ELEMENTA
Science of the Anthropocene

Searcy, C 2017 Multi-stakeholder initiatives in sustainable supply chains: Putting sustainability performance in context. *Elem Sci Anth*, 5: 73. DOI: https://doi.org/10.1525/elementa.262

PRACTICE BRIDGE

Multi-stakeholder initiatives in sustainable supply chains: Putting sustainability performance in context

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The purpose of this article is to explore the role of multi-stakeholder initiatives (MSIs) in sustainable supply chains. I argue that MSIs are needed to help establish and institutionalize the natural and social thresholds in which a sustainable supply chain must operate. While a multitude of MSIs relevant to supply chains already exist, they do not yet adequately address sustainability thresholds. Building on theory and literature, I elaborate on four interrelated roles for MSIs in this area: (1) providing learning platforms, (2) developing standards, (3) developing enforcement mechanisms, and (4) issuing labels and certifications. All four roles emphasize the need for supply chains to operate within the thresholds set by nature and society. Staying within thresholds is what distinguishes between sustainable and unsustainable supply chains. The four roles form part of a broader conceptual framework outlining a way forward for MSIs in sustainable supply chains. Different MSIs could address one or more of these roles. I argue that all MSIs must be developed with special attention to their input and output legitimacy. Stakeholders from both within and beyond the supply chain must be involved in developing and implementing a MSI for it to be viewed as legitimate. I note that the conceptual framework presented here is a starting point. It would benefit from further testing and refinement. For example, future work could add further specificity to the four roles I discuss. Future research could also focus on integrating economic thresholds for sustainable supply chains into the framework.

Keywords: sustainable supply chains; multi-stakeholder initiatives; sustainability performance; sustainability context; thresholds

1. Introduction

An ever-increasing number of companies have made commitments to apply the principles of sustainability to their operations. The motivations for business sustainability initiatives vary, but are often framed in terms of competitiveness, legitimation, and ecological responsibility (Bansal and Roth, 2000). Whatever their reasons, companies in virtually every industry all over the world have developed sustainability policies, plans, programs, and projects. Public disclosures of the outcomes of these initiatives are now widespread through stand-alone, integrated, and web-based sustainability reporting.

Sustainability initiatives have grown to become institutionalized in large companies. However, it is widely recognized that the scope of sustainability is very broad and cannot be addressed by any one company acting alone. Stated another way, sustainability extends beyond the boundaries of any one firm (Seuring and Gold, 2013). In recognition of this point, companies are increasingly extending their business sustainability initiatives to supply chains. For example, Walmart, the world's largest company by revenue (Fortune, 2017), launched Project Gigaton in April 2017. The initiative aims to remove 1 gigaton of greenhouse gas (GHG) emissions from Walmart's supply chain by 2030 (Walmart, 2017). This focus makes sense since most of a company's environmental and social impacts are typically in its supply chain (The Sustainability Consortium, 2017).

Business sustainability initiatives are increasingly shifting their focus from one player in a supply chain to everything that is required to produce and deliver a product to the final customer. This shift has given rise to a rapidly growing literature on sustainable supply chains (O'Rourke, 2014). However, addressing sustainability at the supply chain level remains difficult. A fundamental challenge is in determining what sustainability means at the supply chain level and how to achieve it (Ahi and Searcy, 2015). In particular, challenges remain with respect to distinguishing between sustainable and unsustainable supply chains. There is currently no agreed-upon mechanism for determining what specific levels of performance are sustainable in a supply chain context.

Establishing sustainability performance expectations in a supply chain is particularly challenging given the potentially large number of players involved. Even basic supply chains typically include a multitude of supply,

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manufacturing, transportation, warehousing, and retailing companies. All of these companies are instrumental in establishing the sustainability performance of the supply chain. Moreover, a great range of stakeholders, including individuals, groups, and organizations, can affect or are affected by the activities of these companies (Freeman, 1984). These stakeholders also play an essential role in overall supply chain sustainability.

Stakeholders can especially exert and potentially magnify their influence through participation in multi-stakeholder initiatives (MSIs). MSIs are a part of a broader movement towards a multi-actor approach to addressing sustainability governance issues. MSIs bring together stakeholders from a range of different backgrounds to help "define, implement, and enforce rules that direct corporations' behaviour with regard to social and environmental issues" (Rasche, 2012, p. 683). This form of governance recognizes sustainability is a complex problem, and it can only be addressed through long-term, coordinated action involving actors from both the public and private sectors.

MSIs are playing an increasing role in sustainable supply chains. For example, the Better Cotton Initiative, the Fair Labour Association, and the Better Work initiative are foundations of sustainability efforts in the apparel industry. Other industry-specific and broadly-applicable MSIs abound (Mena and Palazzo, 2012). Experience has shown that MSIs can play an important role in driving positive change in supply chains. The Fair Labour Association and Better Work initiative, for example, have been instrumental in improving working conditions in the apparel supply chain. MSIs provide a way to address complex issues that businesses cannot address on their own.

The purpose of this article is to explore the role of MSIs in sustainable supply chains. I argue that some critical sustainability challenges in supply chains can only be addressed through MSIs. Specifically, I argue that MSIs can help identify shared expectations about the required level of sustainability performance in a supply chain context. MSIs can link supply chains to the broader sustainability context in which they exist. In particular, MSIs can help companies and other interested parties to identify the natural and social thresholds that form the basis for sustainability performance expectations and define whether or not a supply chain is sustainable. MSIs can also institutionalize those thresholds, particularly through establishing learning platforms, standards, enforcement mechanisms, and labels. Identifying and institutionalizing clear thresholds will provide a basis for evaluating steps towards supply chain sustainability. This is currently difficult, if not impossible.

I continue with a brief review of background information on both sustainable supply chains and MSIs. This provides a basis for developing a conceptual framework that addresses a way forward for MSIs in sustainable supply chains. I conclude with a discussion of required action going forward.

