental policies, rather than to make the economy and nature directly commensurable.

## 2.2. Institutionalization without dissemination

- 13 The 1992 Rio Earth Summit marked a turning point in the institutionalization of environmental accounting. In its aftermath came the introduction of the “United Nations System of Environmental-Economic Accounting” (SEEA), whose mandate is to supplement the system of national accounts (SNA), a post-war instrument, that does not integrate either the environment or key aspects of well-being (Vanoli, 2013). The plan was for this new system, the first version of which was published in 1993, to be adopted at least as a satellite account, alongside the central national accounting system for want of amending it (Bérard, 2019).
- 14 This accounting system was ultimately acknowledged as an international standard by the UN Statistics Commission in 2012<sup>2</sup> and has given rise to numerous meetings and conferences. And yet these instruments remain little disseminated beyond narrow circles of experts, national accountants, international statisticians and researchers. Large amounts of data are required to produce physical and environmental accounts. It is thus imperative, for measurements to be carried out regularly rather than sporadically or in the context of pilot projects, to have information systems allowing for systematic and regular data collection. Capacities distinct from those needed to produce traditional national accounts are also needed. These prerequisites are out of reach for many countries. Accordingly, the development of environmental accounting has been set as an objective to be approached gradually, rather than as an immediate obligation.<sup>3</sup> Moreover, biophysical accounts are highly technical, making them inaccessible to the general public and difficult to use to produce and to deliver simple messages –an exercise that is sometimes resisted by their proponents, who are attached to the rigorous use of numbers. There is no shortage of technical entrepreneurs devoting time and energy to the methods on which such accounting relies. However, the multiplicity of metrics used contributes to a lack of transparency and jeopardizes their incorporation into national accounting systems. These projects and their outcomes are often criticized for not being readily interpretable. The understanding of energy scales and the differences between them, for instance, is neither intuitive nor immediate. It requires different skills than reading national accounts expressed in monetary units. Institutionalization, even within a UN framework, thus does not guarantee that these accounting instruments will be taken up by the target audience.

In 1990, Comolet and Weber (1990, p. 267) suggested that monetary units, by providing the basis for the construction of a single equivalence class, are the best choice to come up with a message that political decision-makers cannot ignore. The idea that monetary valuation is immediately intelligible to decision-makers because it matches with their everyday register of expression is widespread. In the words of the director of an organization involved in the standardization of natural capital accounting for the European Union “Money is the language people share and especially decision-makers.”<sup>4</sup> It is to this accounting world that we now turn.

### 3. Private “natural capital” accounting or the making of a promise

#### 3.1. Monetary expression as a mobilizing strategy

<sup>15</sup> Following the Rio Summit, states committed to translating the concept of sustainable development into concrete actions. It was in this context that the British environmental economist David Pearce was mandated to formulate recommendations for the United Kingdom. Single-handedly or with his colleagues Anil Markandya and Ed Barbier, he produced a series of reports: *Blueprint for a Green Economy* (1989), *Greening the World Economy* (1991), *Measuring Sustainable Development* (1993) and *Capturing Global Environmental Value* (1995). He also acted as an expert advisor with the World Bank and the Organization for Economic Cooperation and Development (OECD). In this capacity and given this role as a broker of economic concepts in the political sphere, he was the originator of a series of influential linguistic innovations. He is responsible, if not for the invention, in any case for the dissemination of the notion of natural capital, as well as the associated distinction between weak and strong sustainability (Åkerman, 2003). He suggested that, to conceptualize sustainability, nature could be viewed as an asset, producing flows of goods and services, and, like any other type of capital, subject to depreciation, and thus requiring investment to be maintained. On this conception, the degradation of natural capital can at least partly be offset by increases in the stock of other types of capital. A minimum condition for (weak) sustainability is then to keep total capital at least constant over time. Strong sustainability implies in addition that the stock of natural capital remains constant. For these different forms of capital to be able to compensate or substitute for one another, they must be fungible. In order to envision a category as comprehensive and abstract as natural capital, equivalence conventions must be set up ensuring the commensurability of the great diversity of elements that together constitute nature. What was initially just a vaguely outlined expressive metaphor can readily be appropriated and adjusted to a variety of decision-making contexts, which has major implications for the evaluation of nature. If making nature conservation a widely intelligible objective comes down to defining nature as capital, and if this conceptual move in turn leads to the view that money is the only metric that can make the different categories of capital commensurable, then the only possible way of accounting for nature is monetary accounting of natural capital.

