

A photograph of several women working in a tea plantation. They are walking through rows of tea bushes, each carrying a large, round, woven basket on their back. The women are wearing colorful traditional clothing. The background shows a vast, hilly landscape with tea fields under a clear sky.

# managing sustainable global supply chains

A Systematic Review of the  
Body of Knowledge



Network for  
Business Sustainability

Business. Thinking. Ahead.

Prepared by  
Dr. Stephen Brammer  
Dr. Stefan Hoejmose  
Dr. Andrew Millington



Supply chain  
disruptions can  
be devastating  
for operations  
and share price.



How can companies better manage their global supply chains to leverage opportunities and mitigate risk?

# managing sustainable global supply chains

A Systematic Review of the Body of Knowledge

Prepared by Dr. Stephen Brammer, University of Warwick  
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Network for Business Sustainability  
2011

Additional resources are available at  
[www.nbs.net/knowledge/supply-chains](http://www.nbs.net/knowledge/supply-chains)

Dear Reader,

I am delighted to share with you this report on managing sustainable supply chains. As supply chains become more global and involve more players, it is increasingly important to manage new risks and leverage new opportunities. This report systematically reviews the body of knowledge on sustainable supply chains in an international context.

It has been a joy and an honour to work with Dr. Stephen Brammer and his co-authors, Dr. Stefan Hoejmose and Dr. Andrew Millington, on this report. Stephen is a leading thinker in the field, and has assembled a thorough and thought provoking review. He has also benefited from the insights offered by his guidance committee, which included Dr. Robert Klassen (Richard Ivey School of Business), Erin Woodrow (Suncor Energy), Maureen O'Higgins (BC Biomedical Labs), Georgina Wainwright-Kemdirim (Industry Canada), and Larry Berglund.

This systematic review is one of many that form the backbone of the Network. The topics are chosen by our Leadership Council, a group of multi-sector organizations leading in sustainability whose names you will find at the end of this report. This group meets annually to identify the topics most salient to their business. Managing international supply chains was one of the issues at the top of their list.

We are proud of our systematic reviews. Popularized in the field of medicine, they systematically and rigorously review the body of evidence from both academia and practice on a topic. The result is an authoritative account of the strategies and tactics of managing sustainably, as well as the gaps for further research. Due to the support of organizations such as the Purchasing Management Association of Canada (PMAC), Suncor Energy, and Industry Canada, reviews such as this one can lay the groundwork for future innovations in management research and practice.

I hope you will find this report engaging and enlightening.

Sincerely,



Tima Bansal, PhD  
Executive Director, Network for Business Sustainability  
Professor, Richard Ivey School of Business

Dear CEOs, Supply Chain Managers and Sustainability Leaders,

In a dynamic global market, a business' supply chain can be a source of risk or opportunity. As new economic, environmental and social challenges arise, companies must build their supply chains to be more resilient and competitive. This is why the NBS Leadership Council identified "ensuring sustainability within supply chains" as one of its priorities for 2010.

This report is the culmination of a year's work to compile what the research tells us about building sustainable international supply chains. The research team filtered through thousands of articles and books to summarize the best available evidence and provide you state-of-the-art information for your decision-making.

We would like to direct you to the key framework, found in the executive briefing and on page 45 of this report. This tool will help you identify gaps in your current program and implement new practices and strategies to improve the performance and resilience of your supply chain.

We're confident the best practices in this report will aid you on your journey in building a better supply chain and, in turn, a better business. Please share this report – and any ideas it inspires – with your colleagues, industry peers and supply chain partners.

Sincerely,

The NBS Sustainable Supply Chains Committee



Georgina Wainwright-Kemdirim  
Manager, Policy Development, Sustainability and CSR  
Strategic Policy Branch, Industry Canada



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# introduction

## **The Influence of Globalization, Management Complexity, and New Business Risks**

The era of globalization has had profound implications for managing companies at the strategic and operational levels. Central to globalization has been a dramatic growth in the “cross-border movement of goods and the emergence of global competitors and opportunities across competing supply chains within an industry” (Mentzer et al., 2007, 2). The manufacture of many inputs and products has shifted to a variety of developing and transitional economies, principally to reduce costs of production and increase speed to market. For example, since the 1970s, China has emerged as the workshop of the world and is now projected to eclipse the United States as the world’s leading manufacturer in 2011, at which point China will account for more than 20% of global manufacturing production, and its annual exports will be valued at more than US\$1.7 trillion. Globalization has progressed such that Flynn (2010) notes, “it would be difficult to find a supply chain that does not cut across national boundaries at some point” (3).

