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# Positioning sustainability to deal with complex systems: From sustainability identity to sustainability outlook

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**WiSo-HH Working Paper Series**  
Working Paper No. 49  
Juli 2019



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ISSN 2196-8128

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# **Positioning sustainability to deal with complex systems: From sustainability identity to sustainability outlook**

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## **Abstract**

In recent decades theoretical frameworks for business sustainability increasingly have encouraged business leaders to engage with their external environments to create positive change. The tacit assumption in these frameworks is that firms demonstrating a high level of sustainability maturity will welcome the inherent complexity of the economic, social and environmental systems as a source of learning and innovation. Still, the question of sustainability leaders' orientation to complexity remains under-researched. Our multi-case study analyzes how business leaders from the Finnish forestry sector, an industry considered to be at a high level of sustainability maturity, align their commitment to sustainability with their approach to complexity. Our findings show that while these managers position sustainability at the center of their discourse about business strategy, their implementation is confined to contexts about which they express the ability to reduce complexity in order to gain a high-level of control. This is an important clarification of a disconnection between sustainability ambition and action. We propose that sustainability maturity be theorized as combining sustainability identity (a firm's identification with the principles of sustainability) and sustainability outlook (business leaders' approach to complex systems). We relate these concepts to propose an enhanced framework for sustainability maturity to assist business leaders to innovate within a complex and unpredictable future.

## **Keywords**

Complex systems, corporate sustainability, sustainability identity, sustainability outlook, sustainability posture

## 1. Introduction

Over the past three decades scholars have developed and refined models for businesses to transition from non-sustainable to sustainable. From Carroll's (1979) 'model of corporate performance', Elkington's (1997) 'triple bottom line' to Benn et al.'s (2014) 'maturity models', sustainability advocates have increasingly encouraged business leaders to look outside the boundaries of their operations and consider the wider impacts of their activities on society and the environment. Consistently these frameworks emphasize that firms are embedded within complex systems (Bettinazzi et al., 2019; Ehrenfeld and Hoffman, 2013; Schafer et al., 2015). Indeed, the tacit assumption is that business leaders committed to the principles of sustainability will, by way of consequence, be adept at dealing with complex systems (eg Benn et al., 2014).

The sustainability maturity industry has measurement frameworks and reporting requirements to add rigor in the implementation of sustainability concepts (The Global Reporting Index for example). However, questions remain about how the application of these theoretical principles and practical tools actually influences business leaders' approach to complexity (Adams et al., 2016; Gröschl, S., Gabaldón, P., & Hahn, T. 2019; Shrivastava and Hart, 1995, Van der Byl and Slawinski, 2015; Zollo et al., 2013). Clarifying this assumed causal link between the application of sustainability principles and business leaders' orientation to complexity is a gap in the literature that our study addresses. We ask: *To what extent do business leaders at the forefront of sustainability maturity apply the principles of complex systems in decision making?*

Our paper first reviews the literature on sustainability maturity and complexity, then overview our methodology, presents findings, analysis and conclusions. We apply empirical, qualitative research to investigate the relationships among decision makers' commitments to

sustainability, their experience of complexity in their business environments, and their readiness to address complexity in the future. Our main data are transcribed interviews with senior managers from three multinational companies in the Finnish forestry sector, an industry that continues to be recognized for its longevity and sustainability maturity (see e.g., Mäkelä, 2017; Koskela and Vehmas, 2012).

The results reveal that these managers strongly identify with sustainability as a driver for long-term business performance, but predominantly from the posture that outcomes of their sustainability actions are predictable. While business leaders acknowledge that they influence and are influenced by their broader complex systems, they consider this complexity as a threat to business sustainability. We conclude that the current assumption of sustainability maturity models, that committed organizations will linearly progress be adept at managing complexity, does not hold. Hence, we propose that sustainability be framed as two independent dimensions: *sustainability identity* and *sustainability outlook*. Sustainability identity refers to the application of sustainability principles within a firm's operations, while sustainability outlook brings explicit strategic focus to external complexity. This novel framing has practical implications, particularly as businesses seek to adapt to increasingly complex and unpredictable challenges such as climate change.

## **2. Literature review**

Two aspects of the business sustainability literature are important for positioning this research. Firstly we position our research within the scholarship that conceptualizes sustainability maturity. Next, we examine the scholarship on the interface between sustainability and complexity.

### **2.1 Sustainability maturity**

Sustainability is a difficult concept, in part because of the tensions inherent in its aspiration to integrate often competing social, environmental and economic outcomes for businesses (Hahn et al 2014; Tura et al., 2019). Such tensions result in sustainability being applied distinctively in different organizations and across organizations. Resolving these tensions is a discursive process “through which individuals try to make sense of different aspects of organizational performance” (Busco et al 2018, p. 2219). Because these tensions have not been resolved theoretically, discourses will form within organizations to bring idiosyncratic meaning to sustainability.

Recent literature conceptualizes these inherent tensions as the “paradox perspective on corporate sustainability” (Hahn et al 2018, p. 244). The term encompasses a range of research that explores the tensions between, for example, short-and-long-term decision-making (Sharma and Jaiswal, 2018), how sustainability is understood at different organizational levels (Hahn et al 2014) and how the concept is differentially applied across organizational contexts such as for formal reporting or within less formal discourse.