<sup>16</sup> The major international exercises in evaluating not only ecosystems but also the cost of climate change, biodiversity loss, and ecosystem services<sup>5</sup> carried out in the early 2000s have consolidated this trend. These expert assessments have brought together thousands of researchers from all over the world under the leadership of major figures

in their respective fields. They have thus taken on a form of epistemic authority, which extends not only to their use of monetary valuation, but also to the economic or even market framing they propose to use to encode the challenges of global environmental protection in terms of the logic of accounting. These forms of valuation have also been widely taken up in international environmental arenas, on national political stages and in the media, lending credence to the hypothesis that the monetary expression of environmental values ensures their intelligibility (Maechler & Boisvert, 2023a).

- 17 The valuation of the environment has then taken what its proponents term a pragmatic turn. The use of economic metaphors to speak about nature, equated to ‘natural capital’ providing ‘ecosystem services’, has spread widely; and the use of monetary terms for strictly illustrative and communication purposes has gradually become generalized, a process that had already begun by the late 1990s (Costanza *et al.*, 1997; Daily, 1997). More recent reports tend to make considerable use of these metaphors, especially when addressing an audience supposedly sensitive to financial arguments. For example, in his 2021 report on the economics of biodiversity for the UK Treasury, Partha Dasgupta (2021), former Cambridge professor and a renowned figure in standard resource economics, equates biodiversity with a portfolio of assets, with diversification as a guarantee in the face of the uncertainty of the ecological crisis –an uncertainty that, as in many other areas, can be managed precisely thanks to monetary valuation (Maechler, 2021). The idea that such metaphors are immediately and universally meaningful, and even pedagogical, has been gaining ground, to the point of having almost become a truism in current debates around accounting for nature. Metaphors as simplifications of reality enable a wide range of actors to identify with a common framing despite their differences (Coffey, 2016).
- 18 Contrary to the first generation of work on accounting for nature, then, here monetary valuation is justified mainly as a communicative tool, rather than on the basis of technical or theoretical arguments for fairer and more rational decision-making. Critics of this “environmental pragmatism” (Spash, 2009) see this immoderate use of monetary expression as a sign of the growing dominance –conceptual and discursive if not material– of the market, finance and the private sector as a whole on the environment. But this has not undermined its influence. Initially considered a “necessary evil” (Åkerman, 2003), this strategy is now widely supported by the world of nature conservation, most notably by the International Union for Conservation of Nature (IUCN) and the World Wide Fund for Nature (WWF). The WWF’s biennial *Living Planet Reports* give pride of place to monetary estimates of ecosystem services using them to communicate alarming findings on the disappearance of wildlife and the artificialization of natural environments –as if the mention of colossal dollar amounts were necessary, or even sufficient, to create public awareness. And indeed, in the 2000s, several international conservation NGOs established closer ties with businesses, in the name of this pragmatism and the need to reform capitalism from within, through a strategy of partnership rather than confrontation (MacDonald, 2010). This led them to recommend the development of nature accounting aimed at new actors and that seeks to move towards integration with private accounting. The production of one of the reports of the TEEB (The Economics of Ecosystems and Biodiversity) initiative –*TEEB for Business and Enterprise*, published in 2011 under the direction of IUCN chief economist Joshua Bishop– marked a tipping point in this direction.

- 19 Here a variety of actors, from conservation experts with large NGOs to financial authorities, by way of economists and the business world, came together around a common set of representations and equivalence conventions that took money units as a measurement standard for the values of nature, conceived as a form of capital. This message is regularly conveyed and circulated by public figures who have become “stars” in the world of conservation, sometimes through disconcerting career trajectories. One example is Pavan Sukhdev who, although having no training in any environmental field, has been able to position himself as a key, authoritative figure in the field of environmental accounting. This former banker with Deutsche Bank, and director of the TEEB program is now both President of WWF International and CEO of the consulting company GIST Advisory, which specializes in the monetary valuation of businesses’ environmental externalities.
- 20 This “natural capital accounting” world thus relies heavily on meaning entrepreneurs, relegating technical questions, however crucial they may be in any accounting for nature, to the background. The question of how to ensure the accuracy of equivalence conventions for translating the diversity of nature into monetary units –if indeed such accuracy is even possible– is relegated to the background by the need to produce spectacular figures on the supposedly invisible value of nature. Despite all the hype around the monetary standard, the networks and numerous publications it has given rise to and the fairly broad consensus around it, it has not really been translated into practice (Dempsey, 2016). Despite one case study after another, and indeed one standardization process after another, and despite the very widespread communication of the resulting standards, the status of those standards always remains provisional, sometimes lasting only a few months. Their chief contribution is to provide the basis for the launch of the following process, vouching for a certain seriousness, and ultimately keeping the promise alive. Natural capital accounting thus seems above all to be a form of “incantatory governance” (Aykut, Morena, & Foyer, 2021; Maechler & Boisvert, 2023b).