With the benefits that companies have realized as a result of globalization have come significant increases in the strategic importance and complexity of the supply chain function. Research has identified major risks and concerns that emerge in global supply chains, including supply chain disruption and discontinuity (Craighead et al., 2007), inconsistent or inadequate product quality (Foster, 2008), unpredictable delivery times (Levy, 1997), and substantial, unanticipated additional costs (Geary et al., 2006). Many of these risks are exacerbated by the increasing geographical scope of firms’ supply chains that exposes supply chain managers to a variety of cultural, legal, administrative, linguistic, and political issues (Mentzer et al., 2007; Branch, 2008).

Alongside research on these “orthodox” or “traditional” aspects of the operations and supply functions is more recent research that pays increasing attention to the range of social and environmental issues firms are exposed to through their global supply chains (Carter and Easton, 2011). For example, the subject of research for some time has been green supply chain management, which focuses on environmental issues, such as reducing waste and emissions in supply chains, recycling, and designing products for end-of-life recovery. More recent topics of study include social and ethical issues, such as child labour, working conditions, bribery, and corruption.



The definition of sustainable supply chain management has been debated for some time. Many recognize that “most definitions of sustainability incorporate a consideration of at least environmental and economic concerns, and even CSR [corporate social responsibility] conceptualizations and operationalizations consider the intersection of social and environmental issues” (Carter and Rogers, 2008, 364). Following Carter and Rogers (2008), we reflect on the breadth of the scope of issues that fall within a working definition by defining sustainable supply chain management as “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains” (Carter and Rogers, 2008, 368).

In spite of the growing volume of research on how firms should address these issues and the benefits of doing so, numerous recent cases show that firms continue to grapple with the challenges of addressing sustainability in their supply chains. For example, Apple recently disclosed that it had identified underage workers in three of its East Asian suppliers’ companies. Moreover, nearly 40% of its suppliers’ plants failed to comply with company safety regulations, and only 46% of plants complied with guidelines on working hours. Shell and Halliburton both recently agreed to pay multimillion-dollar fines to the Nigerian government, following allegations of their involvement in bribery of government officials. Most recently, analyses of the BP Deepwater Horizon oil spill have shed light on the complexity involved in the supply chain for drilling services and the resulting impact on the attribution of blame between BP, Transocean, and other supply chain

partners involved in the Gulf of Mexico catastrophe. These and other anecdotal examples testify both to the complexity of the sustainability issues involved in international supply chains and to the relevance of these issues to a wide range of industry sectors.


### Existing Literature Reviews

Numerous studies have reviewed research on supply chain management, primarily with a view to identifying the boundaries and core features of supply chain research in an attempt to promote recognition of supply chain research as a discernable “field” or “discipline” within management research (Croom et al., 2000; Harland et al., 2006). Consistent with that aim, two primary goals of existing reviews have been to generate robust definitions of supply chain management in conceptual and empirical terms, and to describe the state of extant research. Regarding the latter, most reviews have concluded that supply chain research is in its infancy, relative to other fields in business and management research, and thus is characterized by a relative absence of (1) theoretically informed research and (2) a large amount of descriptive empirical research. For example, Croom et al. (2000) found that more than half of the studies surveyed in their review were descriptive empirical studies, whereas only 6% of extant research provided theoretically grounded prescriptions for management practice. Similarly, a later review by Burgess et al. (2006) concluded that “SCM [Supply chain management] is a relatively young field with exponential growth in interest from researchers...., a reliance on the manufacturing and consumer goods industries, [and]...mostly descriptive-type theories” (Burgess et al., 2006, 721).