2. Sustainable supply chains

The literature contains a number of definitions of supply chains. For example, Christopher (2016, p. 13) explains that a supply chain is a "network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer." The focus on networks of organizations underlines the complexity of supply chain management, emphasizing the need to go beyond dyadic relationships (Miemczyk et al., 2012).

While it is not explicit in the definition above, supply chain management can focus on forward and reverse flows. Forward flows concern the "series of activities in the process of converting raw materials to finished goods" (Kocabasoglu et al., 2007, p. 1141), while reverse flows concern the "series of activities necessary to retrieve a product from a customer and either dispose of it or recover value" (Kocabasoglu et al., 2007, p. 1142). The many published definitions of sustainable supply chains (Ahi and Searcy, 2013) tend to build on these foundations.

2.1. Defining a sustainable supply chain

Most definitions of sustainable supply chains focus on applying the concept of the "triple bottom line" of economic, environmental, and social performance (Elkington, 1997) to supply chain management. Seuring and Muller (2008, p. 1700) provided a representative definition. As they explain, sustainable supply chain management (SSCM) encompasses "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements."

Definitions based on the triple bottom line are helpful because they emphasize the need to consider environmental and social issues, alongside traditional economic considerations, in supply chain management. However, such definitions suffer from a key weakness: they do not explicitly link to the broader *sustainability context* in which all supply chains operate. This is problematic because sustainability must be assessed within "the context of the limits and demands placed on economic, environmental or social resources, at the sectoral, local, regional, or global level" (Global Reporting Initiative, 2016). A recent report from the United Nations Environment Programme (UNEP) recommends, "All companies should apply a context-based approach to sustainability reporting" (UNEP, 2015, p. 52).

I have previously defined sustainable supply chains so that they address sustainability context; they profitably "operate within the thresholds set by nature and society" (Searcy, 2016a). McElroy (2015) defined thresholds as measures of "limits or sufficiency." They can represent upper limits, as in the case of an atmospheric GHG threshold, or lower limits, as in the case of a livable wage threshold (McElroy and van Engelen, 2012). This definition underscores that sustainability is not just about continual improvement relative to the company or supply chain itself; boundaries set by the wider world must be taken into account (Milne et al., 2006).

Thresholds are a foundation of developing performance metrics that address sustainability context. As McElroy and van Engelen (2012, p. 65) explain, context-based

metrics "express organizational performance in terms of impacts on vital capitals, relative to norms, standards or thresholds for what such impact ought to be (for specific periods of time) in order to be sustainable (e.g., total water consumed per employee per year compared with a fair or equitable allocation of available renewable supplies)." Context-based metrics can help companies, investors, the general public, and other stakeholders distinguish between sustainable and unsustainable performance in supply chains.

My definition of sustainable supply chains given above is grounded in an ecologically dominant logic (Montabon et al., 2016). Under this view, "business is seen to exist within society, and society within the broader natural environment" (Marcus et al., 2010, p. 419). This goes beyond the instrumental logic used in most research on sustainable supply chains, which focuses on how firms can benefit from considering social and environmental issues (Gao and Bansal, 2013), rather than on how they can become sustainable (Montabon et al., 2016). The key weakness in instrumental approaches is that they generally fail to "recognize the obvious (or near-obvious) fact that all human organizations are embedded within the natural environment" (Starik and Kanashiro, 2013, p. 9). Linking supply chains to their broader sustainability context will address this weakness.

The ecologically dominant logic does take into account the interconnectedness between economic, environmental, and social issues. Performance in one of these realms can clearly have implications for performance in another. For example, economic activity can yield environmental impacts, such as natural resource usage, and influence social impacts, such as working conditions. Economic, environmental, and social issues cannot be addressed without reference to their interrelationships. However, the ecologically dominant logic also establishes a clear hierarchy of issues. Under this logic, economic activity must be conducted within the boundaries set by nature and society.

My focus in this article is on environmental and social thresholds in supply chains. I do not claim that economic interests are unimportant; clearly they matter. To be sustainable, any supply chain or individual organization must be economically sustainable. As Thomas and McElroy (2016, p. 152) argue, sustainability is not "achievable without considering economic sustainability." I wholeheartedly agree and research on economic thresholds for issues such as competitive practices (Thomas and McElroy, 2016) is needed. However, my position is that before we can discuss what levels of economic performance are sustainable, we need to establish the natural and social thresholds in which any economic activity must occur. I refer those interested in a discussion of context-based economic performance to Thomas and McElroy (2016).

2.2. Linking supply chains to the broader sustainability context

The literature has long recognized the need to link business sustainability performance to the bigger picture, particularly from an environmental perspective (e.g., Starik and Rands, 1995). More recently, this recognition has extended into the literature on supply chains (e.g., Montabon et al., 2016). However, questions remain on how this can be done, particularly with identifying appropriate thresholds and translating them to the supply chain level.

The definition of sustainable supply chains requires identifying clear environmental and social thresholds. Business scholars have just begun to debate the setting of thresholds, but some reference points exist. The Planetary Boundaries concept (Rockstrom et al., 2009; Steffen et al., 2015) provides a starting point for setting environmental thresholds. The concept identifies nine key thresholds for the planet, such as for climate change, stratospheric ozone depletion, ocean acidification, and global freshwater use. Previous research has argued that the Planetary Boundaries provide environmental foundations for business sustainability (Whiteman et al., 2013).

For social thresholds, the reference points are less clear. Raworth (2012, 2017) has developed "The Doughnut," consisting of 12 social boundaries as a complement to the Planetary Boundaries. Key social boundaries include, for example, health, education, social equity, gender equity, and income and work (Raworth, 2017). The United Nations Sustainable Development Goals (SDGs) provide another potential reference point. The SDGs outline 17 environmental and social goals accompanied by 169 targets (UN, 2015). The SDGs address a number of social goals such as poverty, health and well-being, education, equality, and decent work. The 12 social boundaries in The Doughnut are closely aligned with the SDGs (Raworth, 2017, p. 39).