### 3.2. The limited effects of natural capital accounting

- 21 Since the 2010s, many nature accounting projects, including some that originally belonged to the first of the environmental accounting worlds presented above, have come to be built on this second discursive framing. One example is the development by the UN Statistics Division, in addition to its biophysical method, of an ecosystem services assessment method (SEEA-EA)<sup>6</sup> to “measure nature like [an] economic asset” (UN Dispatch, 2021). Its presentation attracted some media attention. Like the associated academic communities, in particular that of ecological economics –which has shown divided responses to the ‘pragmatic turn’ of monetary valuation– the first world of accounting for nature split into camps, with only a portion of actors adopting a natural capital accounting approach, after numerous debates. Some statisticians and national accountants still object to expressing values in monetary terms, seeing this as an oversimplification of a complex reality. This partial but significant turn towards monetary valuation has enabled the development of closer ties with the private sector and the business world, notably through the creation in 2017 of a broad coalition (*Combining Forces on Natural Capital*). This coalition was facilitated by the *TEEB for Business Report*, which, in addition to bringing together actors from these two worlds, also prompted the formation of a number of consultancy companies firms specializing

in natural capital accounting. One example is the IDEEA Group, a company founded by two former Australian national statisticians who contributed to the development of SEEA methods before changing careers to become international consultants. The circulation of experts between national administrations, NGOs, international accounting arenas, the business world and academia has promoted the spread of natural capital accounting principles across very different social worlds. Yet it is first and foremost to the private sector that various policy entrepreneurs in this area have addressed themselves.

- 22 Beginning in 2012, under the influence of these consultancy firms but also of the Big Four accounting firms (PwC, Deloitte, KPMG, EY), various companies have implemented as-yet experimental forms of natural capital accounting. These have been more widely used to display attention to environmental issues than to actually measure impacts on nature. The Big Four have taken on a leading role in the working of global capitalism, if not in its regulation, in recent decades, including in terms of sustainability (Malsch, 2013). Through their core –accounting, auditing and consulting– they have positioned themselves at the centre of many emerging fields. It was thus inevitable that they would weigh in on debates on natural capital accounting, and indeed they rapidly developed their own methodologies. PwC, whose consultants participated extensively in preparing the *TEEB for Business Report*, has positioned itself as the leader in the field. It was mandated in 2010 by the sportswear corporation Puma, and later by the luxury goods group Kering to produce this type of accounts. Both also called in the expertise of the True Price consulting group, which, as its name indicates, works with businesses to determine the “true” price of their products, after accounting for social and environmental impacts. Here, however, the question is not the “price”, but the environmental “cost” of businesses’ activities. This approximation reflects the priority given to form over substance, and sends the message that it should be up to consumers, and not businesses, to act as change agents, by deciding to pay the higher, “true” price of goods. Kering’s “environmental profit and loss account” showed a deficit of € 524 million in 2019 (Kering, 2020). But the result is of relatively little importance: to conduct the exercise in the first place is, at least partly, to succeed. The objective for businesses is not strictly speaking to internalize these externalities but to neutralize the effects of environmental damage on their corporate image. The core aim is to head off criticism and build a reputation as environmental pioneers, reiterating commitments and promises, and issuing communications on the calculation process and the involvement of ‘stakeholders’. Actual environmental impacts and actions in response to them are largely incidental.
- 23 The major challenge that has been at the center of debates since 2016 and that seems to be a never-ending process is the standardization of natural capital accounting methods. The quantification and equivalence conventions used in these methods to translate the diversity of nature into monetary units are manifold and often lack transparency. This accordingly limits the potential deployment of this form of accounting, whose is precisely to make different phenomena commensurable and comparable (Mennicken & Espeland, 2019). A “natural capital community” has formed to meet the challenge of standardization. It has come together in particular under the banner of the Natural Capital Coalition<sup>7</sup> formed in 2014 on foundations laid by the TEEB for Business and Enterprise. It includes businesses, nature conservation organizations, representatives from national administrations and a plethora of “international consultants”, including

