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Corporate reporting and conservation realities: understanding differences in what businesses say and do regarding biodiversity

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Abstract

Businesses are increasingly called on to participate in tackling biodiversity loss but the extent of corporate commitments to act is unclear. We have a limited understanding of differences in perceptions and actions regarding biodiversity across business sectors. Doubts also remain concerning the reliability of corporate reporting as a window into business involvement in biodiversity. This paper tackles these uncertainties by using formal corporate reporting and interviews with managers and stakeholders about actions regarding biodiversity as the evidence base. Taking the cases of forestry and salmon farming in Chile, it finds sectoral differences are influenced by distinct regulatory settings and forms of stakeholder engagement. Whilst reporting serves as a partial window into each sector, manager interviews and stakeholder accounts indicate firms in both sectors perceive biodiversity primarily as a reputational risk, rather than a core responsibility. In both cases businesses have used formal corporate reporting to mask negative impacts and it has failed to leverage fundamental reform. The findings indicate that formal reporting can only ever play a partial role in understanding and motivating business action on biodiversity. Stakeholder views and the particularities of local contexts must be more clearly articulated to ensure businesses undertake substantive rather than symbolic action on their impacts. The paper concludes by reflecting on implications for Natural Capital reporting and identifies limitations and avenues for future research.

Keywords

Corporate reporting, biodiversity conservation, corporate sustainability, salmon farming, forestry, markets and conservation

Introduction

Businesses are increasingly called on to recognise their role in tackling biodiversity loss (Jones & Solomon, 2013; Natural Capital Coalition, 2016). Corporate reporting is seen as a tool offering insights into understanding business responses to biodiversity and, through increased transparency, to hold them accountable for their impacts on it (Boiral & Heras-Saizarbitoria, 2017a; Jones & Solomon, 2013). Yet the extent to which formal reports and manager surveys help us understand business perceptions and actions regarding biodiversity remains unclear (Boiral, 2013, 2016; Jones & Solomon, 2013). We know that responses vary across sectors, but whilst some studies indicate sector-specific factors, others suggest regulations and stakeholder interactions are critical (Boiral & Heras-Saizarbitoria, 2017b; Mulder & Koellner, 2011). The capacity of formal reporting to increase business accountability for managing impacts on biodiversity is also uncertain. Some suggest that in its present forms it merely serves to manage reputations rather than prompt reform (e.g. Boiral, 2016; Milne & Gray, 2013)

This article uses the cases of the forestry and salmon farming sectors in Chile to explore these uncertainties. It explores how multiple factors related to the local contexts in which businesses operate influence approaches to biodiversity. It establishes that despite sectoral differences, businesses in both sectors perceive biodiversity as a reputational risk rather than a core responsibility. In contrast to previous studies that have generally focussed on corporate reporting, this article integrates stakeholder accounts to explore what businesses highlight and underplay in their reporting. (Boiral, 2013). These cases demonstrate the limitations of reporting to leverage change. The paper concludes by reflecting on implications for Natural Capital reporting, limitations and avenues for future research.

Understanding corporate reporting and action on biodiversity

This section considers the insights corporate reporting provides into business perceptions and actions regarding biodiversity. It highlights evidence gaps addressed by this article.

Multiple factors appear to influence business perceptions and actions regarding biodiversity. Although there is an association between business sector and action, the nature of the association is uncertain (Bhattacharya & Managi, 2013; Boiral & Heras-Saizarbitoria, 2017a; Bonini & Oppenheim, 2010; Rimmel & Jonäll, 2013). Some studies suggest that firms with the greatest exposure to biodiversity (e.g. utilities) and/ or impact on it (e.g. mining) have the most explicit policies towards biodiversity (Bhattacharya & Managi, 2013). Other studies have identified the opposite, with those firms at lowest risk providing more information (Rimmel & Jonäll, 2013).

Besides sector, factors related to the context a business is operating in appear to influence approaches to biodiversity. Concern about and priorities regarding biodiversity vary across regions (Bonini &

Oppenheim, 2010; PwC, 2010; Sell, Koellner, Weber, Pedroni, & Scholz, 2006). Regulatory contexts may shape conservation activities and investments, for instance (Lambooy & Levashova, 2011; Mulder & Koellner, 2011). Who is communicating knowledge about biodiversity and how effectively that knowledge is communicated can influence business commitments to conservation (Ebeling & Yasue, 2009; Lambooy & Levashova, 2011; McNab, Davies, Eves, Rowcroft, & Dunscombe, 2015; Overbeek, Harms, & Van den Burg, 2013; Pogutz & Winn, 2016; Ruckelshaus et al., 2015; van den Burg & Bogaardt, 2014). For example, stakeholders such as the state and conservation NGOs can help businesses understand their responsibilities to act (D'Amato, Wan, Li, Rekola, & Toppinen, 2016; McNab et al., 2015; Overbeek et al., 2013; Sell et al., 2006; van den Burg & Bogaardt, 2014).