Based on the above, thresholds can be derived from environmental science, as in the case of the Planetary Boundaries, or from social science and ethics, as in the case of The Doughnut. In any case, they must reflect both the larger sustainability context and the unique circumstances of the supply chain. Assuming thresholds can be identified, the next key issue is in determining how to translate global (e.g., climate) and regional (e.g., water) thresholds to the business and supply chain levels. This is complicated because of different units of analysis (e.g., for the planet, a region, a company, a supply chain) (McElroy and van Engelen, 2012). One option is the creation of science- and ethics-based goals. Science-based goals are specific outcomes "grounded in scientific knowledge," while ethics-based goals are "grounded in norms of fairness, justice, integrity, and respect" (McElroy, 2015).

Environmental issues, such as GHG emissions or water use, are well-suited to the creation of science-based goals. Many social issues, on the other hand, such as equity or diversity, are better suited to the creation of ethics-based goals. Again, research in this area is in the early days, but has some starting points. Research on translating climate change thresholds is furthest along. For example, Randers (2012) showed that "GHG [greenhouse gas] emissions per unit of value added" (GEVA) at the corporate level must be cut by 5% per year between 2010–2050 in order to keep global temperature rise, relative to pre-industrial levels, to below 2°C.

Science-based goals also have some momentum in practice. For example, Walmart's Project Gigaton arose, at least in part, due to the company's commitment to

using science-based targets to guide its emissions reduction efforts. Over 300 companies around the world have committed to setting GHG targets "in line with climate science" as a part of the Science Based Targets Initiative (SBTi, 2017). The SBTi requires companies to consider their supply chain GHG emissions. Moreover, the CDP, formerly known as the Carbon Disclosure Project and a partner in the SBTi, is increasingly looking at incorporating science-based targets in its work on supply chains. These practitioner-based efforts on the use of science in environmental measurement and reporting are, in many ways, ahead of academic research.

Limited additional research exists on translating environmental and social thresholds to the business and supply chain levels. For example, in a review of 445 academic papers, Ahi and Searcy (2015) identified 2,555 metrics for SSCM. None met the definition of a context-based sustainability metric proposed by the authors. The metrics were not explicitly linked to thresholds and did not address the issue of what impacts "ought to be (for specific periods of time) in order to be sustainable" (McElroy and van Engelen, 2012, p. 65). Another study by Bjorn et al. (2016) found that only 5% of the 40,000 corporate responsibility reports they reviewed referred to ecological limits. While many studies take environmental and social issues into account in supply chain performance measurement, the reference points and associated assumptions are generally arbitrary.

One of the core challenges in identifying appropriate environmental and social thresholds, translating them to the supply chain level, and allocating responsibilities for action is the high degree of judgment involved. Supply chain sustainability cannot be measured directly; it is necessary to select proxies, such as GHG emissions, water usage, diversity, and equality. Identifying those specific proxies, however, is open to debate. Thresholds are also clearer for some issues, such as climate change, than for others, such as diversity. There is also no generally accepted way of translating identified thresholds to the supply chain level. Methods to allocate responsibilities for addressing sustainability issues inevitably involve value-laden judgements. Multi-stakeholder initiatives can play important roles in addressing these challenges.

3. Multi-stakeholder initiatives in sustainable supply chains

MSIs have their roots in the stakeholder theory of the firm (Freeman, 1984). Stakeholders are individuals, groups, and organizations that "make a difference" (Freeman, 1984, p. 46). Stakeholders have been classified in a number of ways (e.g., Clarkson, 1995; Freeman, 1984; Henriques and Sadorsky, 1999), all of which serve to highlight that a great range of parties can potentially make a difference in business and supply chain management. Stakeholder theory explicitly recognizes that different stakeholders can exert different degrees of influence at different times based on a number of factors, such as power, legitimacy, and urgency (Mitchell et al., 1997).

A supply chain can have many potential stakeholders. Stakeholders may be broadly classified into two categories: (1) stakeholders *within* the supply chain and (2) stakeholders *beyond* the supply chain (adapted from Searcy, 2016b). Each player in the supply chain will have its own internal stakeholders such as employees, unions, managers, and owners. Players may also have external stakeholders within the broader supply chain, such as their own suppliers, distributors, and consumers. Other supply chain stakeholders may include those outside of the supply chain itself, such as government, communities, and non-governmental organizations (NGOs), among others (Searcy, 2016b). As Hyatt and Johnson (2016) argue, considering stakeholders traditionally viewed as beyond the supply chain is becoming increasingly essential, in large part due to the different perspectives they offer. Stakeholders may work together to address shared interests and challenges related to supply chain sustainability through MSIs.

3.1. Defining MSIs in sustainable supply chains

As with supply chains, there are many definitions of MSIs. For example, Fransen (2012, p. 166) explains that "the term MSI describes a universe of initiatives in which the expertise, skills and finance of non-profit and for-profit organizations are pooled." MSIs may be further defined as "private governance mechanisms involving corporations, civil society organizations, and sometimes other actors, such as governments, academia or unions, to cope with social and environmental challenges across industries and on a global scale" (Mena and Pallazzo, 2012, p. 528). Moreover, researchers now widely study interactions between corporations, governments, non-governmental organizations, and other stakeholders (Kourula and Lassonen, 2010).

Some MSI definitions directly address supply chains. For example, Hyatt and Johnson (2016, p. 2) characterize multi-stakeholder supply chain initiatives as "sites of institutional and organizational change, as structural mechanisms by which varied actors from different sectors (business, civil society, and government) set about achieving shared agendas of change that have evolved beyond the traditional boundaries of the sustainability movement." All definitions of MSIs emphasize the collaborative efforts of a range of stakeholders to address shared interests and challenges.

Researchers often describe MSIs as a form of civil regulation, which are created to help address "the perceived limitations of both government regulation and corporate self-regulation" (Utting, 2002, p. 66). For example, MSIs can help "improve the quality of standard-setting, reporting, auditing, monitoring and verification procedures" (Utting, 2002, p. 82). Moreover, MSIs are useful for "issues that are too challenging and complex to tackle alone" (UN Global Compact and BSR, 2015, p. 59). This is particularly relevant for issues like supply chain sustainability, which have large numbers of stakeholders, substantial power imbalances amongst those stakeholders, and cross many regulatory jurisdictions.