Scholars advocating for sustainability have synthesized the concept into frameworks to assist businesses to navigate the tensions and paradoxes. Sustainability has been conceptualized as a process of long-term change for businesses in culture, practices and engagement with the external environment (Benn et al., 2014). Wilson (1975) defined a model through which a sustainable business develops its orientation to external change through reaction, defense, accommodation and proactive action. McAdams (1973) defined a continuum for the posture of the sustainable firm, from fighting, to leading change. Progressively, advocates for these concepts argue that this orientation to external change becomes progressively part of a business’s identity. For example, Benn et al. (2014, p. 26) posit that the ultimate aim of the

sustainable business is to be an ‘integral, self- renewing element of the whole society in its ecological context’.

Other frameworks build on this general concept of maturity with subtle differences in the phasing. Dyllick and Muff (2016) express the change-journey as being from triple bottom line to a ‘Truly Sustainable Business’ that creates common good by focusing on society and the sustainability challenges it faces. Baumgartner and Ebner (2010) position the most sustainable firms as applying visionary, holistic strategies that engage with their broader society and environment.

The common thread through the literature on sustainability maturity is that businesses progress through a defined continuum of increasingly demanding attributes. ‘Mature’ (Benn et al., 2014) or ‘true’ (Dyllick and Muff, 2016) sustainability increasingly positions a sustainable business as a leader in driving positive change within a complex external environment. Hence, sustainably-mature firms take a broad views of the external environment, engage widely in interpreting social and environmental change and innovate to improve these systems (Adams et al., 2016). The journey from resource exploitation to resource sustainability occurs as businesses change their processes, culture and strategic decision-making from routine, to creativity – from control to adaptation.

In support of these models of sustainability maturity, a number of agencies have develop frameworks of performance indicators to assist organizations to monitor progress and enable inter-organizational benchmarking. The indicators used in these theories seek to quantify the ‘maturity’ of an organization based on measures of environmental, social and economic compliance and performance. These data provide few insights into how organizations actually resolve the tensions and paradoxes of sustainability. Hence, there is little data to test the assumed correlation between commitment to sustainability and an organization’s ability



overcome paradoxes to engage with adaptively with complex external environments (Dekker et al., 2013; Voss et al., 2005). This is a critical gap in the research.

## **2.2 Engagement with complex systems**

Complex systems, such as society and our physical environment, display behavior characterized through concepts such as emergence and self-organization (Pina e Cunha and Vieira da Cunha, 2006; Burnes, 2005; Kurtz and Snowden, 2003). Knowledge of complex systems is never complete, and surprises and unintended effects are inevitable (Orlikowski, 2002). There is always a level of unknowability of complex systems. Recognizing the complexity requires accepting residual unpredictability and the inevitability of unforeseen outcomes of actions (Snowden and Boone, 2007). The implication is that business leaders must be humble in acknowledging limits to predicting how complex systems will behave (Ehrenfeld, 2008; Snowden and Boone, 2007) and to building capabilities to manage unintended consequences (Mortimer, 2016).

Hence, business leaders who embrace the concept of complex systems shift from a conservative, managerial approach to an approach that welcomes the unpredictability of rapidly changing environments and responds through experimentation (Iñigo and Albareda, 2016). Such organizations will develop adaptive capabilities through continuous adaptive learning, change, improvement and development (Teece et al., 1997; Hart and Dowell, 2012; Wu et al., 2012). These capabilities are being theorized as adaptive capacity (Dangelico et al., 2016; Chang, 2016; Chen and Chang, 2013; Primc and Cater, 2016); ambidexterity (Hahn et al., 2016); and embedding listening and learning capabilities (e.g., Argyris, 2002; Senge, 2006; Easterby-Smith et al., 2008).

A challenge for scholars is how to measure these capabilities to assess where firms are placed in their ability to address complex systems. We draw on recent research and conceptual

analyses to propose that an effective proxy for complex systems is the concept of unintended consequences, defined as the unexpected outcomes of effectively-planned activities (Mortimer, 2016). Whereas complexity is an ephemeral concept, unintended consequences are tangible byproducts of an organization's experience with complex systems, hence, provides important insights into how an organizations engages with complex systems.

### **3. Research Method**

We apply an inductive multi-case study (Yin, 2014) to research three large, multinational firms from the Finnish forest industry. A multi-case study was chosen because it is an appropriate way to understand new phenomenon in a real-life setting (Corbin and Strauss, 2015) when limited theory exists (Eisenhardt and Graebner, 2007; Yin, 2014). We apply discourse analysis (for interview data) and content analysis (for documentary data) as have proven to be valuable and widely-used methods in previous research on the Finnish forest industry (see e.g., Mäkelä, 2017; Koskela, 2011; Koskela and Vehmas, 2012).

As argued by Coupland (2007) and Rego et al. (2017), views and actions are only rendered partially visible through an interview. Expecting to uncover the true views or actions of business leaders through interviews would disregard the inherent 'inaccessibility' of these concepts (Sveningsson and Alvesson, 2003). Acknowledging this limitation is particularly relevant to a study that asks business leaders to reflect on unpredictability. In such a context, Hahn and Aragon-Correa (2015) found that business leaders avoided giving examples of projects where financial and environmental or social objectives did not align, but later in private conversations were willing to admit to numerous examples. Our analysis navigates this dilemma by comparing the formal, corporate expression of sustainability included in the the Global Reporting Index (GRI) report with the relatively informal, personal expression in interviews. However, a limitation of our research is that we were not able to further

triangulate our findings by, for example, observing decision-making processes in executive meetings and boardrooms. We undertook the multi-case study in three stages (Figure 1).