Motivations within businesses to engage in biodiversity conservation remain unclear. The business case for engaging in biodiversity conservation is founded on operational, regulatory, financial, reputational, societal and ethical grounds (Jones & Solomon, 2013; Natural Capital Coalition, 2016). These are often split into opportunities from acting and risks of inaction (Natural Capital Coalition, 2016). Corporate motivations for involvement in biodiversity initiatives identified through reporting include improving corporate image and legitimacy, gaining new knowledge, innovating and better understanding stakeholder expectations regarding conservation. Some studies suggest that ethical considerations are a factor in corporate action on biodiversity (Boiral & Heras-Saizarbitoria, 2017a) but others have found limited or no evidence that ethics are significant in corporate perceptions and actions regarding biodiversity (D'Amato et al., 2016; Liempd & Busch, 2013). It is uncertain whether realising opportunities (e.g. product differentiation) or reducing risks (e.g. reputational damage due to negative impacts) is a greater incentive for action on biodiversity (Bhattacharya & Managi, 2013; Boiral & Heras-Saizarbitoria, 2017a, 2017b).

A further issue with much of this work is the reliance on corporate accounts, acknowledged by the studies themselves (Bhattacharya & Managi, 2013; Boiral, 2016; Boiral & Heras-Saizarbitoria, 2017a, 2017b; Liempd & Busch, 2013; Rimmel & Jonäll, 2013). Limited reporting requirements regarding biodiversity (e.g. the Global Reporting Initiative (GRI) and Integrated Reporting) mean outputs are often minimal and low quality (Jones & Solomon, 2013). Interviews and surveys of managers and employees provide greater insight into thought processes and activities, but can suffer from social desirability bias and adherence to the official corporate line (D'Amato et al., 2016; Lambooy & Levashova, 2011; Mulder & Koellner, 2011; Rimmel & Jonäll, 2013).

Corporate sustainability reporting can be used to construct “façades” to neutralise competing (and potentially contradictory) stakeholder demands (Boiral, 2016; Cho, Laine, Roberts, & Rodrigue, 2015). Consequently, businesses can use reporting to avoid rather than tackle issues (Milne & Gray, 2013). Several studies have demonstrated how businesses can manipulate perceptions of their attitudes and

actions regarding biodiversity, presenting what is seen as desirable and legitimate rather than necessarily what they really believe (Boiral, 2016). Since multiple values and perspectives are relevant in constructing conservation priorities, perception management regarding biodiversity is a potentially serious issue (Boiral & Heras-Saizarbitoria, 2017b). Reporting practices regarding biodiversity are under-explored.

The review above indicates several gaps in our understanding of business approaches to biodiversity. Firstly, considering actions in context can build a more comprehensive understanding of the interplay between sector and non-sector related factors, overlooked in previous work. Secondly, examining motivations to act in context can address issues with the level of detail offered by managers and formal reports. Integrating stakeholder "counter accounts" can provide information of activities on the ground (Boiral, 2013; Ehrnström-Fuentes & Kröger, 2017) and expose issues and disputes not disclosed by businesses in reports or surveys (Boiral, 2016; Cho et al., 2015; Lähtinen, Guan, Li, & Toppinen, 2016). Contrasting corporate perspectives with stakeholder opinions and experiences can build a more comprehensive understanding of corporate perceptions and drivers to act regarding biodiversity. Thirdly, identifying both what business highlight and what they downplay or fail to report can help understand the capacity of formal reporting to change corporate perceptions and actions regarding biodiversity (Boiral, 2016; Jones & Solomon, 2013). Recent developments in reporting like the Natural Capital Protocol (Natural Capital Coalition, 2016) might address these failings, but a clearer understanding of how reporting is being used at the moment can identify what else might need to be reformed to leverage change in business approaches to biodiversity.

Case studies, materials and methods

Forestry and salmon farming in Chile

This study contrasted perceptions and actions regarding biodiversity in the forestry and salmon farming sectors in Chile, with biodiversity historically a low priority in both industries (Barton & Fløysand, 2010; R. Heilmayr, Echeverría, Fuentes, & Lambin, 2016; Latta & Aguayo, 2012). Sector differences need further exploration and case studies enable detailed investigation of multiple variables, aiding understanding of phenomena in their context (Cresswell, 2008; Yin, 2014). Focussing at a sector rather than organisational level increased participant anonymity, enabling them to be more open in their views.

Biodiversity appears to have risen up the agenda in forestry in Chile since the early 2000s, with the largest firms adopting Forestry Stewardship Council (FSC) certification and increasing investment in native forest conservation (Cubbage, Diaz, Yapura, & Dube, 2010; R Heilmayr & Lambin, 2016). Firms have entered a Forestry Dialogue with community and conservation NGOs and participated in a state-led Forest Policy Council to discuss reforms to industry practice. The three largest firms have joined

the New Generations Plantation Initiative (NGP) to consider new approaches to plantation management, including introducing wildlife corridors (New Generation Plantations, (n.d.)). Yet recent widespread forest fires have revived criticism of forestry plantation practices (AIFBN, 2017) and conflicts with indigenous Mapuche people regarding land ownership and local communities over water and plantation management, persist (Ehrnström-Fuentes & Kröger, 2017; González-Hidalgo & Zografos, 2017; Salas et al., 2016). The extent of reform and reasons underlying changes to date remain unclear.