Building on the strengths outlined above, researchers have classified MSIs in a number of ways. For example, Palazzo and Scherer (2010) differentiate MSIs on the basis

of an increasing level of engagement in that they may: (1) "provide learning platforms," (2) "develop behavioural standards," (3) "develop mechanisms of auditing and compliance of the rules," and (4) "issue labels and certifications" (Mena and Palazzo, 2012, p. 536). This is consistent with other classifications of MSIs offered by other authors. For example, Rasche (2012, p. 682) identifies four complementary types of MSIs, including those offering: (1) "principles of engagement" and "learning platforms," (2) "reporting frameworks," (3) "criteria for certification," and (4) "standardized management processes."

A number of authors have stressed that stakeholders must perceive MSIs to have both input and output legitimacy (e.g., Backstrand, 2006; Mena and Palazzo, 2012). Input legitimacy arises from: (1) "stakeholder inclusion,"(2) "procedural fairness of deliberations," (3) "promotion of a consensual orientation," and (4) "transparency of an MSI's structures and processes" (Mena and Palazzo, 2012, p. 536). Output legitimacy is influenced by: (1) high "coverage," (2) high "efficacy," and (3) a guarantee of "good enforcement and monitoring of their rules" (Mena and Palazzo, 2012, p. 537). Each of these criteria are defined further in Mena and Palazzo (2012, p. 537). A failure to address both input and output legitimacy could seriously undermine a MSI's effectiveness and credibility (Mena and Palazzo, 2012). Special attention should also be paid to the stability and flexibility of the MSI (Rasche, 2012).

3.2. Example MSIs in sustainable supply chains

Over the last two decades, the number of MSIs has grown rapidly. MSIs are now well established in sustainable supply chain management. A great range of issues are addressed by the existing MSIs. A number of MSIs have been developed to address issues specific to a single industry. Other MSIs are intended to apply to any industry. Many of these MSIs have been established to address issues on a global scale, while others are more concerned with regional or local issues. Moreover, a wide range of stakeholders beyond corporations have participated in developing these MSIs, including NGOs, trade unions, academics, and governments, among many others (Mena and Palazzo, 2012).

Many existing MSIs address industry-specific issues. For example, in the apparel industry several MSIs address labour conditions, including the Better Work initiative, the Fair Labour Association, and the Accord on Fire and Building Safety in Bangladesh. A range of MSIs address environmental issues in the apparel industry, such as the Better Cotton Initiative and the Partnership for Cleaner Textile (PaCT). Examples of other industry-specific MSIs abound, including for forestry (e.g., Forest Stewardship Council – FSC), fishing (Marine Stewardship Council – MSC), mining (Kimberly Process), and palm oil (Roundtable on Sustainable Palm Oil), to name but a few (Mena and Palazzo, 2012). All of these have clear relevance to supply chain sustainability.

Many existing MSIs also apply to multiple industries. For example, the International Organization for Standardization has issued a number of broadly-applicable management system standards, such as ISO 9001 for quality management and ISO 14001 for environmental management. Additional ISO standards, such as ISO 45001 for occupational health and safety, are under development. A variety of non-ISO standards are also available (Mena and Palazzo, 2012), covering issues such as accountability (AA1000), social accountability (SA8000), and sustainability reporting (Global Reporting Initiative – GRI). Many generic MSIs have industry-specific versions or supplements, such as those provided by the GRI. Again, these MSIs can clearly play a role in sustainable supply chains.

Many MSIs address different geographic scales. For example, consider the UN Global Compact (UNGC). The UNGC addresses several key issues, including human rights, labour, the environment, and anti-corruption. To approach these issues from both the global and local perspectives, the UNGC has established both global and local networks. As Rasche (2012, p. 687) explains, local networks are designed to "contextualize the rather abstract principles underlying the wider global network." In the UNGC, they serve as "hubs for local partnerships and multi-stakeholder dialogue" (Rasche, 2012, p. 686). The UNGC has an extensive program on supply chain sustainability. Other examples of multi-level MSIs include the Global Water Partnership, the Principles for Responsible Investment, and the Extractive Industries Transparency Initiative (Rasche, 2012).

Different MSIs come with a number of advantages and disadvantages. For example, key advantages of MSIs include their encouragement of stakeholder dialogue, their flexibility, their legitimacy, and their ability to serve as a watchdog (Fransen and Kolk, 2007; Rasche, 2012). However, poor stakeholder engagement can undermine these advantages. This, along with rigidity and lack of stringency, can lead to low levels of legitimacy for a MSI (Rasche, 2012). While MSIs with strong input and output legitimacy can therefore advance supply chain sustainability, those without them may do the opposite.

Existing MSIs have undoubtedly helped advance sustainability in supply chains. For example, they have helped raise awareness throughout the supply chain, improved managerial practices, enhanced product traceability, and reduced clearly unsustainable behaviours. However, they have not yet provided the clarity needed to distinguish between sustainable and unsustainable supply chains. Awareness and improvement are not the same things as sustainability. Few current MSIs explicitly address the natural and social thresholds in which the supply chain operates. This is a critical oversight because, as discussed earlier, that is what sustainability is fundamentally about. Fortunately, some existing MSIs provide encouraging starting points.

4. The future of multi-stakeholder initiatives in sustainable supply chains

Sustainability is fundamentally a context-based concept. The sustainability of a supply chain cannot be assessed based on its performance relative to itself or its peers. Improving or being better than others is not the same thing as sustainability. As made clear by the definition provided earlier, a supply chain is sustainable only if it

operates within natural and social thresholds. While commendable, improving performance on a year-over-year basis or performance relative to peers does not mean that a supply chain is sustainable. The fundamental challenge in supply chain sustainability is, therefore, setting clear natural and social thresholds and then staying within those boundaries. MSIs can establish and institutionalize these thresholds in the context of a supply chain.