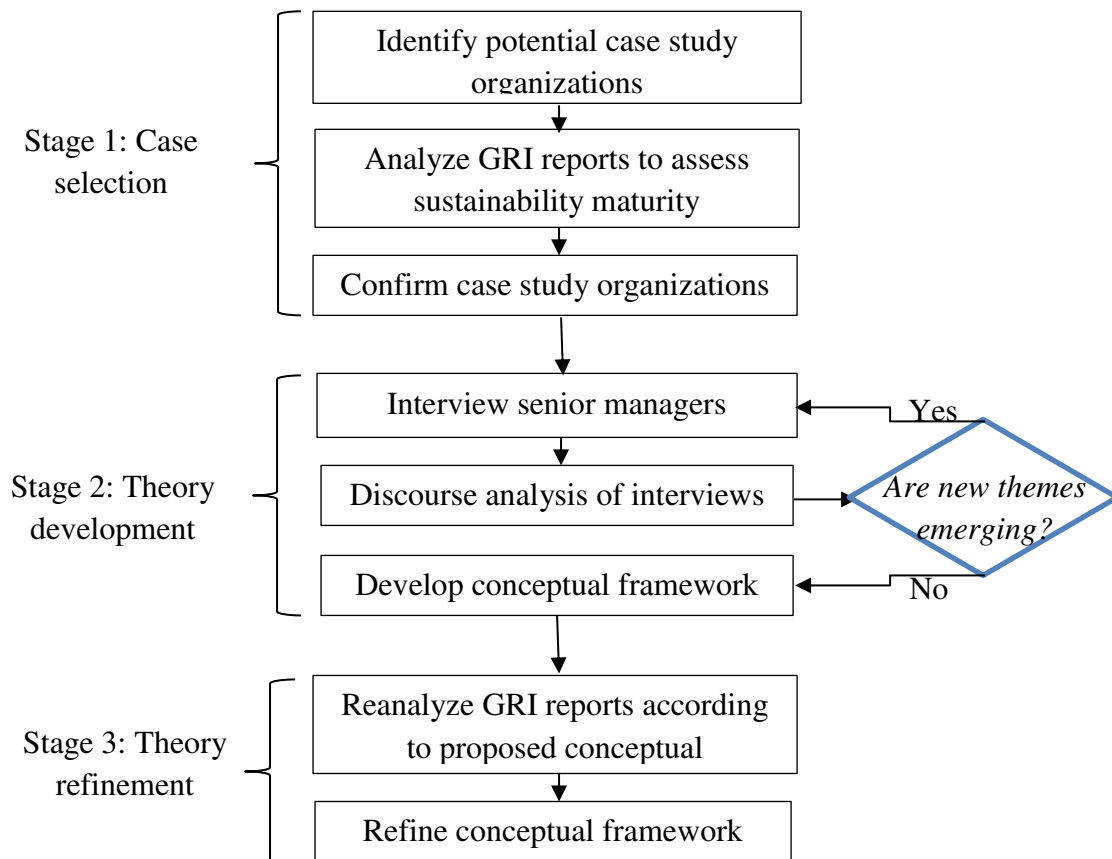


Figure 1. Methodology overview

### 3.1 Phase 1: Case selection

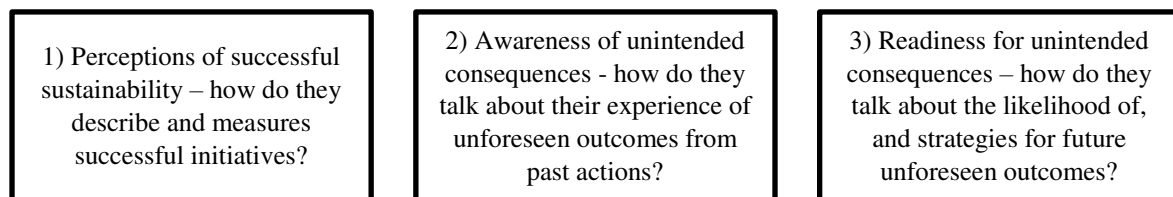
We investigate the Finnish forestry industry because of its clear links to complex natural systems given that their primary resource is forest timber. In Finland tree rotation periods of up to 100 years from planting to harvest require firms to take a long-term perspective to sustain their resources. Forestry in Finland has demonstrated longevity in that all the major companies have pulp mills that have been in operation for more than a century (Forest Industry Federation, 2016). In as much as longevity is an indicator of sustainability, firms within this industry can be considered to be at a high-level of sustainability maturity.

Our sample and interview approach enabled us to gather responses from different levels and operations within each firm (Eisenhardt and Gabner, 2007). As a precursor to undertaking the interviews, we analyzed each firm's most recent GRI reports (the annual reports from 2016) to ensure each firm matched our requirement of being considered as being at an advanced stage of sustainability maturity. We analyzed how they define sustainability and acknowledge complexity in their external environment and their commitment to sustainable innovation. Although there were differences among the three firms' approaches to sustainability (for example, their levels of commitment to rolling out new biofuel technology), we concluded that the level of commitment to sustainability of each of these firms met our threshold criteria of being at an advanced stage of sustainability maturity.

### **3.2 Assumptions and procedure**

Our research methodology derives from the premise that unintended consequences are inevitable when organizations innovate within a complex system. The research design makes two important assumptions. Firstly, we assume that in seeking to operate sustainably, managers will encounter the attributes of complex systems (Pina e Cunha and Vieira da Cunha, 2006; Snowden and Boon, 2007). Secondly, we assume that unintended consequences are a proxy for complexity such that business leaders' expressed attitude to unintended consequences corresponds with their approach to complex systems. Our interviews were framed to reveal how business leaders identified and responded to past unintended consequences, and planned for future unintended consequences (we also referred to "unforeseen outcomes"). We further explored how interviewees perceived the relationship between unintended consequences and innovation in the form of future sustainability initiatives.