Salmon farming's rapid expansion in Chile – with production second only to Norway globally – appears to have come at a high environmental cost and with limited regard for biodiversity (Cid Aguayo & Barriga, 2016). Environmental Impact Assessments (EIAs) were introduced in the late 1990s (Barton & Fløysand, 2010) but the inadequacy of regulations were exposed by an Infectious Salmon Anaemia (ISA) outbreak that almost wiped out the industry and regulatory reforms concentrated on sanitation and biosecurity rather than biodiversity (Bustos-Gallardo, 2015). The largest firms operating in Chile have joined the Global Salmon Initiative (GSI), committing to meeting Aquaculture Stewardship Council (ASC) standards by 2020 (GSI, 2017), but reforms remain limited (Bustos-Gallardo, 2015). Salmon producer practices are widely criticised and conflict with local communities and conservation NGOs persists (Bustos-Gallardo, 2015; Latta & Aguayo, 2012; Salgado, Bailey, Tiller, & Ellis, 2015). An algae bloom prompted fresh protests in 2016 (AQUA, 2016) and salmon producers have resisted calls to release data on antibiotic use (Esposito, 2016). The extent to which salmon producers understand their impacts on biodiversity is uncertain.

Evidence base

The study combined formal corporate reporting (company websites, sustainability reports and online documentation) with manager and stakeholder interviews.

Qualitative approaches can extract rich data from a small evidence base (Boiral, 2016; Cho et al., 2015; Joutsenvirta, 2009). This study adapted Joutsenvirta's 2009) approach to examine changes in formal reporting over time. Chilean forestry and salmon farming industry association membership lists and government records on forest plantation and salmon farm concession ownership were used to identify relevant firms in each sector. Arauco, CMPC and Masisa are the only firms to produce sustainability reports. Due to minimal changes in formal report content year on year, the study examined alternate years between 2003/2004 (the earliest available reports) and 2014. Firms with websites were analysed, along with any documentation regarding FSC standards. Subsidiaries of larger organisations were included in the analysis where they have distinct operations with separate reports. Firms without an online presence were excluded because they had no documentary material. Source types are summarised in Table 1.

Document Type	Forestry	Salmon Farming
Company websites	**22**	**20**
Sustainability, Integrated or Annual Report		
2004	3	x
2006	3	3
2008	3	4
2010	3	8
2012	3	8
2014	3	10
2015	3	10
2016	3	7
Total	**24**	**51**
Other • **Forest Management Plans** • **Forest Survey Reports** • **Forestry Operational Documents** • **Environmental/ CSR Policy Declarations**	**68**	**13**

Table 1: Document Review by type and sector

Interviews with 21 senior and middle managers and four industry association representatives across both sectors supplemented the document review (Rydin & Falleth, 2006). Interviews explored strategic and operational decisions; internal and stakeholder relationships; and the development of ongoing projects. See Table 2 for a summary.

Business interviews were complemented by 49 stakeholder interviews to: a) understand the demands placed on businesses in each sector regarding biodiversity; and b) avoid risking a partial understanding of business perceptions and actions regarding biodiversity due to "retrospective sense-making" in corporate accounts (Eisenhardt & Graebner, 2007: 28). Boiral and Heras-Saizarbitoria (2017b) recommend using more diverse and detailed sources of information, including stakeholders involved in biodiversity actions, to triangulate corporate reporting and to understand stakeholder priorities regarding biodiversity. Stakeholders were identified through existing literature and discussions with experts working within and / or studying one of or both sectors in Chile. The range of participants is summarised in Table 2.

Document Type	Forestry	Salmon Farming
Company websites	**22**	**20**
Sustainability, Integrated or Annual Report		
2004	3	x
2006	3	3
2008	3	4
2010	3	8
2012	3	8
2014	3	10
2015	3	10
2016	3	7
Total	**24**	**51**
Other • **Forest Management Plans** • **Forest Survey Reports** • **Forestry Operational Documents** • **Environmental/ CSR Policy Declarations**	**68**	**13**

Table 2: Respondents by sector and type

Material was gathered over several stages, including fieldwork in Chile.

Scoping (September to October 2015): involved a review of corporate reports and websites and the websites of relevant stakeholders to generate a) themes for interview and b) a sample of organisations and target participants. The sample included secondary and some tertiary targets if the primary target was unavailable or unwilling to participate. Targets were cross-referenced with recommendations from each participant to check if any individuals or organisations should be added.