those from the Big Four. Notably absent are actors in traditional –i.e. financial–accounting standardization. This community has made a series of attempts to standardize natural capital accounting in various arenas. First of all, the Natural Capital Coalition itself produced the *Natural Capital Protocol*, published in 2016.<sup>8</sup> In November 2020, the British Standards Institution (BSI) also opened a consultation on an accounting standard –*BS 8632 Natural Capital Accounting for Organizations*<sup>9</sup> –based on the ISO’s recently developed standard for the monetary evaluation of nature (ISO 14008).<sup>10</sup> Lastly, the 2019 European Green Deal emphasizes the need to develop standardized natural capital accounting practices. The European Commission regularly supports actions in this area and notably the Value Balancing Alliance (VBA), a private initiative of multinational corporations featuring, once again, the (pro bono) participation of the Big Four. Beyond the competition among natural capital accounting standards (Maechler & Graz, 2020), this proliferation of arenas reflects the efforts of their respective advocates to ensure that this type of accounting is perceived as a dynamic and attractive field (Maechler & Boisvert, 2023b).

- 24 While the number of new organizations or “coalitions” formed to reiterate the promise of an accounting that will transform capitalism’s relationship with nature continues to grow, the practical effects of these initiatives remain limited, in line with the power of the coalitions that produce them. They remain disconnected from the standards and regulations that, *de jure* or *de facto* are mandatory for businesses. They have not led to a shift in the regulation of capitalism, particularly since states have left their implementation to the discretion of the corporate sector. Calls to evaluate nature in monetary terms in order to make it visible by capital have not so far transformed accounting systems, nor led to the internalization of the environmental externalities they are supposed to measure. The opacity of the proposed methodologies, and in particular of the equivalence conventions employed, is a major sticking point in this respect. In the end, the transformation of nature into capital remains an essentially discursive proposal, its quantification incomplete, and the expected effects of the whole no more than an unfulfilled promise. However, another “greening” of accounting standards and practices seems to be taking shape under the aegis of traditional accounting standards setters; but the project is of an entirely different kind from those that we just described.

## 4. “Financialization”, or the defeat of nature accounting?

### 4.1. Natural risks in financial governance

- 25 In recent years, the central arena of accounting for nature has shifted, as the risks produced by the ecological crisis have become a major issue in financial governance (Christophers, 2017). The Task Force on Climate-Related Financial Disclosures (TCFD) set up in 2016 by the Financial Stability Board (FSB) under the impetus of its chair Mark Carney, then Governor of the Bank of England, played a decisive part in the creation of this new accounting regime. Now led by the businessman Michael Bloomberg, whose eponymous company focuses on producing information for financial markets, the TCFD has fostered the pricing and disclosure of climate-related impacts on businesses’ future assets (TCFD, 2017). It has thus actively advocated for the inclusion of climate-related

risk on the agenda in financial accounting standard-setting arenas. In particular, the TCFD monopolized discussions at the 2019 annual session of the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR), which brings together the global accounting community under the auspices of the United Nations Conference on Trade and Development (UNCTAD).<sup>11</sup>

- 26 The International Financial Reporting Standards (IFRS) Foundation, associated with the major international organization in international accounting standard setting, the International Accounting Standards Board (IASB), then took up this issue. In October 2020 they engaged in a consultation process on the potential production of a standard for “sustainability accounting” (IFRS Foundation, 2020). After major financial actors such as the London Stock Exchange Group, Allianz, UBS, HSBC, BlackRock, Moody’s, and the Big Four accounting firms showed their interest, the IFRS launched a project in partnership with the International Organization of Securities Commissions (IOSCO). This project was officially presented in November 2021 at the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change in Glasgow.