We structured the interviews into three sections. The first explored how business leaders defined successful sustainability initiatives and how they measured success. The second asked managers to describe unforeseen outcomes they experienced from sustainability initiatives. In the third part of each interview we asked business leaders to reflect on their long-term strategies for dealing with unforeseen outcomes (see Figure 2). The first theme encouraged participants to discuss sustainability in their own terms. The second and third themes explored the extent to which interviewees interpreted changes in the external world and responded to unintended consequences.



**Figure 2.** Overarching framework for the semi-structured interviews

### 3.3 Data collection

Our data consist of transcripts of thirteen in-depth, semi-structured interviews with sustainability business leaders from three firms (see Table 1 for detailed information). The interviews were mostly conducted face-to-face at each participant’s office in Finland, both in Helsinki and at pulp mill site offices, with the exception of three interviews that could not be conducted face-to-face and so occurred via telephone. The interview data were collected in two rounds by two researchers. The core data collection used the semi-structured interview discussed above in eight interviews conducted in late 2015 and early 2016. Interviews were undertaken progressively until analysis of the coded responses revealed a consistent pattern of discourses, supplemented with interviews completed in 2014-15 with different managers from the same firms in 2014–2015. We then added richness and validity to our findings by reviewing the latest (2016) GRI reports for the three companies.

Table 1: Interview data information

Company	Interviewee expertise area	Time	Duration
Company A	Environmental Manager, Pulp Facility	Spring 2016	47 min
	Vice President, Pulp Production		83 min
	Vice President, Environment and Responsibility <i>(Telephone interview)</i>	Autumn 2015	54 min
	Director, Environment and Responsibility <i>(Telephone interview)</i>		57 min
Director, Stakeholder Relations	Spring 2014	72 min	
Company B	Head of Forests, Plantations and Land Use	Spring 2016	53 min
	Vice president, Sustainability Consumer Board		59 min
	Senior Manager, Sustainability		54 min
	Factory Manager	Spring 2015	35 min
Environmental Manager	35 min		
Communications Manager	35 min		
Company C	Research Manager	Spring 2016	64 min
	Environmental Manager <i>(Telephone interview)</i>	Spring 2014	94 min

### 3.4 Data analysis and coding

The data analysis was undertaken in three stages. First, we transcribing each interview and wrote memos reflecting on the terms and forms of expression used by interviewees to propose a preliminary framework of discourses and themes. In the second stage, we used this framework to code the transcriptions (Hsieh and Shannon, 2004), continually refining our preliminary discourse framework and adding new codes. The software program MaxQDA

was used undertake matrix analysis of the discourse attributes and explore the shared perceptions among the authors. The result was a proposed conceptual framework for how managers understood the relationship between sustainability and complexity (refer to the Discussion section). In the final stage we re-examined the content of the firms' GRI reports to validate our proposed framework. We iteratively re-examined the reports and interviews to progressively refine and build greater confidence in our conceptual framework.

#### **4. Findings**

Table 2 summarizes the attributes of the sustainability and complexity discourses that emerged consistently from analysis of statements from managers across all organizations. The Table also presents analysis of statements in which the discourses of sustainability and complexity concur to understand how managers conceptualized the cause-and-effect between these two concepts.

Table 2: Characteristics of sustainability and complexity discourses with exemplar quotes

<b>Discourse characteristic</b>	<b>Exemplar quotes</b>
<b>Sustainability discourse</b>	
Accountability	<i>And this is publically known because it is regulated. So we know how well our factories perform compared with other factories available.</i>
Awareness – change-sensitivity	<i>[We have] a policy that we are not operating GMOs at the moment. Because at the end of the day, nobody knows what the exact risks are. There are plenty of different opinions, especially in Europe. But of course there are opportunities.</i>
Responsiveness (eg to risk)	<i>We need to kind of be able to show our customers that we have a comprehensive approach, not only to human rights approach, but a comprehensive approach to our value chain management in terms of sustainability.</i>
Comprehensive	<i>So they are dealing with social issues, reporting issues, stakeholder issues, investors and things like this. And then our team we have in wood production and pulp materials. I am in consumer board business dealings with consumer board customers. I think it is like the whole story of this company is we are trying to create solutions with renewable materials that can more or less save the planet from trashing too much or overusing the non-renewable resources. [part of community]</i>
Rationality	<i>Basically we prefer not to use the word waste ... almost everything could be treated as a side stream and used as a resource. Just as an example, we try to use all resources as efficiently as we can. We are trying to create a successful business and do some good. Now I'm thinking of it, it is pretty much based on control. And reporting. Internally we have reporting system, we have environmental database where everyone should fill in mill specific emissions and then we calculate them together and then we have indicators and targets.</i>
Heritage – history, knowledge	<i>Only suppliers we know We have been practicing forestry for more than 150 years, so we know the game rather well. Of course, such as long history. And this why I shifted to this industry. You are using renewable resource.</i>
Modernity – technology	<i>I don't know because we have all the time in company policy that we do our best and we use modern technology available every time when we are doing any modifications.</i>
Safety, security (eg supply-chain)	<i>What we also have done is that we have developed very good health and safety practices, in our own operations especially. This is mostly building the safety culture and changing attitudes.</i>
Enduring status	<i>I would say the whole company idea is based on sustainability. It is a very strong driver. Ok, but that is too short for us. For chemical companies, they can look at a 20 year cycle, but we need to look at a 100 year cycle.</i>
Differentiation	<i>That we are providing more eco-efficient technology than our competitors. And there is something we can differentiate ourselves a little bit. There is now a pull from the business to say give us more argument why are we sustainability and how can we differentiate in the paper industry. It really part of business and part of the product quality.</i>