Interviews (November 2015 and May 2016): covered the Metropolitan, Bio Bio, Araucania and Los Lagos Regions of Chile. 67 face to face interviews, three via Skype; 66 conducted in Spanish and four in English. Participants were recruited via e-mail and telephone, sometimes after recommendation by other participants. Fieldwork continued until the point of saturation, i.e. until similar themes continually reappeared and new interviews yielded few or no insights (Bauer & Arts, 2000).

Document review (January to March 2017): involved downloading all relevant documentation and capturing content from corporate websites.

Analysis

Data were analysed inductively using NVIVO 10. Formal reports were reviewed in their original form, with text from websites and summaries of other documents collated in an Excel spreadsheet. Interviews were transcribed by a native Spanish speaker and checked against original recordings; the interviews in English were transcribed by the lead author. There were several phases of analysis: 1) Reading and

coding formal corporate reporting, grouping individual codes into themes, repeating this process for interviews with managers and industry association representatives. 2) Reviewing codes to identify additional details from manager interviews and any disparities between the interviews and formal reports. 3) Repeating the reading and coding process for stakeholder interviews. 4) "Within-case" analysis (Eisenhardt, 1989: 539-540) to understand similarities and differences between corporate and stakeholder accounts in each sector. 5) "Cross-case" analysis (Eisenhardt, 1989: 540-541), combining corporate and stakeholder accounts for forestry and separately for salmon farming to identify similarities and differences between sectors.

Findings

In this section we highlight differences in perceptions and actions regarding biodiversity in forestry and salmon farming in Chile, both across sectors and between corporate and stakeholder accounts. We explore the reasons for these differences in the discussion.

Differences in perceptions and actions regarding biodiversity by sector

Forestry

Forestry firms focus on native forest when discussing biodiversity: "ARAUCO is committed to the protection of the native forests on its land, understanding that the sustainability of its production processes is closely tied to the biodiversity and ecosystem services of the territory it inhabits. Monitoring enables the Company to identify changes and implement prevention and restoration actions" (ARAUCO, 2017: p. 84). Firms highlight restoration and monitoring activities: "Forestal Mininco has a strong commitment to the conservation of native forests, demonstrated in its interest in understanding and protecting them, determining the presence of endangered plant and animal species, and identifying, managing and monitoring high conservation value areas (HCVAs)" (Forestal Mininco, 2017).

The three largest firms go further than smaller firms and by joining the NGP initiative they are considering their impacts on ecosystem services such as "water provision, scenic beauty, carbon storage, recreation and tourism opportunities, and biodiversity conservation" (Masisa, 2017). However, even the smaller firms accepted that their operations must account for biodiversity: "We are aware that our company's future depends on nature's future. As such, we take care over every detail of our production process, with the aim of assuring environmental sustainability" (Compañia Agricola y Forestal El Alamo, 2017).

Cooperation with stakeholders interested in and affected by decisions regarding biodiversity is accepted as an important part of management activities: "we must have all those who are interested in this subject at the table" (I6, Manager, Forestry Firm). Universities and conservation NGOs are valued for their

expertise: “ARAUCO […] is spearheading joint scientific research programs with universities, public institutions and NGOs; encouraging innovation through the development of projects; and is managing the environmental monitoring of biodiversity and research programs related to the fulfilment of environmental commitments.” (ARAUCO, 2017: p. 82). As one manager put it: “there’s a level of specialisation that the company could never have” (I27, Manager, Forestry Firm).

Local community support is important: “[t]his work is being carried out jointly with the community, which plays a fundamental role in the protection of the remaining native forests, as well as in the care after the planting of native species or in their natural regeneration.” (CMPC, 2017: p. 215). Firms are “going to handle and have to develop science and technology and the procedures to achieve that aren’t something that they understand in detail, so they are going to need lots of support from universities, from NGOs and from communities to be able to advance. This is an important point for forestry firms” (I25, Manager, Forestry Firm).

Stakeholder engagement is also about retaining social legitimacy: “who you are paying for research is done with a certain [level of] attention to showing that the practices that are being implemented are harmless and that they are also good for biodiversity” (I31, Manager, Forestry Firm). Biodiversity is valued for multiple reasons, not simply sustainability: “you’re conveying that you’re a company that’s concerned about these subjects and that generates value, it generates internal value and it generates value amongst stakeholders and, finally, it generates commercial value too” (I65, Manager, Forestry Firm). Managers argued efforts to consider biodiversity are complex, with uniform approaches unsuited to managing diverse demands across different areas: “it has taken us a lot of time to sit at the same table, talk about common issues and that takes time. And if you need to develop… you know local… information, you need to develop management plans at a local level, all of that needs to be worked together with all the actors … in the field” (I4, Manager, Forestry Firm).

Managers emphasised limits to forestry firm responsibilities regarding biodiversity: “you have to reach a point where you are capable of, of management ultimately, you can’t prioritise everything [because] that means you can’t manage everything […] For us biodiversity management is based on this mechanism of prioritisation” (I66, Manager, Forestry Firm). Managers were defensive about plantation practices, arguing that they should not be expected to meet the demands of conservation NGOs and others that they adapt their practices: “it’s purely ‘conservation’ and they’re not looking at the beneficial role of plantations. They see it as not good, sometimes, because they're just one species, over large areas and what's more they're cut-down, so they like native forest, so, for them, there must only be conservation, but that's one extreme” (I7, Manager, Forestry Firm).