Figure 1 presents a conceptual framework that illustrates a way forward for MSIs in sustainable supply chains. The framework consists of several core components, including legitimacy, stakeholders, and the types of MSIs needed. This underlines that MSIs must achieve input and output legitimacy with stakeholders, that they must engage a wide range of stakeholders both within and beyond the supply chain, and that MSIs must play many interrelated roles in advancing supply chain sustainability. Building on the literature (Palazzo and Scherer, 2010; Rasche, 2012) these roles include: (1) providing learning platforms, (2) developing standards, (3) developing enforcement mechanisms, and (4) issuing labels and certifications. Different MSIs could focus on addressing different roles. A MSI could also focus on addressing multiple, or even all four, roles. Existing MSIs might evolve to address these requirements. Alternatively, corporations, civil society organizations, and other stakeholders may design a new MSI to address these requirements.

4.1. MSIs to provide learning platforms

MSIs can provide learning platforms that focus on linking supply chains to their broader sustainability context. Many well-established MSIs focus on aspects of supply chain sustainability. Identifying key sustainability

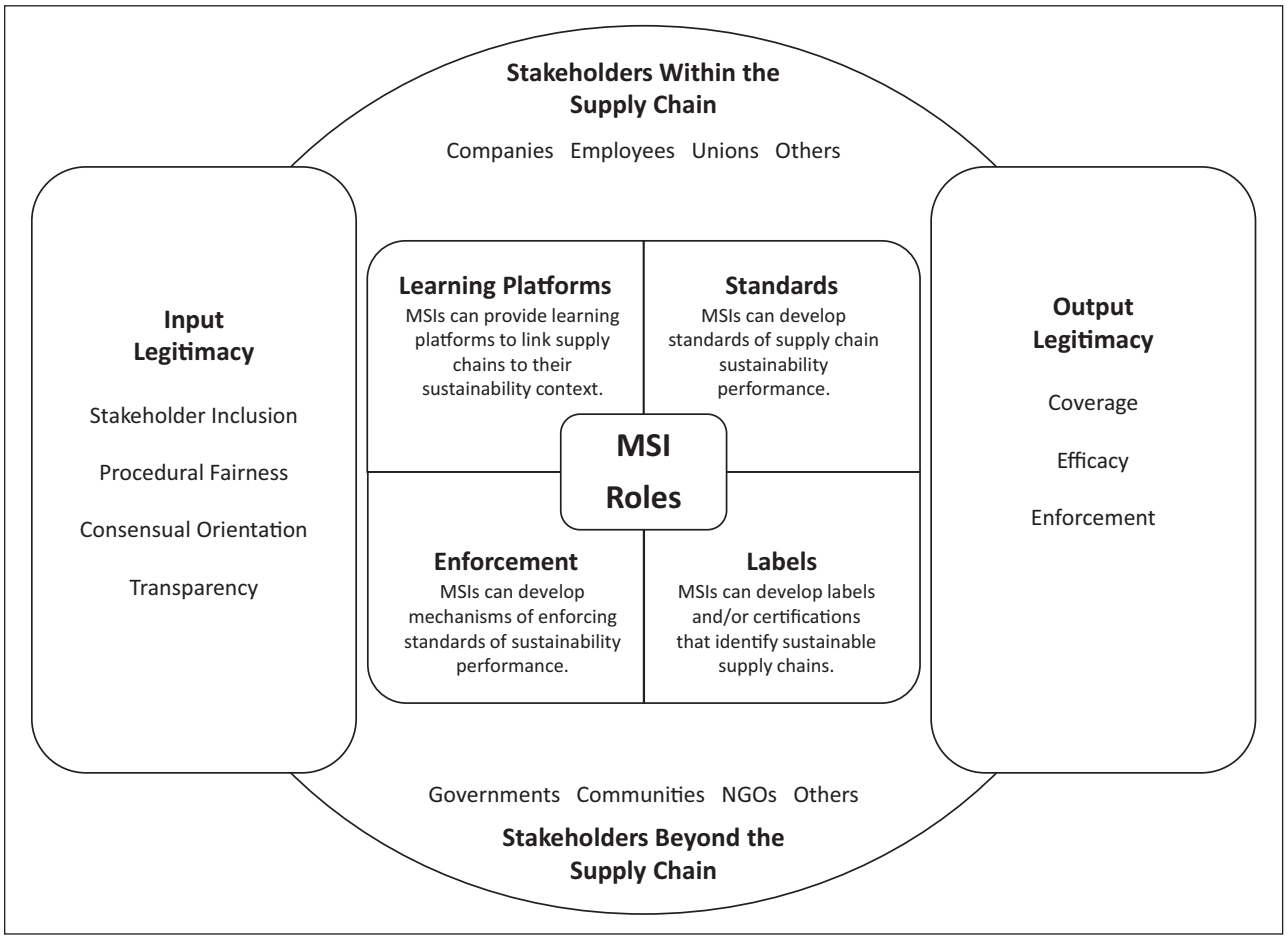

Figure 1: Conceptual framework for multi-stakeholder initiatives (MSIs) in sustainable supply chains. MSIs can play four key roles in sustainable supply chains: (1) providing learning platforms, (2) developing standards, (3) developing enforcement mechanisms, and (4) issuing labels and certifications. A single MSI can play one or more of these roles. MSIs must be developed with special attention to their input and output legitimacy. Input legitimacy is process-dependent, and focuses on stakeholder inclusion, procedural fairness, a consensus orientation, and the transparency throughout these processes. Output legitimacy is outcome-dependent, and focuses on the coverage, efficacy, and enforcement of the MSI. The nature of stakeholder involvement will have implications for the legitimacy of the MSI. Stakeholders from both within and beyond the supply chain must be engaged in developing and implementing the MSI. The conceptual framework in Figure 1 was derived based on a review of theory and literature. The MSI roles are adapted from Palazzo and Scherer (2010) and Rasche (2012). The characteristics for input and output legitimacy are drawn from Mena and Palazzo (2012). The stakeholders from within and beyond the supply chain are adapted from Searcy (2016b). DOI: https://doi.org/10.1525/elementa.262.f1

issues, promoting their importance, and building bridges between stakeholders are all ways in which MSIs already, and can continue to, promote learning (Brown and Timmer, 2006, p. 1). However, going forward, MSIs must provide educational and training opportunities about the broader environmental and social context in which supply chains operate.