In addition to providing overviews of trends in supply chain research generally, several literature reviews have focused on sustainability and its relation to supply chain management. However, none has focused on the particular issues and challenges present in the context of international supply chains, and most have confined their attention to a focus on environmental issues (see, e.g., Srivastava, 2007; Sarkis et al., 2011). Two recent reviews of green supply chain management, recognizing the relative lack of attention to theory seen in supply chain management research generally, have paid particular attention to the conceptual features and orientations present in prior research (Srivastava, 2007; Sarkis et al., 2011), which suggests that theories from the broader operations management and organization areas might contribute significantly to the future development of green supply chain research. Two reviews (Carter and Rogers, 2008; Carter and Easton, 2011) focus on the development of the broader literature concerned with sustainable supply chain management, and many of their observations echo those seen in broader supply chain research. In particular, these two reviews note the contested nature of the concept of sustainable supply chain management, the prevalence of descriptive research, and the lack of theoretical development present in extant research. That said, Carter and Easton (2011) do note the growing sophistication of more recent research in both theoretical and empirical terms. They highlight, for example, the growing incidence of structural equation modelling and greater use of theory in research since 2001.

### The Remaining Knowledge Gap

In light of the observations made thus far, in this study, we conduct the first systematic review of knowledge related to managing sustainable supply chains in an international context. In contrast to earlier reviews of sustainable supply chain management, we examine the state of knowledge regarding sustainable supply chain management as it specifically relates to supply chain issues that transcend national borders, and we focus on the issues, experiences, practices, and outcomes of managing sustainability in these challenging global supply chain environments. A further distinctive element of our review is our contributions to managerial practice by developing three key synthetic theoretical models: one that addresses the antecedent organizational, inter- and extra-organizational conditions under which international sustainable supply chain management is expected to be successfully implemented, and two that constitute systematic processes of managerial practice for managing international supply chains sustainably. In developing these theoretical models, we reflect and respond to the contemporary concern in business and management scholarship that “management research that delivers both what-is and how-to knowledge is much more likely to meet the challenge of scholarly quality and relevance” (Pettigrew, 2001, 66). Because of our intention to inform practice, our review encompasses significant practitioner knowledge in addition to the academic articles that are the mainstay of most systematic literature reviews.



The study is structured as follows. The next section briefly outlines our research methods (a fuller discussion is presented in Appendix A). We then outline our findings, which we unfold in three steps. First, we offer a bibliographic overview of the body of research we examine in our review, charting its development over time, along with a discussion of the issues and contexts examined in prior research and the theoretical and methodological approaches adopted in this research (the “what, where, and when” findings). Second, we examine the motivations for engagement with sustainable supply chain management in an international context and review the evidence concerned with the payoffs and outcomes from managing international supply chains sustainably (the “why”). Third, we focus both on the spectrum of management involved in managing international supply chains in a sustainable manner and on the facilitators of engagement in such practices. In particular, we inductively generate two theoretical models of the processes involved in international sustainable supply chain management (the “how”). We argue that, in respect of the nuances of these models, organizational choices should appropriately reflect a range of organizational contingencies but that wider use of either model would bring about significant business and societal benefits.

# methodology

To provide the most robust overview of knowledge regarding sustainable supply chain management in an international context, we adopt the systematic literature review approach. Systematic literature reviews aim to provide enhanced objectivity and quality in the literature review process by having “clear goals, reproducibility, a broad and inclusive search based on merit thereby reducing reviewer bias, and incorporating a synthesized approach to organize the literature” (Walker, 2010, 358). Our review followed a discrete series of steps including: (1) identifying relevant literature and assessing its relevance and usefulness, (2) extracting data in a systematic way from the identified studies, and (3) analyzing the collected data, usually comprising a descriptive overview of the data and a synthetic overview. A full description of our methods is provided in Appendix A. Here, we confine ourselves to sketching the principal features of our approach.

The first step in identifying relevant literature is to develop operational definitions of the core concepts under investigation: sustainability and supply chain management. For each concept, we took a broad approach, by encompassing in our searches a wide range of both synonyms and elements of each primary search term to avoid missing relevant work. The second step requires defining the methods for identifying relevant work. We conducted searches using widely available search engines for the academic, news, and business press, including the Web of Science and EBSCO Business Source Premier databases. Additionally, we conducted (a) a careful analysis, from previous literature reviews,

of those papers that might potentially have relevance; (b) a search for practitioner and business articles using the Factiva database of global print media; (c) Google web searches to identify consultancy and/or practitioner knowledge outside of the databases we used; (d) a manual search for relevant research on the websites and in publications of organizations and associations involved in the fields of sustainability, corporate social responsibility (CSR), and supply chain management (such as Business in the Community and the Chartered Institute of Purchasing and Supply); and (e) series requests to members of the project’s oversight committee regarding practitioner knowledge they were aware of. Our initial search strategy provided more than 30,000 pieces of evidence for our original sample, which we then reviewed systematically numerous times to remove irrelevant material. Ultimately, we identified 194 articles that addressed sustainable supply chain management in an international context.