Salmon farming

Salmon producers seldom refer to "biodiversity", preferring to communicate about sustainability: "Marine Harvest is aware of the environmental and social challenges that the aquaculture industry is facing" (Marine Harvest, 2017c). Producers associate sustainability with the industry's viability : "Today the focus is on people, benefits and the planet; aquaculture must be socially and environmentally sustainable to be profitable in the long term" (Marine Harvest, 2017c). Like forestry firms, salmon producers declare a responsibility for biodiversity: "we feel that we are part of the community in which we live and we are convinced that our development should be in harmony with our surroundings, not only with the environment, but also with society. As a company we are strongly committed to manage our growth responsibly and sustainably to give the best we can to future generations." (AquaChile, 2017).

Producers focus on managing impacts at a site level and along the supply chain: "We focus on good farm management in an effort to increase survival, manage disease, reduce medicine use and prevent escapes, all of which safeguards wild fish populations and biodiversity" (Marine Harvest, 2017b: p24). Investment in science and technology feature prominently: "[t]his mission has led the company to introduce technology and world-class to its value chain" (Friosur, 2017). GSI members introduced the Fish Feed Ratio (FFR) to indicate fish content in feed and demonstrate efforts to reduce impacts on wild fish populations: "Marine Harvest is driving change in industry practices and pioneering technology that will ensure a sustainable supply of food for the future" (Marine Harvest, 2017a).

As in forestry, producers recognise the need for stakeholder engagement regarding impacts on biodiversity: "[n]owadays what people are requesting, what some retailers are requesting, is that effectively you are sustainable across a broad spectrum" (I42, Manager, Salmon Producer). Producers refer to multiple stakeholders "Blumar understands Sustainability as collaborative work with its stakeholders; defined as workers, clients, providers, contractors, communities, investors, the natural environment, society, and regulatory bodies; to generate economic, social and environmental value in the medium and long term" (Blumar Seafoods, 2017: p. 62). That work includes "keeping a constant dialogue with the community and the authorities" and obtaining "international certificates that endorse our processing practices and our important commitments to the environment" (AquaChile, 2017).

Yet tensions with stakeholders regarding biodiversity, particularly conservation NGOs, is common: "we're a long way apart, indeed, as we were discussing before it's because they are requesting that antibiotic use is more open" (I62, Manager, Salmon Producer). Some conceded that they needed to do more both in terms of community engagement and improving knowledge of biodiversity: "ultimately, we're falling short in, in investing more in science to better understand the environment" (I62, Manager,

Salmon Producer). As one manager put it: "currently we know more about space than we do about the sea" (I42, Manager, Salmon Producer). Instead, producers prefer to focus on EIAs, meaning "each producer conducting environmental studies on their concessions, but there aren't environmental studies of the [wider] area, or larger zones" (I62, Manager, Salmon Producer).

Although admitting some shortcomings, producers mostly defended current practices: "Cermaq has developed an antibiotic policy emphasizing a sustainable use of antibiotics. Antibiotics are used only when strictly needed and only upon approval by an authorized veterinarian" (Cermaq, 2015: p. 17). Producers also point to ecological challenges faced in Chile that are less prevalent elsewhere: "there are issues with the environment, such as Caligus, sea lice, there are areas that have more and others with less and [quantities] don't 100% depend on what you do, so, this indicator is difficult to fulfil" (I49, Manager, Salmon Producer). Consequently, achieving standards such as the ASC are seen as: "a rather ambitious certification and for most companies it's costly to implement" (I41, Manager, Salmon Producer).

Managers were clear that biodiversity came secondary to market considerations. "[T]he main concern in this business is always going to be making money and after this, if you're making money, sure, you're going to take decisions more… conceived more for the natural environment and in reducing environmental impacts" (I63, Manager, Salmon Producer). Managers identified multiple limitations on their capacity to act regarding biodiversity to defend their stance: ultimately, there are so many fronts to work on; there are environmental issues, labour issues, issues with local community relations" (I62, Manager, Salmon Producer). Although financial constraints were a more acute issue for smaller producers with fewer concessions, even larger producers cited profit margins as a reason for inaction on biodiversity: "you can improve, certify, reduce production, search for the best feed, already major expenditures and, obviously, these are going to depend on whether business is good" (I63, Manager, Salmon Producer).