<b>Discourse characteristic</b>	<b>Exemplar quotes</b>
<b>Complexity discourse</b>	
Threat	<i>We today don't have any cleaning system. But they are afraid to take that kind of risk that some kind of noise will come from the other side of the river.</i>
'The other' (culture, practices, regulations, 'foreignness', difference) "them" – the unknown	<i>But I do know that we look at certain countries and we say, look we don't want to go there ourselves, we have agents to handle the potential sales case there. So that comes, that is a result of risk analysis of a country's political situation, corruption level, business ethics, operations as such. We made the pulp mill nobody ... knew that the political environment that existed there is different. And the decision-making is different. You need to be very careful when going to emerging markets because it is totally different.</i>
Irrational, 'political'	<i>So you really need to try and influence and communicate to the writing of the law, that this is not sensible. It's not necessarily market driven. It's sometimes politically driven, and when it is policy driven then it results in unhealthy economics. But that is life. It happens.</i>
Breach (of trust or 'luck')	<i>What I would find interesting in how much really was unintended and were they aware of the risks of this new technology? When we, for example, developed paper based CD case, but then people were moving to listen to music on their mobile phones. So then this paper based CD was not needed any more. So the market changed, and the consumption habit changed. So how can you forecast the future? We had our best brains, then the university had their best brains, then we tested, is this a good concept? Will it fly? Then we noticed, yes, so we guessed that it would fly. Then it was so expensive so, cuck ['chop' hand signal].</i>
<b>Sustainability and complexity</b>	
Scrutinizing from the perspective of suspicion	<i>So it's complex, but I would say the main strategy is being out there, being part of different networks and that we have certain ears and eyes in our company. They are always thinking well before hand ... and that kind of erases or eliminated the possibility for unexpected, but at the same time, you never know what is going to happen.</i>
Neutralizing, protective	<i>[In response to a question about why sustainability was highlighted in reports about the complexity of overseas expansion] They [the company Board] just like to have a comfortable life. And we know that we should have as short a supply chain as possible and only with reliable contractors who we know. We have found that they are less risk, or risk free we can say.</i>
Avoiding	<i>Then we learnt from that and then we try to avoid that happening in Europe. Now all our suppliers sign a code of conduct. They try to make a settlement even when they know we are really right and there is no question about that. Same thing with our environmental managers in the company. They try to avoid conflicts, and I think they should recognize also win some conflict, not avoid. But then again our approach is to have this risk register and have this listed there and really avoid anything unintended happening because that is, well, it isn't pleasant when you're caught by surprise. But really I'm having a hard time finding an example. Yeh, but it is how well you have done your homework so that you have included all the possible aspects, show stoppers.</i>

Discourse characteristic	Exemplar quotes
Correcting	<p><i>But perhaps in the future we are following it even more closely because somehow we were not able to catch this thing. I think the kind of preparation works needs to be done very comprehensively, so that we some – and of course something unexpected can happen – but how big a thing it will be, it is quite much of the company’s ability to respond very quickly and systematically to that and that is not possible unless you have the ground work done well.</i></p> <p><i>But of course, what we see in the audits are, is that sometimes we come across things that are unexpected in the supplier side as well. Then we are making corrective action to make those right.</i></p>
Caring	<p><i>Because then all these cost cutting programs all these companies have gone through. It is really the case that we need to be careful with money. Sixteen years ago we had a lot of money and we had a lot of profit. But now to make profit you need to be very careful. The economic situation has changed.</i></p>

## 4.1 Sustainability discourse

Sustainability has two broad dimensions within the discourse of managers – an alignment with the internal operation and an influence in the external presentation of the organization.

We summarize these attributes in Table 3.

Table 3: Sustainability discourse synthesis

<b>Locus</b>	<b>Attributes</b>	<b>Explanation</b>	<b>Synthesis</b>
Internal	Comprehensive, responsiveness, rational, safe	Sustainability integrates knowledge, experience, heightened awareness and ethical behavior into all aspects of the organization.	Rational virtue
External	Accountable, long heritage, enduring status, modernity, differentiation	Sustainability differentiates the business competitively and historically. Sustainability is the bridge between a successful past and long-term prosperity.	Enduring status

Internally sustainability is considered to imbue rational virtue on the business. Managers discursively framed sustainability as being at the heart of behavior across the company, imbedded into practices such as safety and supply chain management e.g. *“The whole business integrates sustainability. It’s not a separate aspect”*. Within the organization, sustainability integrates superior rationality (awareness, use of information, knowledge and experience) with strong ethical principles. The sustainable business is perceived to go beyond mainstream requirements to achieve comprehensive standards imbued through the organization.

Complexity shifts the discourse from the first person (us) of sustainability, to the third-person (them). By nature, complexity is the antithesis of sustainability. Where sustainability is perceived as a rational virtue, complexity is irrational and corrupting (certainly political).

Externally, sustainability attaches to the organization an enduring status that provides a bridge between the organization and its external environment. This bridge is temporal (past and future), competitive (market differentiation) and political (superior positioning in the public mind). In associating these meanings, sustainability is used by these organizations as a comprehensive integrating discourse – past and future; strategic and operational; rational and ethical; personal and political.

#### **4.2 Complexity discourse**

Managers characterized complexity in terms of both its nature and how it is experienced. The nature of complexity is “otherness” or foreignness – other cultures, other regulations, other, less worthy aspirations. Business encounter complexity when they venture into new countries or deal with centralized agencies perceived to be out-of-touch.