Having identified the relevant literature, we then followed a standardized data extraction process designed to reduce author subjectivity (Tranfield et al., 2003). To facilitate this process, we developed a pro forma or structured coding frame that encompassed a range of literature features to be recorded in Microsoft Excel. Basic elements included in the grid included the author(s), title, year published, the number of times an article had been cited according to Google Scholar and Web of Science (for articles published in Institute for Scientific Information, or ISI, journals). In addition, we developed a coding frame to permit the extraction of a range of

attributes: the issues and concepts under investigation, the contexts within which these issues and concepts were studied, the details of methods and conceptual perspectives used and referred to in particular studies, the motivations and performance outcomes from involvement in sustainable supply chain management in an international context, the organizational conditions that favoured or hindered involvement in sustainable supply chain management, and the specific management practices that comprised managing international supply chains sustainably. In all, the original coding frame encompassed more than 60 distinct pieces of information for each study.

Having produced the primary grid of data through careful and systematic examination of each of the articles identified in our search, we were then able to conduct various analyses. Where the coding process had identified the incidence of features of studies in a numerical form, analysis could take a quantitative approach, principally by comparing the frequencies and patterns with which specific features appeared in the articles. This approach is useful in that it provides a robust sense of “what is” present in the extant literature. However, in light of the absence of simple a priori coding schemes for all categories of data, and given the partially conceptual nature of our goal (in the sense that we aimed to consolidate the state of knowledge of management practices concerned with international sustainable supply chain management), we pursued a mode of analysis that is helpful when trying to inductively make sense of qualitative evidence – that of pattern matching and explanation building (Yin, 1994).

# findings

We present our findings in three stages, each of which is oriented to addressing a specific set of research questions. The first part of our analysis sets out to provide an overview of the articles with a view to describing the bibliometric properties of this research. In so doing, we answer such questions as: How has the scale and scope of international sustainable supply chain research evolved over time? What are the most prevalent social and environmental issues encountered in international sustainable supply chain management? How have these issues changed over time? What particular contexts (industries, countries) has previous research focused on? What are the specific theoretical and methodological characteristics of research concerned with managing international supply chains in a sustainable manner? This analysis provides an overview of the specific body of research that we focus on, which facilitates a comparison with broader reviews of the state of supply chain research.

The second step in our analysis aims to evaluate the drivers, facilitators, and performance outcomes when international supply chains are managed sustainably. In so doing, we aim to inform research and practice by evaluating such questions as: What motivations for engagement in sustainable supply chain management are most prominent in this research? What pressures do firms face to address issues of sustainability in their international supply chains? What organizational and inter- and extra-organizational conditions are most conducive to managing international supply chains in a sustainable manner? What evidence exists regarding the extent and character of benefits to involvement in international sustainable supply chain management?

The third step in our analysis seeks to synthesize the relative prevalence of managerial practices involved with managing international supply chains to enable the construction of models of best practice for managing sustainability in international supply chains. In this section, we address the following questions: How (i.e., using what specific practices) should firms address sustainability in their international supply chains? What are the pitfalls of alternative managerial approaches to sustainability?

# What, Where, and When: An Overview of the Literature

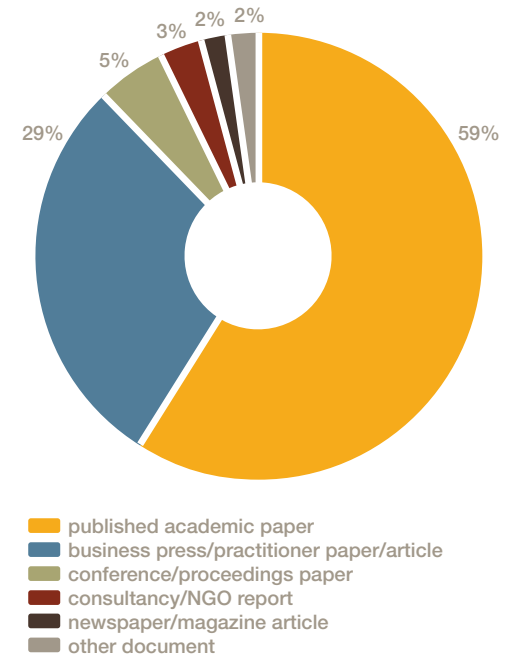
First, we describe the main features of the body of literature. In particular, we provide an overview of the types of articles used in our review.