Differences between corporate and stakeholder accounts regarding biodiversity

Forestry

Stakeholders agree that forestry firms have a "different attitude to that they had 15 years ago" (I59, Government Agency). Many cited the role of FSC Chile and needing to meet new standards "if certification hadn't existed, perhaps this bridge for dialogue, to go beyond certification, wouldn't have existed, the conditions wouldn't have existed" (I8, Government Agency). Firms were exposed to new forms of knowledge: "other professionals entered, for example biologists, sociologists, anthropologists, who were very rare to see before" (I8, Government Agency). Consequently, "what certification has done is to bring home that there are rising standards, rising environmental requirements" (I14,

Conservation Biologist, University). Firms accept they must consult over decisions affecting biodiversity: "before the firm was the owner: 'this is my land and it is private land and, therefore, I'll do what I want with my private land'. This has changed […] it has ensured more effective communication with the same groups that didn't happen before" (I8, Government Agency).

Yet stakeholders who have worked closely with forestry firms felt they could go further "we're still at a very basic level" (I1, Conservation Biologist, University). Stakeholders noted: "certification systems are defined by landowner, not by landscape" (I30, Government Agency), failing to encourage innovation regarding biodiversity: "[w]ith respect to the High Conservation Value Forests, generally they are forests conserved simply for exclusion from use and not for monitoring, nor to transform them into an asset for, or part of, a system of conservation" (I59, Government Agency). Some went further: "the [FSC] management plan is not a plan that allows you to look at biodiversity, maybe its destruction" (I23, Conservation NGO).

Many stakeholders also felt that the big three firms were slow to respond, "because we have a high concentration of land amongst a few companies, I'd say that that the companies delay, ultimately they delay in acknowledging these effects" (I5, Government Agency). Firms were seen as conservative in regarding further reform, summarised as: "stop, too risky, too innovative" (I14, Conservation Biologist, University). Whilst welcoming increased dialogue, stakeholders felt that the firms used it as a tool to manage the reputational impact of contentious topics, rather than to engage in a concerted effort to resolve underlying issues: "mere discussion won't be enough […] they find it hard to understand that these are long processes that won't simply be resolved [by] collecting information, but [by] showing a change of action" (I59, Government Agency). Some were also suspicious of forestry firms' intentions, feeling that they found excuses for not acting: "[w]hy has the huillin, the river otter, disappeared? "*It's climate change*"… it's a handy tool, the tailor-made response" (I24, Conservation NGO).

Although stakeholders generally agreed that forestry firms had changed in terms of their activity, there were different opinions about how best to achieve further reform. Some conservation NGOs defended talking to and compromising with forestry firms to achieve change: "normally we don't like to leave our comfort zone, but we left our comfort zone" (I22, Conservation NGO). All stakeholders – conservation biologists, environmental consultants, NGOs and state representatives – felt that whilst practices had changed, forestry firms' remained focussed on productivity and plantations, with limited regard for biodiversity itself.

Salmon farming

Stakeholders had contrasting views on salmon producer understanding and consideration of biodiversity. Some were positive: "[i]n terms of sustainability, I think we've made fairly good progress"

(I70, Conservation NGO). Conservation NGOs, representatives of state authorities and scientists working along the supply chain pointed to investment in new technologies and moving concessions out of lakes as examples of reducing impacts on biodiversity. A few felt attitudes were changing, away from seeing "native fauna as species that threaten salmon" and that "a new awareness is increasingly evident" (I5, State Agency), reflected in commitments to support Blue Whale conservation, for example. Producers have moved from a "less rigorous" to "a better understanding of these variables" (I68, State Agency). Even stakeholders critical of producers felt that relations had changed: "now there is some proximity, [for example] with people from SalmonChile […] it wasn't always this way" (I43, Marine Biologist, University).

Some felt that market and social pressure was having an influence on: "how the product and how it is produced are perceived" with "pressure by NGOs, like us" (I61, Conservation NGO). Others noted producers had begun to look beyond the supply chain for learning: "recently they have realised that [this] information is necessary" (I44, Aquaculture Scientist, University). Representatives of state agencies accepted that salmon producers faced multiple challenges: "they are caught in a tight spot, it's an inflexible and complex context, in that it's very hard to change course" (I5, State Agency). Even those with a more positive outlook felt ASC standards, the most demanding in environmental terms, would be difficult to achieve: "it's not that they aren't viable for Chile, it's just that it takes a lot to achieve them" (I70, Conservation NGO).

Whilst conceding salmon producers face significant challenges, many stakeholders argue they must do more regarding biodiversity: "yes, they've progressed, but many issues remain [unresolved]" (I43, Marine Biologist, University). Many were critical of producers' attitude to change: "[it is] an extremely aggressive sector" with a "brutal willingness to invest, to [take] risks" (I5, State Agency). Stakeholders feel producers resist change, preferring to: "talk about sustainability, but I think they lack a definition, an understanding of what sustainability really means. They believe it is… that this tripartite balance doesn't exist and they only advance on economic issues and a little on social ones, but [only] how they interpret social links and interactions" (I61, Conservation NGO).