## 4.2. A material nature

- 27 Accounting standards, in their financial dimension, are meant for a specific audience: investors. In financial logic, the only information worthy of interest is the future fair value of businesses, which accounting is charged with revealing (Colasse, 2012; Edgley, 2014). In a financialized economy, this fair value is the value of the company on a competitive market, once all “financially material” future risks have been identified, quantified and translated into monetary terms. Financial accounting thus applies a logic of risk, based on what is characterized in the world of financial auditing as an analysis of “materiality” (or, more rarely, relevance) [Clark, 2021]. Information is classified as “material”, in the sense of the IAS 1 standard.<sup>12</sup> if it is likely to influence the decisions of the main users of financial statements, namely investors. From this perspective, the scope of risks –including those relating to nature– and their place in valuations are defined only in terms of their impact on the accuracy of companies’ certified accounts, and thus of their effects not for society as a whole, but for investors. This third accounting world thus encodes the environment in terms of financial risks or impacts on businesses’ financial performance.
- 28 The IFRS “sustainability reporting”<sup>13</sup> approach is built around “internal” materiality, concerning only the firm’s financial sustainability. It currently only takes into account “climate-related” risks –but the possible inclusion of risks linked to biodiversity and ecosystem services and the development of related standards are under consultation.<sup>14</sup> The main argument used to justify this exclusive and narrow focus on climate is its potential ripple effect. Calculating such risks, it is argued, will allow stakeholders (investors and businesses) to become aware not only of the climate crisis but of the ecological crisis more generally. According to this line of thinking, that can be expected in turn to induce a general reduction in environmental impacts by favouring a reallocation of investment towards low-risk sectors –which, it is argued, are also low-impact. However, no time horizon has been announced for achieving this more general objective. In sum, the prospect in this accounting world is not to take stock of natural assets and liabilities with a view to reducing the ecological footprint of economic activities. Instead, nature is largely made invisible, obscured by a capitalistic logic of

risk management whereby markets alone will enable an ecological transition. The condition for the latter is that a price be placed not on nature, nor even on impacts on nature, but on the risks that a degraded environment and a poor environmental image might pose to economic activity (Maechler 2023). The challenge is thus to improve businesses' financial performance in the context of climate-related risks that have potentially disruptive effects for financial markets (Gabor, 2021). Unlike natural capital accounting standards, the IFRS standards, the first set of which was published in June 2023 for implementation in January 2024,<sup>15</sup> could well become mandatory, transposed as they stand into national legislation, as previous IFRS financial accounting standards have been in many countries. States may also decide to go further than the IFRS approach, which is framed as a “global baseline”.

- 29 This approach has met with resistance, as some actors argue that it is not enough given the high stakes of the ecological crisis. The European Commission, which after considerable debate (Leblond, 2011; Mügge & Stellinga, 2015) endorsed previous IFRS financial accounting standards, announced that it does not plan to do so on sustainability. Instead, it has mandated the European Financial Reporting Advisory Group (EFRAG) to produce a proposal for a Corporate Sustainability Reporting Directive (CSRD).<sup>16</sup> Through this project, European institutions are aiming at a “double materiality” approach: one that includes environmental risks and their impacts not only on investors but also on society (understood as a set of “stakeholders”), in a spirit similar to previous natural capital accounting projects. These European standards are set to become mandatory within Europe although the aim is to spread them internationally (Maechler, 2023). However, there is considerable scepticism as to whether European institutions will have the power to assert their project internationally over that of the IFRS. Indeed, the European Commission, which is in the process of transforming the EFRAG project into a directive, has decided to relax the requirements on double materiality.<sup>17</sup> In the United States, where IFRS standards are not used for traditional financial accounting, a project to establish sustainability reporting standards on the IFRS model is being developed,<sup>18</sup> but it is being resisted by regulators who believe that existing standards are sufficient.<sup>19</sup>
- 30 These various approaches are built around different senses of materiality –ways of defining the environmental dimensions to be integrated into accounting standards. But beyond this definitional question, the very reference to materiality indicates that, in the final analysis, it is economic considerations, and more specifically effects on companies' financial valuation, that will determine priorities for the integration of nature into accounting practices. These types of approaches are thus far removed from the aspiration to an accounting that aims to conserve nature itself. In the end, they represent a “financialization” not of nature –which does not directly provide a flow of future returns (Birch & Muniesa, 2020)– but of environmental policy, through accounting instruments that favour the redistribution of power on the basis of shareholder value (Erturk, 2020), thereby contributing to the reproduction of financial capitalism.

## Conclusion: Towards an invisibilization of nature?

- 31 Here, we have examined three worlds of nature accounting that have been developed over recent decades. They coexist without real competition, in the sense that they are



situated in different spaces, organized around distinct narratives, and draw on different kinds of expertise. Even if some organizations –notably the OECD, the World Bank, the UNEP, and the Big Four accounting firms– are involved in the development of more than one of the three, those organizations are generally represented by different people or legal entities in each case.