MSIs can increase awareness and understanding about the existence of environmental and social thresholds and the role these play in defining supply chain sustainability. A company's efforts to consider or even improve its performance with respect to key sustainability issues, such as working conditions or GHG emissions, is commendable. However, the principle of sustainability context underlines that such efforts are not necessarily enough for companies to develop sustainable supply chains. Sustainability cannot be assessed without reference to key environmental and social thresholds. MSIs could focus on providing learning platforms on these issues, potentially through exposure to new standards and labels as discussed below. The new learning platforms must also support interaction and, ultimately, collaboration between stakeholders from both the public and private sectors. Neither can address supply chain sustainability on their own.

Many existing MSIs could help provide learning platforms explicitly focused on sustainability context. However, they must be modified towards this end. For example, consider use of the UNGC as a learning platform, an idea discussed in the literature (e.g., Palazzo and Scherer, 2010). As Mena and Palazzo (2012) explain, the UNGC involves a number of stakeholders in its governance process, including companies, governments, NGOs, and trade unions. The UNGC bills itself as the "world's largest corporate sustainability initiative" and now boasts over 12,000 signatories (UNGC, 2017). It also already provides a large number of resources and best practice examples through the UNGC sustainable supply chains website. It is thus well-positioned to serve as a learning platform in this area. However, a search of the UNGC sustainable supply chains website for the terms "sustainability context" and "thresholds" revealed zero results (address: http://supply-chain.unglobalcompact.org/site/search/, searched: March 28, 2017). Creating learning platforms specifically focused on these issues would help the UNGC raise awareness and understanding around sustainability context, which is the foundation of sustainable supply chains.

4.2. MSIs to develop standards

MSIs can develop standards that explicitly address the required levels of performance needed for sustainable supply chains. A multitude of existing standards address aspects of the economic, environmental, and social performance of supply chains. However, many of these standards are process-oriented, rather than performance-oriented. Although they often require the implementation of particular processes, they generally do not set expected levels of performance. MSIs can specifically define the upper or lower limits of performance that distinguish between sustainable and unsustainable supply chains.

MSIs can establish a limited set of standardized context-based performance metrics that are broadly applicable to all supply chains. Given the large number of potential metrics, MSIs can establish credible metrics that will provide some basis for comparability. The metrics could, for example, focus on GHG emissions, water consumption, and working conditions. Expected levels of performance for each issue could be linked to defined thresholds for each issue, which could in turn be accompanied by science- or ethics-based goals. These would provide a basis for determining a supply chain's sustainability performance, provided the analytical boundaries for these standardized metrics are clear.

Given the potentially wide range of sustainability issues any one supply chain may address, MSIs can establish processes for creating context-based metrics tailored to the unique needs of the chain. This would include guidance on identifying issues, developing science- and ethics-based goals linked to relevant thresholds, allocating responsibilities for action, and reporting performance. Such MSIs would provide the flexibility needed to accommodate supply chains for different industries, as well as differences within an industry. Although it was not specifically designed for application to the supply chain level, the MultiCapital Scorecard provides an example of a structured, yet flexible, approach to developing context-based metrics (Thomas and McElroy, 2016). For example, Thomas and McElroy (2016) provide example context-based metrics for social (e.g., living wage), environmental (e.g., water supplies), and economic (e.g., competitive practices) issues. They also provide worked examples for each of their proposed metrics.

Many existing MSIs could help provide a basis for developing standards of sustainability performance in supply chains. However, they would need modifications to meet the requirements outlined above. For example, consider the GRI. The GRI involves a number of stakeholders in its governance process, including corporations, governments, NGOs, and academia (Mena and Palazzo, 2012). Brown et al. (2009) note that the GRI exhibits a number of characteristics associated with established institutions. The GRI standards are the world's most widely-applied sustainability reporting standards. Perhaps most relevant to this discussion is that the GRI also already has an explicit sustainability context principle. However, the GRI provides few details on how to apply its sustainability context principle in practice and most reports developed using the GRI standards appear to ignore this principle (McElroy and van Engelen, 2012; Thomas and McElroy, 2016).

There is evidence that MSIs are now looking to seriously consider and address the broader sustainability context in which organizations operate. The Science Based Targets Initiative (SBTi) provides the most interesting example. The SBTi is a joint initiative of the CDP, the UNGC, the WWF, and the World Resources Institute in collaboration with We Mean Business, a large business coalition. The SBTi "aims to increase corporate ambition on climate action by changing the conversation on GHG emissions reduction target setting" (SBTi, 2017). Members of the SBTi are required to sign a letter committing the company

to "develop a science-based emission reduction target within the next 24 months" (SBTi, 2017). Although its primary focus is not on supply chains, the SBTi requires its members to consider GHG emissions in their value chains. By 2020, the SBTI hopes to institutionalize science-based targets so that they become standard business practice (SBTi, 2017).

To help companies achieve their science-based emissions reductions goals, the SBTi offers workshops, resources on how to set targets and measure progress, and independent assessments of company performance. For example, the SBTi has offered webinars on how to move from theory to practice, common pitfalls, and lessons learned on setting science-based targets (SBTi, 2017). Over 10 case studies detailing how companies have set science-based targets are available on its website. The SBTi also provides a detailed manual on setting science-based targets. Although the SBTi does not specify the methods companies must use to set targets and measure progress, it does provide information on a number of possible approaches, including the GEVA approach mentioned in Section 2.2. All targets are verified by the SBTi through a detailed target submission form (SBTi, 2017).