Consequently, "the relationship with communities continues to be unfriendly, it's like a private enterprise that uses the space but doesn't necessarily interact with the others" (I37, Community NGO). Several stakeholders cited producer attitudes to engagement on environmental and social issues as the basis for their poor image: "the view of the salmon farming sector at a national level isn't so favourable, because the salmon farming sector has been very inward looking" (I68, State Agency). Stakeholders wonder whether salmon producers really understand their impacts on biodiversity: "there's a very superficial view, we believe that they aren't asking the right questions" (I61, Conservation NGO). As

one observer working on projects in Puerto Montt put it: “one is left with the feeling that there is no learning in the industry” (I36, State Agency).

Discussion

The findings demonstrate contrasting perceptions and actions regarding biodiversity in Chile: between the forestry and salmon farming sectors, as well as businesses and stakeholders. This section considers the role of local contexts in shaping business perceptions and actions regarding biodiversity and implications of the findings for debates regarding the business case for action on biodiversity and the role of reporting in biodiversity management by business. It concludes by reflecting on limitations and avenues for future research.

The forestry and salmon farming cases support the association between business sector and approaches to biodiversity, but indicate that factors specific to Chile are also important (Bhattacharya & Managi, 2013; Boiral & Heras-Saizarbitoria, 2017a, 2017b). Mirroring findings in other contexts forestry firms focus on certification, minimising operational impacts and local community engagement (Boiral & Heras-Saizarbitoria, 2017a; D'Amato et al., 2016; Toppinen, Virtanen, Mayer, & Tuppura, 2015). Similarly, salmon producer views on sustainability and dealing with threats align with narratives identified elsewhere (e.g.Vormedal, 2017). Non-sector specific factors also feature. Forestry firm attitudes and actions regarding biodiversity are focussed on native forest conservation and have evolved with the implementation of FSC certification. Salmon producers consider biodiversity through what they see as Chile’s restrictive regulations regarding the environment, sanitation and the concessions system. Bigger firms are doing more than smaller firms in each sector. However, these differences largely reflect scale and underlying attitudes regarding biodiversity are more closely aligned with the firm’s sector than its size. Consequently, perceptions and actions regarding biodiversity reflect sector differences, but local contexts also influence developments (Boiral & Heras-Saizarbitoria, 2017a).

Businesses in both sectors consider biodiversity more in terms of managing an external reputational risk than exploiting an opportunity (D'Amato et al., 2016). Firms do enough to meet regulatory requirements and market expectations, but neither sector is thinking innovatively about the role they can play in biodiversity conservation. Instead, protecting core operations remains the priority. Forestry firms safeguard plantation practices by doing enough to retain FSC certification. In formal reports they emphasise conservation and community engagement, whilst downplaying negative impacts in plantations (Boiral & Heras-Saizarbitoria, 2017b; Joutsenvirta, 2009). As one stakeholder summarised: “they are still in the era of High Conservation Value Forests and eventually [wildlife] corridors, but they don’t look much beyond that” (I59, State Agency). Salmon producers highlight efforts to reduce impacts on biodiversity through EIAs, along the supply chain, investing in technology and bigger firms

via the Blue Whale conservation project, for example. Managers defend antibiotic use by highlighting the range of ecological, regulatory and financial challenges that they face. Producers also suggest that poor communication about their impacts on biodiversity, rather than comprehension of alternative approaches, is a key problem.

Although firms in both sectors advance an ethical/ moral case to act on biodiversity in formal reports, manager and stakeholder interviews indicate that these concerns are not as high on corporate agendas as some studies have suggested (Boiral & Heras-Saizarbitoria, 2017a; D'Amato et al., 2016; Liempd & Busch, 2013). The findings demonstrate firms in both sectors feel there are limits on their responsibilities to act regarding biodiversity conservation. Consequently, they are resisting pressure to go beyond what is strictly required (FSC standards in forestry, environmental regulations in salmon farming). Each sector deploys slightly different techniques to minimise responsibilities regarding biodiversity. Forestry firms emphasise their adherence to FSC standards to underline their conservation credentials, whilst using discussion to delay further reforms desired by stakeholders. Salmon producers blame regulatory and environmental challenges without being prepared to invest more to investigate alternative approaches to managing impacts. Whilst outwardly accepting moral responsibility for acting regarding biodiversity, firms in both sectors are avoiding the fundamental reforms required to meet these commitments in practice (Jones & Solomon, 2013; Liempd & Busch, 2013; Natural Capital Coalition, 2016).

The limited impact of formal reporting in changing how either sector understands or acts regarding biodiversity aligns with the findings of other studies (Boiral, 2016; Jones & Solomon, 2013; Tregidga, 2013). Even the practices of bigger firms in forestry and salmon farming, and who adhere to GRI requirements, demonstrate its limited impact in leveraging change (Milne & Gray, 2013; Rimmel & Jonäll, 2013). Stakeholder accounts indicate that forestry firms – and salmon producers even more so – still struggle for legitimacy at a local level (Boiral, 2016; Ehrnström-Fuentes & Kröger, 2017). Yet by complying with voluntary standards in forestry and statutory regulations in salmon farming alongside formal reporting, firms retain legitimacy in the markets they sell to. Applying more sophisticated reporting tools, such as the NCP, might address problems with transparency. However, managing biodiversity entails more than agreeing a set of indicators: it means integrating multiple perspectives and values (Jones & Solomon, 2013; Milne, Tregidga, & Walton, 2009; Ruckelshaus et al., 2015). Whilst Chilean forestry is far from a perfect case, progress came through dialogue with stakeholders changing the debate from "confrontational, ideological, value-based, to something much more evidence based" (I5, Government Agency).