- 32 At its beginnings, accounting for nature was driven by a critical perspective on the primacy of economic growth as measured by GNP alone, and on a development model based on unequal ecological exchanges between nations. The multiplicity of accounting units mobilized in these methods of public accounting, developed by policy entrepreneurs with predominantly technical skills, enabled them to be institutionalized in the UN context in particular, but not to spread to a broader public. This form of accounting was followed in the late 1990s by a monetary accounting of “natural capital”, which arose in response to the imperative to evaluate the sustainability of public action. The different types of capital deemed to contribute to well-being, including natural capital, had to be made commensurable in order to evaluate change in them over time. The result was the development of an equivalence convention grounded in monetary evaluation. Brokers like David Pearce and then Pavan Sukhdev enabled these concepts, previously considered technical, to be addressed to a broad audience of decision-makers in both the public and private sectors.
- 33 From the 2000s onward, the accounting approaches backed by the world of nature conservation, NGOs and international institutions have been justified by the need to increase public awareness of the ecological crisis. They are most often built on the notion of ecosystem services, reputed to be an effective way to communicate the values of nature for human societies; and on monetary valuation, also justified by a putative immediate, broad accessibility. The aim of this second accounting world is to reveal the values of nature in a way that encourages their integration into the strategies of a wide range of actors, and in particular companies. Diverse coalitions including businesses and various other actors have published a succession of private ‘natural capital’ accounting standards. In these approaches, statistical, ecological, economic and accounting techniques have been largely replaced by grand metaphorically driven narratives. But the ambitions of the most recent projects are different. They seek not so much to reduce the impacts of economic activities on the biosphere as to manage so-called reputational risks –potential negative impacts of a poor environmental image on economic activity. Natural capital accounting projects have proliferated, promoted by different types of entrepreneurs, in particular those sometimes referred to as “meaning” entrepreneurs. Whereas “first generation” projects used a plurality of metrics, over the past decade there has been an alignment of actors and initiatives around monetary valuation. This convergence is supported less by technical, and particularly economic, arguments (e.g., as a pathway to the internalization of environmental externalities) than by would-be pragmatic arguments about communication. After being bitterly contested in the 1990s, these arguments have been subject to comparatively little debate since the mid-2000s. The possibility of using money as a simple standard of value, shorn of its other functions, has apparently been established as a convention in the world of conservation and among the proponents of environmental accounting. Whatever judgment may be passed on these developments and their vaunted pragmatism with respect to global environmental problems, it is

important to emphasize a common characteristic of these first two accounting worlds: they have not succeeded in setting standards that are applied outside their own community of actors. Despite their relatively long standing, they have not reached a stage of broader dissemination or operationalization for different reasons. The first has been kept from spreading too widely by its highly technical nature, while the second – which thus far has only led to the articulation of general principles and the production of reports intended as exemplary – is essentially only “incantatory”.

- 34 But over the course of a succession of shifts and displacements between arenas, a third accounting world has begun to emerge, which is connected to financial capitalism as seen from the perspective of ‘traditional’ accounting standard setters. Here, environmental questions become just a single component in the analysis of materiality within (financial) sustainability reporting. In this context, companies are tasked with integrating aspects of their activity that could have an impact on their economic performance and their stock market value –in other words, risks– into their financial statements. The techniques involved are accounting techniques above all; ecological, or even broad economic concerns are nowhere to be seen. Nor indeed is nature itself. This approach is supported by coalitions of private actors, multinational corporations and major auditing firms, that have demonstrated on other subjects their ability to impose standards and regulations that align with their interests. This project promises to allow companies maintain their existing frame of reference while claiming to be at the forefront of environmental sustainability. Besides, it might be interpreted as a credential that the financial sector is using “green” innovations to extend the scope of its extractivist ideology (Tordjman, 2021). However, we have shown here that it is not nature that is integrated into this body of accounting thought and practice, but the potential risks posed by a degraded nature –or a negative environmental image, which is placed on the same level– companies’ bottom line. This amounts not so much to a commodification or financialization of nature as to its eviction from the scene, or its invisibilization. If it were instituted, environmental concerns would be deemed to be measured, accounted for and internalized, despite their being approached from a very selective, restricted angle.
- 35 The third approach, supported by traditional accounting standard setters, seems more likely to become widespread, because it is backed by powerful actors, who are well established within the system, and whose role is to simplify and unify conventions. For the moment, however, it is hard in practice to tell whether a system of accounting for nature is emerging that will achieve hegemony and take on a structuring role, dictating universal standards. Recent undertakings are continuous with the dominant accumulation regime and do not reflect any real aspiration to transform it, let alone subvert it. By claiming –misleadingly, given their construction and aims– to account for nature, they contribute to undermining more radical attempts to account for nature in accounting, and threaten to supersede them and make them irrelevant.