The SBTi thus addresses, at least in part, several of the MSI roles identified in **Figure 1**. However, it is limited to one major sustainability issue at this point (GHG emissions) and it is relatively non-prescriptive. It does, however, provide a potential reference point for advancing progress on developing performance-based standards for sustainable supply chains. Member companies are already encouraged to have their efforts recognized through the CDP disclosure platform, which does consider science-based targets throughout the value chain (CDP, 2016). The evolution of the SBTi in the coming years could provide useful insight into the challenges and opportunities in developing MSIs for sustainable supply chains.

4.3. MSIs to develop enforcement mechanisms

MSIs can develop mechanisms of verifying compliance with sustainability performance expectations. Various forms of auditing are already well-established in many sustainable supply chain initiatives. However, opportunities abound to go beyond existing enforcement mechanisms, which typically rely on professional auditing companies or internal forms of corporate assessment. For example, MSIs can provide mechanisms for joint enforcement of expectations set in standards.

All MSIs should have clear processes on how to verify compliance with their requirements. This should include specific mechanisms of joint monitoring and enforcement, i.e., making provisions made for involving representatives from corporations, civil society organizations, and other stakeholders. Although it is clearly "in line with the philosophy of multi-stakeholder involvement," relatively few MSIs currently employ joint enforcement mechanisms (Fransen and Kolk, 2007, p. 642). The MSIs must also specify how to identify participants in joint enforcement, as well as their roles and responsibilities. This would provide an opportunity to draw on the unique expertise of the various groups involved in the MSI. To strengthen the credibility of the process, the MSIs could also make provisions for the accreditation of participants in this process. Any MSI must also clearly state what happens if the supply chain performance falls short of expectations.

Many existing MSIs have well-developed enforcement mechanisms, though they rarely involve a wide range of stakeholders. For example, consider the use of management systems standards (MSS) in supply chains. MSS, such as ISO 9001 and ISO 14001, all have clauses that require periodic internal audits. They also offer the possibility of formal registration based on external audits performed by independent, accredited third-parties. Although they typically make allowances for second-party audits, which are conducted by parties having an interest in the MSS (e.g., auditing a supplier), the provisions for meaningful joint enforcement are often weak. SA8000's enforcement mechanisms go beyond those of the ISO standards and require a "balanced representation" of management and worker representatives on its "Social Performance Team" (SPT). The worker representatives, in unionized facilities, must be "trade union representatives, if they choose to serve." The SPT has the responsibility of monitoring compliance with the requirements of SA8000 (SA8000, 2014, p. 14). This broader focus on joint enforcement may be an outcome of the wide range of stakeholders involved in the governance of SA8000, including corporations, governments, NGOs, and trade unions (Mena and Palazzo, 2012).

Building on the example provided by SA8000, a similar approach could strengthen the enforcement mechanisms in other MSS, such as the ISO standards. Joint enforcement mechanisms can also play a key role in other forms of standards in sustainable supply chains, such as the performance-oriented standards contemplated in the previous sub-section. In such standards, stakeholders could be responsible for jointly monitoring and enforcing performance relative to context-based sustainability metrics and their related goals and thresholds. This could include monitoring of the data collection, analysis, and reporting systems on which the context-based metrics rely.

4.4. MSIs to issue labels and certifications

MSIs can develop labels, certifications, and/or ratings that explicitly distinguish between sustainable and unsustainable supply chains. Many existing labels, certifications, and ratings have relevance to sustainable supply chains. However, most of them do not adopt a context-based approach to sustainability performance. In other words, they tend to focus on activities that reduce unsustainable activities or on relative measures of performance.

MSIs can establish criteria for labels, certifications, and/or ratings that identify sustainable supply chains. Critically, these criteria must include minimal levels of performance for key sustainability issues and their associated thresholds, goals, and context-based metrics. Merely improving supply chain performance relative to the chain itself or those of its peers would not necessarily meet the minimal performance expectations. Nor would reducing adverse impacts, such as GHG emissions, necessarily be enough. Clear performance expectations, linked to the broader sustainability context of the supply chain, backed by enforcement mechanisms would be required. It bears repeating that sustainability performance cannot

be assessed without reference to the broader economic, environmental, and social context of the supply chain. Labels, certifications, and/or ratings must do a better job of accounting for that context.

Other than creating new MSIs, one way to better distinguish between MSIs that do and do not take sustainability context into account is through accreditation. The Global Initiative for Sustainability Ratings (GISR) provides a strong reference point. The GISR is a MSI which works with "investors, companies, ESG research and rating organizations, and civil society organizations to improve worldwide access to high-quality sustainability ratings" (GISR, 2017). As explained on its website, "GISR does not rate organizations," but instead works to voluntarily accredit "sustainability ratings, rankings or indices on the basis of their alignment with GISR's 12 Principles" (GISR, 2017). One of GISR's principles is sustainability context, which requires that "A rating should assess performance in the context of science-based thresholds and limits or, if unavailable, widely-accepted norms pertaining to long-term human and ecological well-being" (GISR, 2017).

The critical point is that labels, certifications, and/or ratings for sustainable supply chains must be tied to context-based metrics that link the supply chain to the wider world. Self-referential or process-oriented metrics do not provide the resolution needed to identify whether a supply chain is sustainable or not. Any label, certification, or rating that does not make that distinction is insufficient.

4.5. Other requirements for MSIs

Figure 1 highlights the need to develop MSIs for sustainable supply chains with the active participation of a range of stakeholders. Clearly, the specific stakeholders involved will vary depending on the focus of the MSI. Developing MSIs that address the requirements outlined earlier requires considering stakeholders within the supply chain, such as companies, employees, and trade unions. Other stakeholders, such as governments, communities, and NGOs, must also play important roles. Moreover, these stakeholders will need to work together collaboratively. The nature of stakeholder involvement will have implications for the legitimacy of the MSI.

All MSIs for sustainable supply chains, therefore, must pay special attention to their input and output legitimacy. Fundamentally, input legitimacy relates to "procedural demands" (Backstrand, 2006, p. 294), such as stakeholder involvement, how decisions are made, the extent to which mutual agreement is fostered, and the degree of transparency throughout these processes (Mena and Palazzo, 2012, p. 537). Output legitimacy concerns the "effectiveness" (Backstrand, 2006, p. 295) of the MSI, with special attention to the quantity of participants, the suitability of the requirements, and whether the requirements are followed in practice (Mena and Palazzo, 2012, p. 537). MSIs with weak input or output legitimacy are unlikely to provide the needed basis for shifting to sustainable supply chains.