Formal reporting focussed on local contexts is problematic, not least in complicating attempts at direct comparisons in performance between firms and across different settings. However, integrating different

views into biodiversity reporting could more accurately reflect the local contexts firms are operating in, for instance demonstrating competing conservation priorities (Barkemeyer, Stringer, Hollins, & Josephi, 2015; Landrum & Ohsowski, 2018). Reporting against baselines set in the local context would also provide more reliable measures of progress made regarding biodiversity restoration. Focussing on increased dialogue, rather than communication, could ensure practices that are more effectively tailored to achieving consensus between firms and local stakeholders, rather than masking tensions between competing priorities as the cases here demonstrate. Ultimately, the findings here suggest that achieving a change in corporate perspectives regarding biodiversity is likely to require broader systemic changes too. Managers of forestry and salmon farming firms may have over-emphasised the limitations on their capabilities to act regarding biodiversity. However, firms may need state assistance to map-out priorities regarding biodiversity and incentivise change through regulatory reform (Ebeling & Yasue, 2009; van den Burg & Bogaardt, 2014).

Although the findings advance understanding of business perceptions and actions in several ways, further research is required to substantiate this work. Firstly, the findings relate to two sectors within the same national context and may not be replicated elsewhere. For instance, state agencies may be more knowledgeable about biodiversity and have more coherent conservation policies than in Chile. Accordingly, stakeholder engagement might be more structured and/ or corporate biodiversity strategies may be more proactive (Vormedal, 2017). Similarly, sector dynamics may be different, with firms able to use formal biodiversity reporting to differentiate from competitors to a greater extent than the findings here suggest (particularly in the case of the two biggest forestry firms) (Boiral & Heras-Saizarbitoria, 2017a). Secondly, this study covered basic reporting mechanisms. Examining more advanced reporting such as the Natural Capital Protocol and measurement tools like IBAT might demonstrate alternative, potentially more developed, corporate understandings of biodiversity in relation to their local contexts than the findings here suggest. Thirdly, although this study identified few differences in perceptions and actions regarding biodiversity within each sector, exploring individual organisations in detail, with more systematic sampling of firms by factors such as size and ownership may reveal routes to changing organisational cultures and achieving reform from within, rather than relying on external pressure.

Conclusion

This article has combined corporate and stakeholder accounts to demonstrate that business perceptions and actions regarding biodiversity are contingent on multiple, interacting factors relating to both the sector and context they operate in. The contrasts between the forestry and salmon farming sectors in Chile reflect different operational impacts on biodiversity. However, perceptions and actions are also shaped by distinct regulatory contexts and forms of stakeholder engagement. Formal corporate reporting provides a window into perceptions and action regarding biodiversity but has failed to

leverage change, with businesses downplaying negative impacts and emphasising positives (Boiral, 2016). Stakeholder "counter" accounts provide alternative and additional information that firms may be unwilling to disclose, particularly regarding negative impacts on biodiversity (Boiral, 2013). A more holistic view confirms that both sectors perceive biodiversity as a reputational risk with actions generally orientated to manage external expectations. Despite pressure to reform, businesses focus on core operational aims and express clear limits to their responsibility to manage impacts on biodiversity. Whilst these findings apply to the Chilean context and must be tested elsewhere, there are implications for current debates and future research on corporate reporting on biodiversity.

Firstly, biodiversity reporting needs to more accurately reflect the local contexts businesses are based in. Such an approach complicates developing suitable indicators and comparing performance, even between firms in the same sector. However, accounting for local contexts can help in measuring progress against baselines. It could also be tailored to integrate and reflect different objectives and views on what is important regarding impacts on and management of biodiversity (Barkemeyer et al., 2015). If these considerations are not taken into account, some stakeholders – especially local communities – are likely to remain frustrated with corporate actions regarding biodiversity, as firms retain legitimacy with distant markets at the expense of local populations (Ehrnström-Fuentes & Kröger, 2017). Secondly, the findings highlight potential limitations to a business case for biodiversity framed within business self-interest. If appeals are based on potential opportunities or risks alone, the findings suggest – as have other studies – that businesses will use reporting as tool to manage perceptions rather than increase transparency regarding biodiversity (Boiral, 2016; Milne & Gray, 2013; Milne et al., 2009). Increased stakeholder dialogue may widen debate on the values businesses should share, what biodiversity means and the potential of and limits to corporate action on biodiversity. Dialogue is complex and time-consuming, but may be better in addressing and resolving differences than the avoidance strategies currently being pursued through corporate reporting.

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