## Research Sources

Figure 1 illustrates that roughly 60% of the articles included in our analysis are academic articles and approximately 30% of the articles are from the business press or are practitioner articles. The remainder are conference papers and miscellaneous documents. A distinctive feature of our analysis is that some 40% of the articles were sourced from outside the “orthodox” academic mainstream, which, as we argued above, reflects our desire to achieve a strong orientation both to emergent findings and lessons from practitioner discourse.

Figure 1

**THE COMPOSITION OF THE SAMPLE OF ARTICLES ANALYZED**

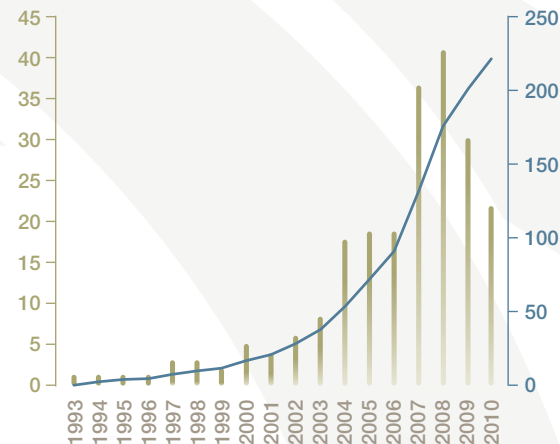


## Research Volume over Time

In our second step, we examine the progression of the literature over time. The bars in Figure 2 reveal, for each of the years since 1993, the number of papers published that concern international sustainable supply chain management (read off the left-hand Y-axis), while the red line describes the cumulative growth of the literature over this period (read off the right-hand Y-axis). Over the past 10 years, the increase of published papers in this area has been exponential, reflecting the greater number of articles published in broader literatures in supply chain management and sustainable supply chain management. A deeper examination of the data reveals that this pattern is similar for both practitioner and academic research in this literature, and that the growth in both types of articles occurs broadly in parallel. The recent decline in the number of studies addressing sustainability in international supply chains could, we speculate, arise from the reduced salience of such issues in times of global economic crisis.

Figure 2

**THE ANNUAL AND CUMULATIVE FREQUENCY OF ARTICLES CONCERNED WITH INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

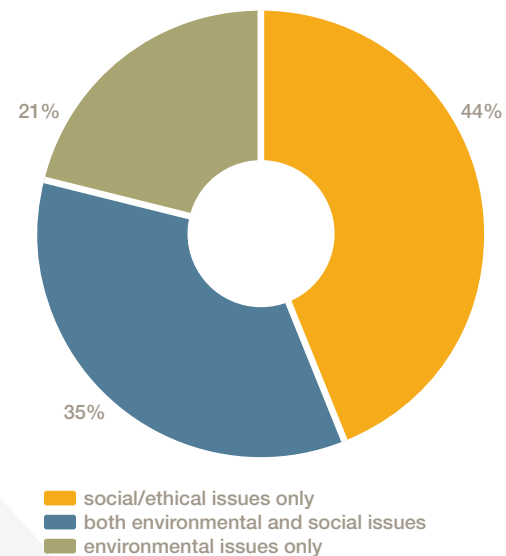


## Issues

Regarding the types of issues explored in the studies in our sample, this body of literature appears to be primarily concerned with social and ethical issues rather than environmental issues. As shown in Figure 3, only one-fifth of studies focus exclusively on environmental issues, which is a stark contrast to the broader literatures on sustainable supply chains, where the orientation is very heavily environmental (Carter and Easton, 2011).