MSIs for sustainable supply chains will also need to offer reasonable degrees of stability and flexibility. In this sense, stability "refers to the persistence of network ties among participants despite the existence of internal or external challenges" (Rasche, 2012, p. 692). The legitimacy of MSIs depends in large part on the collaboration between its key stakeholders. However, this collaboration can be fragile and can be undermined by any number of potential disputes. Mechanisms to maintain ties between the stakeholders and to resolve any disputes that may arise will be needed. Even while maintaining these ties, however, MSIs will need to adapt to changing local and global circumstances over time. This underscores the interrelationship between stability and flexibility.

MSIs must recognize the differing economic, environmental, and social conditions in which supply chains operate. Establishing priorities for action will need to balance positive and negative, existing and potential, and short- and long-term impacts. Some of these impacts, such as climate change, are global issues. Clearly, actions at local and regional scales contribute to global scale impacts. Other impacts, such as water consumption, are primarily local or regional issues, but they may also be affected by impacts at the global scale. MSIs must address impacts at different scales, while also recognizing the interrelationships between those scales. The differences between industries also underlines the need for MSIs to be flexible. While there is an overarching need to focus on linking supply chains to their broader sustainability context, MSIs should not assume a one-size-fits all approach will work in all cases (Rasche, 2012).

Undoubtedly, developing and implementing MSIs that meet the requirements discussed here will be challenging. Establishing definitions of sustainability, identifying relevant thresholds linked to science- and ethics-based goals, determining who is responsible for what, and developing context-based metrics are unlikely to be straightforward processes. For example, previous research has highlighted the difficulty in creating shared platforms (e.g., Reinecke et al., 2012) and the challenges in balancing the use of developing science in standards (e.g., Spicer and Hyatt, 2017). While these challenges should be recognized, my argument is that MSIs developed through the collaboration of corporations, civil society organizations, and other actors are best positioned to address these difficult questions. Given these challenges, MSIs are unlikely to get everything right on the first try. However, it is better to get started with good-faith efforts and improve over time rather than accept the status quo.

5. Conclusion

In this article, I have argued that MSIs must play a critical role in developing sustainable supply chains. MSIs are essential in linking supply chains to the broader sustainability context in which they operate. They are well-suited to addressing many of the complexities inherent in sustainable supply chains, such as a large number of stakeholders and the need to accommodate differing economic, environmental, and social conditions across the chain; all while developing a shared basis for action.

I presented a conceptual framework that outlined four interrelated roles for MSIs going forward (**Figure 1**): (1) providing learning platforms, (2) developing standards, (3) developing enforcement mechanisms, and (4) issuing labels and certifications. All four of these roles emphasized the need for supply chains to operate within

the thresholds set by nature and society. Staying within thresholds is what distinguishes between sustainable and unsustainable supply chains. The framework also highlighted a number of criteria that influence the input and output legitimacy of MSIs. It particularly emphasized that MSIs for sustainable supply chains must heavily involve stakeholders both within and beyond the supply chain.

My purpose in presenting this conceptual framework is to help advance work on defining sustainable supply chains, measuring supply chain sustainability performance, and the role of MSIs in these areas. I have also presented the case for how MSIs can help institutionalize the principle of sustainability context. To do so, they must advance research and practice on thresholds, science-and ethics-based goals, allocation mechanisms, and context-based metrics. This will require MSIs that facilitate new forms of collaboration between a wide array of stakeholders. The conceptual framework I presented provides some insight into how to navigate these challenges.

That said, this initial version of the conceptual framework would benefit from further testing. This could yield additional roles for MSIs in sustainable supply chains. For example, MSIs could potentially play an advocacy role as well. Future research could also add further specificity to the four roles I discussed. This could involve, for example, a focus on identifying how MSIs can help address key sustainability issues and how they can help measure, verify, and report performance. Clearly, this work cannot be the job of academia, government, or corporations alone. The very nature of MSIs underscores the need for such groups to work together.

Another limitation of my discussion was an overarching focus on the environmental and social aspects of supply chain sustainability; I did not meaningfully engage in their economic aspects. Clearly, no organization or supply chain can be sustainable without considering the economic dimension of sustainability. I chose to focus on the need for supply chains to operate within the natural and social thresholds set by society because these areas are currently underemphasized. It is inconceivable that all of the key players in supply chains would ignore their economic performance. However, it is equally clear that further work exploring economic thresholds for sustainable supply chains is absolutely needed. MSIs can play a critical role in tackling the difficult questions in this area, such as the required levels of economic performance for players throughout the supply chain in light of the broader sustainability context and how sustainable economic performance should be measured.

Establishing MSIs that fulfill the requirements outlined here will undoubtedly be challenging. There is no definitive formulation of what constitutes a sustainable supply chain. Substantial debate with multiple reasonable perspectives is inevitable. However, MSIs are uniquely situated to address these issues. MSIs can establish the credible learning platforms, standards, enforcement mechanisms, and labels that will drive progress on sustainable supply chains going forward.

Acknowledgements

I would like to thank the editor, associate editors, and the two anonymous reviewers for their comments.

Competing interests

The author has no competing interests to declare.

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How to cite this article: Searcy, C 2017 Multi-stakeholder initiatives in sustainable supply chains: Putting sustainability performance in context. *Elem Sci Anth*, 5: 73. DOI: https://doi.org/10.1525/elementa.262

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Knowledge Domain: Sustainability Transitions

Part of an *Elementa* Special Forum: Multi-stakeholder initiatives for sustainable supply networks

Submitted: 03 April 2017 **Accepted:** 01 November 2017 **Published:** 06 December 2017

ELEMENTA Science of the Anthropocene

Elem Sci Anth is a peer-reviewed open access journal published by University of California Press.

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