When business leaders were prompted to describe their past experience with unintended consequences, their initial response was either to reject the notion (they found it difficult to think of anything), or to attribute the experience to perceived weaknesses internal to their organization. Statements such as *“I didn’t expect it would be so difficult to get colleagues to take our sustainability initiatives seriously”* or *‘we have developed marvelous products but they didn’t sell’* show that managers found it easier to discuss unintended consequences within the internal business environment. By this we mean that respondents described unforeseen outcomes as the result of problems within their firms, not as the consequence of complexity of the external environment.

Managers experienced complexity as threatening and as a breach. This breach is experienced as poor decision-making (“*were they aware of the risks?*”) or bad luck (“*we had our best brains ... then it was so expensive*”). Hence, complexity is positioned as the antithesis of sustainability. Where sustainability is a rational virtue, complexity is irrational and political. Where sustainability offer enduring status, complexity needs to be avoided and corrected.

### **4.3 Sustainability and complexity discourse**

The discourse does not allow for complexity to be an inherent behavioral quality of the systems in which the sustainable businesses operates. The juxtaposition of complexity and sustainability in the managers’ discourse is that of threat and virtue – malady and treatment. Where complexity is an irrational, external threat, sustainability provides scrutiny (“*ears and eyes*”) required to avoid, correct and neutralize unintended consequences. Sustainability enables the business to take care of itself in the face of unpredictable change.

The discourse on the interface reveals that sustainability provides a process approach to address complexity. Firstly, the sustainable business is able to scrutinize and shed virtuous light on suspicious contexts. Secondly, sustainability enables the rational analysis and planning required to avoid and neutralize the risk of complexity. Thirdly, sustainability provides the management tools to subjugate and correct the threat of complexity.

### **4.4 Identity and outlook in sustainability reporting**

We refined our findings by investigating how the GRI reports for the case-study organizations positioned sustainability and complexity. We found two dominant perspectives when firms described how they addressed complex issues such as human rights – compliance and engagement.

The compliance approach was the most dominant in formal reporting. For example: “*our company respects international human rights agreements and agreements concerning labor rights, including the UN Declaration of Human Rights, the ILO Declaration of fundamental Principles and rights at work, and the OECD guidelines for multinational enterprises*”. The sub-dominant approach of engagement invariably was used to reinforce our finding that sustainability and complexity are viewed by firms as antithetical. “*We continuously work with its diverse range of stakeholders to understand their specific expectations. Well-functioning stakeholder engagement is bringing stability, predictability and competitive advantage to the company.*”

The content analysis of this formal communication confirms our finding from the discourse analysis that sustainability offers a comprehensive process counterpoint to complexity. Sustainability offers insight, (“... *to understand their specific expectations*’), rational analysis ‘*carefully planned people management, starting with responsible leadership, is important wherever we operate*” to enable greater control (“... *predictability*”) over the external environment. The theme of control is imbedded in the sustainability as communicated in these reports.

## **5. Discussion**

We set out to identify the extent to which managers in organizations recognized as being at the forefront of corporate sustainability apply the principles of complexity in their decision-making, to explore the tacit assumption within current sustainability theory frameworks that a commitment to business sustainability *ipso facto* achieves adeptness in innovating within complex business environments. Using the concept of unintended consequences as a proxy for complexity, we did not identify a relationship between a demonstrated commitment to sustainability and the orientation required to succeed in complex environments. Hence, we

conclude that the assumed interdependence between business sustainability maturity and the capacity to apply the principles of complexity is an inadequate conceptualization of sustainability (see also Hedilin, 2019).

We conclude that there are independent concepts that need to be demarcated within sustainability theory to enable organizations to reach high levels of maturity. We draw from our research and the literature on complexity to propose that sustainability maturity be conceptualized as the interaction between two independent concepts: sustainability identity and sustainability outlook.

### 5.1 Defining sustainability identity and sustainability outlook

*Sustainability identity* is a concept we use to describe the extent to which business leaders conceive sustainability as being central to the way the firm positioned itself in the marketplace and the wider community. Our data reveal that managers within recognized mature organizations believed that sustainability was central to ‘who we are?’ Our adoption of the term sustainability identity is consistent with the definition of organizational identity used by Wickert et al. (2017), who conceived identity as a concept that perceived ‘bridge’ connecting the firm with society (Allen et al., 2015).

We propose that sustainability identity be represented in a continuum from *marginal* to *integrated*. Most of the business leaders we interviewed demonstrated an integrated, describing their firms as being embedded in society and the environment. This identity extended to a conviction that their operations contributing to a better society. On the other hand, some interviewees expressed characteristics of a marginal view, emphasising adherence to external regulations or standards as their core responsibility. This marginal view of sustainability identity considers sustainability obligations as compliance and even a cost or burden to business.

We found the integrated view of sustainability identity to be dominant among our interviewees, who emphasized how their firms influence and are influenced by the broader ecological and social systems. These managers saw themselves as embedded in or integrated within in these systems. However, across all three firms, the marginal view of sustainability identity was also evident, with some business leaders equated sustainability success with meeting criteria set by an external standard or regulation. As business leaders discussed different ways of defining success and what drives sustainability initiatives, they would often shift between the marginal and integrated positions.

We use the concept *sustainability outlook* to describe a firm's orientation to the dynamics of their external environment, i.e., how they deal with complex systems. Specifically, sustainability outlook considers business leaders' perspectives on the question 'How do we contemplate future changes in our external environment?' The concept brings focus to the business leaders' beliefs about the relationship between dynamics the external environment and innovation. We propose that these perceptions fall along a continuum from 'controllable' to 'co-created'. At the one extreme, innovation is perceived as a business's ability to bring order and control to complex systems. At the other, co-created extreme, businesses embrace innovation that emerges from the complexity.