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## NOTES

1. We employ this term to underscore the stark contrast between the technocratic activity of accounting and the abstract concept of “nature” (Ducarme, 2019).
2. URL: <https://seea.un.org/> [consulted 25 September 2023].
3. Systematic data collection, for example, has been included among the Aichi Targets making up the “Strategic Plan for Biodiversity 2011–2020” or the Sustainable Development Goals (SDG, 15.9.1.b). However, the results remain contrasted and very unequal from one country to the next. See <https://www.cbd.int/aichi-targets/target/2> [consulted 25 September 2023].
4. Christian Heller, spoken contribution, “We Value Nature 10-Day Challenge”, 24 March 2021.
5. These are respectively the UN Millennium Ecosystem Assessment, the final report of which came out in 2005, the Stern Review on the Economics of Climate Change commissioned by the UK government and released in 2006, and The Economics of Ecosystems and Biodiversity (TEEB) initiative for which reports were circulated in 2010.

6. URL: <https://seea.un.org/ecosystem-accounting> [consulted on 8 December 2022].
  7. Now called the “Capitals Coalition. See <https://capitalscoalition.org/> [consulted 25 September 2023].
  8. Many other protocols, especially sector-specific ones, have been published since, although without specifying the objective of this accounting and without their standardized application being greatly affected. For the Natural Capital protocol, see [https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp\\_filter\\_tabs=guide\\_supplement](https://capitalscoalition.org/capitals-approach/natural-capital-protocol/?fwp_filter_tabs=guide_supplement) [consulted 25 September 2023].
  9. URL: <https://www.bsigroup.com/en-GB/standards/bs-86322021/> [consulted 25 September 2023].
  10. URL: <https://www.iso.org/standard/43243.html> [consulted 25 September 2023].
  11. Fieldnotes: Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting, 36<sup>th</sup> session. Geneva, 30 October - 1 November 2019.
  12. URL: <https://www.iasplus.com/en/standards/ias/ias1> [consulted 25 September 2023].
  13. URL: <https://www.ifrs.org/projects/completed-projects/2021/sustainability-reporting/#final-stage> [consulted 25 September 2023].
  14. URL: <https://www.ifrs.org/projects/work-plan/issb-consultation-on-agenda-priorities/> [consulted 25 September 2023].
  15. URL: <https://www.ifrs.org/supporting-implementation/supporting-materials-for-ifrs-sustainability-disclosure-standards/ifrs-s1/> [consulted 25 September 2023].
  16. URL: <https://www.efrag.org/Activities/2010051123028442/Sustainability-reporting-standards-roadmap?As> [consulted 25 September 2023].
  17. URL: [https://ec.europa.eu/commission/presscorner/detail/fr/qanda\\_23\\_4043](https://ec.europa.eu/commission/presscorner/detail/fr/qanda_23_4043) [consulted 25 September 2023].
  18. URL: <https://www.sec.gov/news/press-release/2022-46> [consulted 25 September 2023].
  19. URL: <https://www.sec.gov/news/statement/peirce-climate-disclosure-20220321> [consulted 25 September 2023].
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## ABSTRACTS

The interactions between the economy and nature are little reflected in the management tools of capitalism. The impacts on the latter remain largely invisible to economic processes. This is the narrative behind the proposal to integrate nature into a central instrument of capitalism: accounting. However, nature accounting is shaped by a diversity of actors, practices, objectives and effects. Taking a chronological approach, we show how three successive approaches that we call “accounting worlds” have developed over time and coexist today. The first is public accounting expressed in biophysical, material and energy units, with the aim of exposing the



exploitation and unequal exchange of natural resources as an extension of unbalanced trading relations. This was followed by the gradual development of natural capital monetary accounting projects, aimed at internalizing environmental externalities, initially at the national level and later extended to private accounting. A third and final project has recently emerged in connection with traditional accounting and financial standards. Its purpose is to measure the impact of nature and its degradation on the economic and hence financial performance of firms. Based on an analysis of these three worlds, we suggest that the growing influence of accounting thought and practices on nature, especially in their most recent forms, leads not so much to its commodification or financialization as to its invisibility or dilution in the logic of financial capitalist reproduction. Finally, we question the possible emergence of a unified regime of accounting for nature.