Figure 3

**BROAD TYPES OF ISSUES ADDRESSED IN PRIOR RESEARCH**





The broad categories of issues presented in Figure 3 mask the considerable variety of the specific issues that the studies focus on. To shed more light on these issues, we recorded the specific issues that each of the analyzed articles addressed and then we explored the relative frequency with which these issues arose in the literature, recognizing that each individual study could address multiple specific issues. These findings are presented in Figure 4. This analysis shows that the most prevalent issues (aside from the generic consideration of environmental issues) related to labour and workplace issues, such as low wages, sweatshops, labour practices, and working conditions. Given the prominence of these issues in wider societal discourse in relation to these aspects of international supply chains, the prevalence of these issues is perhaps not surprising, but it does stand in marked contrast to the balance of issues considered in broader research concerned with sustainable supply chains (Carter and Easton, 2011), underlining the distinctive issues present in international sustainable supply chain research.

Figure 4

**THE FREQUENCY OF SPECIFIC ISSUES IN PRIOR RESEARCH**



**Issues over Time**

Although Figure 4 provides a robust insight into the issues under investigation within the articles analyzed, such an overview tends to obscure the possible dynamic evolution of particular issues throughout different time periods. To explore the possibility of such trends, we revised our analysis by categorizing the literature into three periods, each having a roughly similar number of articles published. This analysis, provided in Table 1, shows how the prevalent terminology and issues have evolved over time. Some issues, such as green issues, working conditions and human rights, appear to be consistently of concern. Other issues decline in their importance, such as bribery and corporate social responsibility, and are replaced by other issues, such as sustainability and low and living wages. Overall, a considerable overlap occurs in the composition of the set of issues being considered in this research, even if some, relatively marginal changes occur in the ranking of issues across the three periods.

Table 1

**MOST PREVALENT ISSUES IN INTERNATIONAL SUSTAINABLE SUPPLY CHAIN RESEARCH IN THREE PERIODS**

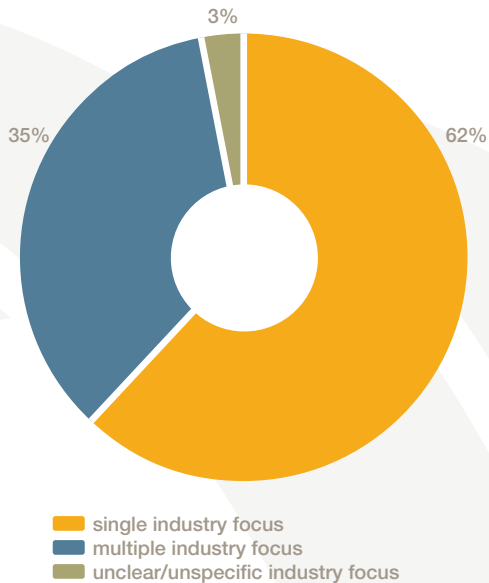
BEFORE 2003	2003-2006 INCLUSIVE	SINCE 2007
Generic "Green" or Environmental Issues	Working Conditions	Working Conditions
Human Rights	Generic "Green" or Environmental Issues	Generic "Green" or Environmental Issues
Child Labour	Human Rights	Sustainability
Working Conditions	Low Wages	Human Rights
Bribery	Corporate Social Responsibility	Low Wages

## Industries

Having addressed the patterns of the prevalent issues being considered in extant research on international sustainable supply chains, we now turn our attention to the contexts within which extant research explores these issues. We begin by examining the industry sectors that have been analyzed in current studies. Figure 5 indicates the pattern of industry sectors examined in prior research by illustrating the amount of research focused on a single industry sector versus research based on a more broadly drawn sample. Consistent with the observations made in prior supply chain management reviews, most international sustainable supply chain research is clearly oriented to examine a particular industry sector, rather comparing supply chain practices across industries.

Figure 5

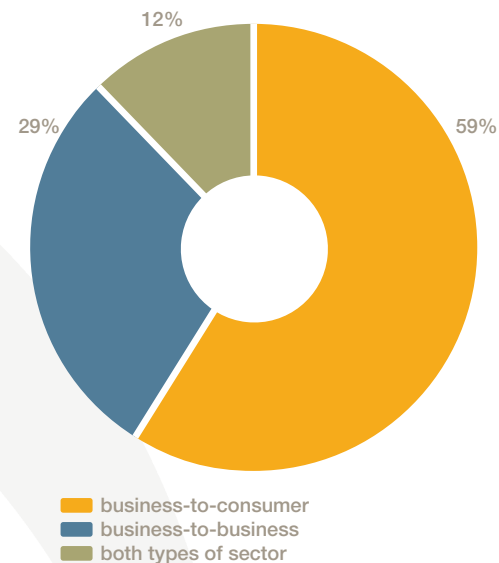
### INDUSTRY SECTORS EXPLORED IN PRIOR RESEARCH