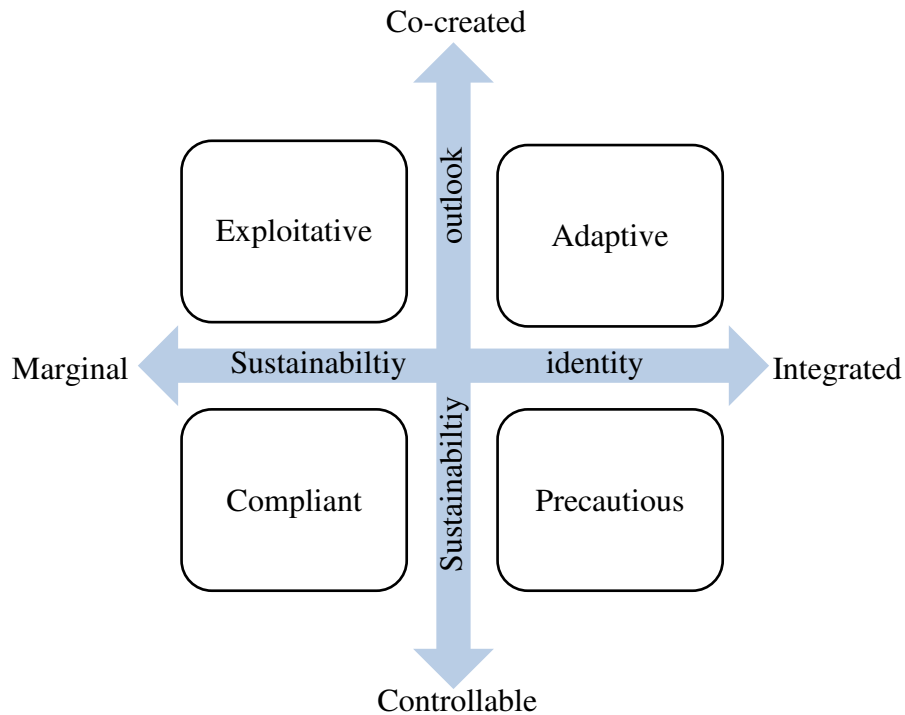
Our findings revealed that, when confronted with unintended consequences caused by environmental complexity, business leaders outlook was dominated by the virtue of their sustainability identity and its capacity to control the external environment. In the face of environmental complexity, sustainability leaders revealed a bias to protect their firm's sustainability identity, perceiving that this was at threat from unintended consequences. In complex environments, there is the risk that business leaders enact more symbolic strategy and seek to manage impressions (Talbot and Boiral, 2015; Testa et al., 2018).



Our findings associate the control approach with managers' attributing to sustainability i.e. the belief that, with good planning, impacts can be predicted and unintended consequences avoided. Such a view led to a conservative approach to outlook innovation. Where the complex environment heightened uncertainty, decision-making favor halting sustainability projects. Hence, the complexity of the external environment was perceived as a constraint on sustainable innovation. Hence we demonstrate that sustainability maturity, as currently defined, does not orient organizations towards co-created innovation that can most effectively address the complex challenges of society. Hence, we propose a new framework for sustainability maturity that explicitly integrates the concepts of sustainability identity and sustainability outlook.

## 5.2 Framing sustainability identity and sustainability outlook

Our proposed framework applies and, importantly, extends on concepts of sustainability 'maturity' from Benn et al. (2014), while bringing a new perspective to existing theories measuring sustainability to make approaches for dealing with complex systems more explicit (Figure 3).



**Figure 3** A two dimensional models of business sustainability posture

Hence, a *compliant* approach represents an early stage of maturity in which sustainability is positioned as compliance with external regulations and standards. This level of maturity correlates with what Benn et al. (2014) describe as compliance. At their most mature, businesses would display what we refer to as *adaptive* sustainability in which they reveal high levels of both identity and outlook. We take our lead from Zollo et al. (2013) by suggesting a central strategy for how business leaders engage with sustainability through building adaptive capacity. The sustainability attributes we propose for this quadrant show strong parallels with Whiteman and Cooper (2000) in taking an ecologically embedded view of sustainability, where firms are physically embedded within the system, respect their environment and are driven by a caretaker role.

In contrast to the adaptive approach, an *exploitative* approach is where business leaders understand complex systems and seek to build dynamic capabilities, albeit from with

marginal consideration of the principles of business sustainability. The risk with such an approach is that innovation is likely to have a short-term perspective as often observed in start-ups. We recognized this exploitative approach when interviewees discussed building innovative capacities with financial gain as the central driver for investment.

A *precautious* approach means business leaders fully appreciate their commitments to maintain, and even transform, the environment and society for the better. However, they do so on the basis that they can predict and control the impacts of their operations and innovation. It is an approach that places emphasis on control and stability as a firm navigates its sustainability agenda. Hence this quadrant has strong parallels with the precautionary principle, which places the burden of proof that no environmental harm will be caused on those taking action.

While we found evidence of all four of these approaches, the dominant quadrant to emerge from our interviews was the precautionous quadrant. Business leaders often promoted a mature sustainability identity that assumed a predictable external environment. Our findings support the models for sustainability decision making developed by Hahn et al. (2014) who concluded that decision makers who are aware of complexity will more likely adopt a prudent approach to sustainability issues. They find that high awareness of embeddedness goes hand in hand with a prudent approach to sustainability because decision makers want to avoid known unintended consequences.