Les instruments de gestion du capitalisme ne reflètent qu'imparfaitement les interactions entre l'économie et la nature. De ce fait, les impacts de l'activité économique sur cette dernière sont largement ignorés dans les processus décisionnels. Tel est le récit qui sous-tend la proposition d'intégration de la nature à un instrument central du capitalisme : la comptabilité. Cette entreprise fait intervenir une diversité d'acteurs et de pratiques, avec des objectifs et des effets tout aussi variés. En nous appuyant sur une démarche chronologique, nous montrons comment trois formes de comptabilité de la nature – que nous proposons de qualifier de « mondes de la comptabilité » – ont été développées au fil du temps et coexistent aujourd'hui. Le premier est une comptabilité publique exprimée en unités biophysiques, matérielles et énergétiques, ayant pour but de mettre au jour l'exploitation et l'échange inégal de ressources naturelles. On a pu par la suite observer l'essor d'une comptabilité monétaire, dite du capital naturel, visant à internaliser les externalités environnementales, d'abord uniquement liée à la comptabilité nationale puis étendue à la comptabilité privée des entreprises. Finalement, un dernier projet a récemment émergé en relation avec les normes comptables traditionnelles ou financières. L'objet en est la mesure des impacts de la nature et de sa dégradation sur les performances économiques et financières des entreprises. À partir de l'analyse de ces trois mondes, nous suggérons que l'emprise croissante de la pensée et des pratiques comptables sur la nature, surtout sous ses formes les plus récentes, entraîne moins sa marchandisation ou sa financiarisation que son invisibilisation ou sa dilution dans la logique de reproduction du capitalisme financier. Nous interrogeons pour finir la possible émergence d'un régime unifié de comptabilité de la nature.

Los instrumentos de gestión del capitalismo sólo reflejan de manera imperfecta las interacciones entre la economía y la naturaleza. Como resultado, los impactos de la actividad económica sobre estos últimos se ignoran en gran medida en los procesos de toma de decisiones. Esta es la historia que subyace a la propuesta de integrar la naturaleza como un instrumento central del capitalismo: la contabilidad. Esta empresa involucra una diversidad de actores y prácticas, con objetivos y efectos igualmente variados. A partir de un enfoque cronológico, mostramos cómo tres formas de contabilidad de la naturaleza –que proponemos calificar como “mundos de la contabilidad”– se han desarrollado a lo largo del tiempo y coexisten en la actualidad. La primera es la contabilidad pública expresada en unidades biofísicas, materiales y energéticas, cuyo objetivo es revelar la explotación y el intercambio desigual de los recursos naturales. Posteriormente pudimos observar el auge de la contabilidad monetaria, conocida como contabilidad del capital natural, destinada a internalizar las externalidades ambientales, primero vinculada únicamente a la contabilidad nacional y luego extendida a la contabilidad privada de las empresas. Finalmente, recientemente ha surgido un proyecto final en relación con las normas de contabilidad tradicional o financiera. El objetivo es medir los impactos de la naturaleza y su degradación en el desempeño económico y financiero de las empresas. A partir del análisis de estos tres mundos, sugerimos que la creciente influencia del pensamiento y las prácticas contables sobre la naturaleza, especialmente en sus formas más recientes, conduce menos a su

mercantilización o financiarización que a su invisibilidad o dilución en la lógica de reproducción de las finanzas. capitalismo. Finalmente, nos interrogamos por el posible surgimiento de un régimen contable unificado de la naturaleza.

## INDEX

**Keywords:** natural capital, accounting, equivalence, environmental governance

**Palabras claves:** capital natural, contabilidad, equivalencia, gobernanza ambiental

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## AUTHORS

### SYLVAIN MAECHLER

Boursier postdoctoral du Fonds national suisse de la recherche scientifique (FNS) pour des postes de chercheur invité à l'université Goethe de Francfort et à l'université d'Ottawa. Collaborateur scientifique à l'Institut d'Études Politiques (IEP) de l'université de Lausanne. [sylvain.maechler@unil.ch](mailto:sylvain.maechler@unil.ch)

### VALÉRIE BOISVERT

Professeure d'économie écologique. Institut de géographie et durabilité (IGD). Faculté des géosciences et de l'environnement. Université de Lausanne. [valerie.boisvert@unil.ch](mailto:valerie.boisvert@unil.ch)