The challenges in the precautionous approach include overconfidence in a business leader's ability to predict and neutralize surprise because this can mean that an organization is slower and less likely to intercept unintended surprises when they arise (MacKay and Chia, 2013; Ansoff, 1975; Courtney et al., 1997; Stirling, 2010). Attempting to control outcomes of sustainability strategy can lead to incremental, conflict free solutions to sustainability

challenges that do not deliver the intended change (Hahn et al., 2010; Slawinski et al., 2017). This natural tendency to be cautious in complex environments has been shown to limit innovation and learning (i.e., Hahn et al., 2010, Stirling, 2010). We found this phenomenon occurring as the business leaders we interviewed acknowledged that their approaches steered them away from areas of being exposed to unpredictability and thus limited their strategic options.

However, there is evidence that a precautionary approach to sustainability is necessary in some circumstances. Should a decision maker believe that their actions are undertaken within a predictable future, then it is appropriate to invest in tools to control outcomes through prediction and planning (Sarasvathy, 2001) as not all sustainability decisions will be subject to the same levels of complexity (Courtney et al., 1997; Kurtz and Snowden, 2003). There is also some evidence that very large firms have (at least to some extent) the ability to take political action to shape their external environment in a way that makes it more predictable (Child and Rodrigues, 2011).

Alternatively, we found deferring action on complex initiatives is positioned as the responsible approach, with managers expressing that awareness of changes in their external environment, even those that generated opportunities, was a source of caution. For example, despite the opportunities to improve carbon sequestration and improve yield this technology is not used by the firms because the uncertainty around impacts is too high. This position could be considered a benefit of the precautionary approach.

Still, due to the risk inherent in applying a precautionary approach, business leaders should consider the opportunities to be found in the adaptive quadrant when developing their sustainability strategy. Here, business leaders consider the extent to which a shift away from a prediction-based approach to view unpredictability as not just threats but also opportunities

(Cunha et al., 2006). This approach is supported by evidence that competitive advantage can be gained through experimentation in dynamic, complex business environments. For example, in a longitudinal case study of two railroad companies, Barr et al. (1992) demonstrated that the railroad company that survived applied a process of continuous experimentation, change and learning in the way it approached its corporate strategy and action. Conversely, the more rigid company was less inclined to experiment in the face of unknown outcomes and went out of business. This study is important because it finds that there is a trade-off in decision making between certainty/ control and organizational learning, (see also Hahn et al. 2014).

## **6. Conclusions and future research**

Our research reveals that business sustainability needs to be conceptualized as the combination of two independent concepts – sustainability identity and sustainability outlook. Our framework brings conceptual clarity to much of the contemporary critical analysis of sustainability including the overarching sustainability debates where sustainability in which simultaneously is understood as a framework for risk reduction (Cai et al., 2016) and as a mechanism to increasingly engage with complexity in order to innovate (Gröschl et al., 2019). Our analysis highlights a potential incompatibility of these positions.

Our framework disaggregates this tension within the sustainability debate, by making the relationship between these two aspects of sustainability more explicit. We dismiss the assumption that there is a causal link between the first (sustainability as risk reduction) and the second (sustainability as experimentation with complex systems). Our findings demonstrate that assuming this causal link leads to a confusing discourse that may limit firms' capacity to adapt to change. In practice, this means that business leaders apply

traditional planning and implementation tools and approaches that avoid the implications of the complex systems they try to influence.

Our findings also provide an explanation for the ‘disconnect’ between the commitment of a firm to sustainability and the continual degradation of the global state of the environment (Dyllick and Muff, 2016). Hahn and Aragon-Correa (2015) suggest that the disconnect between individual-level perceptions and organizational-level responses is a major reason for inaction. Our framework shows an additional explanation for this deadlock: a lack of competency to deal with the realities of complex systems. When firms limit their agenda to focusing only on sustainability identities, the risk is that they become stuck in a frustrating cycle of seeking to predict and control future outcomes in a system that is fundamentally complex.

Our alternative framework for corporate sustainability gives credence and power to sustainability-oriented dynamic capabilities, emergence and resilience (see e.g., Dangelico et al., 2016; Primc & Cater, 2016). We believe that explicitly bringing the discussion around sustainability outlook into models for sustainability posture provides an avenue for companies to better position themselves to respond to complex systems.

We believe that our framework provides a robust basis for future research, but leaves many questions unanswered. In particular, it is not clear how firms might progress through stages of maturity. There is an opportunity to advance theory-development through long-term research explores how identity and outlook interplay through time and circumstance. Indeed, there may be a number of paths, dependent on factors such as business strategy and environmental context.

There also is an opportunity to align our framework of maturity with other theoretical developments in the field of business sustainability, particularly the concept of legitimacy.

Baumann-Pauly et al. (2016) have explored how firms build legitimacy in complex environments. How this concept of legitimacy aligns with both identity and outlook would add significant theoretical clarity to these concepts.

At the level practice, we propose further research through which agencies considered at the forefront of sustainability respond to the concepts of identity and outlook. Such research would lead to both more useful definitions as well as practical case-studies in how for these sustainability concepts are implemented. Indeed, we find that, as currently interpreted, sustainability may well be an impediment to managers and organizations innovating for long-term solutions to complex problems [ref]. Therefore, an important question for further research is whether this shift towards more adaptive approaches to the way organizations interrelate with their environments can be integrated practically within the frame of corporate sustainability, or whether a new language and business paradigm is required. Sustainability scholarship and practice must confront a tricky paradox: when to pursue sustainability and when to sustain stability? Can we really do both?

### **Compliance with ethical standards**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

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