To provide a deeper analysis of the particular industries focused upon in prior research, we coded each study according to the sectors present and then inductively categorized these studies in several ways to provide a coherent overview of the variety of industries examined. Figure 6 illustrates the degree to which international sustainable supply chain research has, like much earlier supply chain research, focused primarily on consumer-oriented industries (such as food and drink, consumer manufacturing, and textiles) or producer-oriented sectors (basic manufacturing, engineering, and chemicals). The evidence suggests that the orientation toward sectors where final consumers are key stakeholders (as seen in much earlier supply chain research) is shared to a considerable extent by international sustainable supply chain research. Specifically, approximately 59% of the existing literature focuses solely on consumer-oriented sectors, whereas only 12% of the articles analyzed are oriented exclusively to producer-oriented sectors, and the remaining 29% address a mixture of the two sectors.

Figure 6

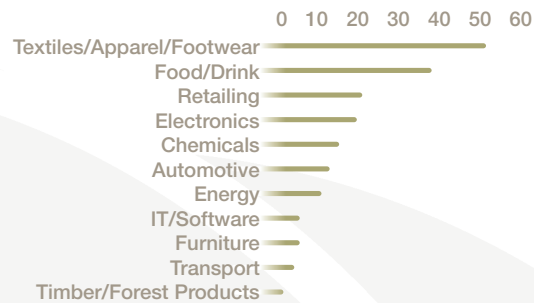
### INDUSTRY TYPES IN PRIOR RESEARCH



The specific industry sectors focused on are predominantly sectors that have highly international supply chains and those associated, in recent years, with significant social and/or environmental challenges, such as Gap and child labour in the 1990s, Apple and working conditions in the 2000s, and, most recently, Coca-Cola and water in India. Hence, as Figure 7 shows, the industries featured prominently include textiles (incorporating apparel and sporting goods), retailing, food and drink (including coffee and tea), and electronics. That said, a wide range of other sectors are also represented, reflecting the diversity of extant research.

Figure 7

**THE PREVALENCE OF SPECIFIC INDUSTRY SECTORS IN PRIOR RESEARCH**



**Geographies**

The geographic contexts within which prior research has examined sustainable supply chain issues are highly diverse, represented by more than 60 country or regional contexts in our sample of studies. Notably, while our literature identification strategy placed no constraints on the particular countries within which we sought international sustainable supply chain research, less than 5% of countries examined in prior research are developed world countries, suggesting that the overwhelming focus of the research lies with issues and challenges faced in managing supply chains in developing and emerging economies. Significantly, no single country context arises in more than 10% of the articles examined, confirming the diversity of contexts present in this research. The most prevalent countries and regions in the articles are shown in Table 2.

Table 2

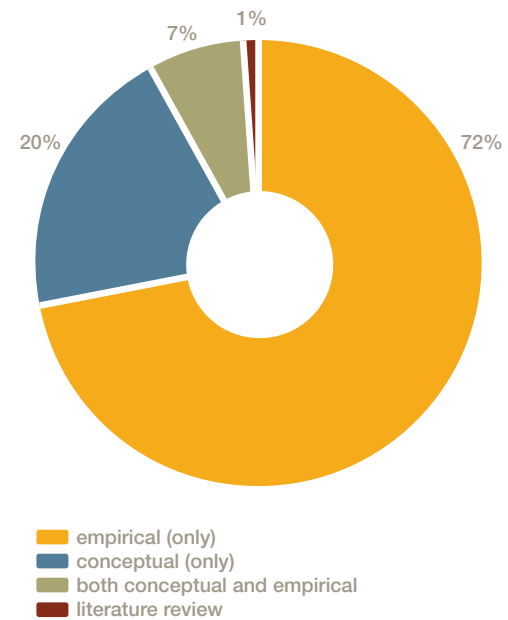
**MOST PREVALENT GEOGRAPHICAL CONTEXTS EXPLORED IN EXTANT RESEARCH**

RANK	COUNTRY OR REGION
1	China
2	Asia
3	United States
4	Mexico
5	Vietnam
6	Thailand
7	Africa
8	India
9	Malaysia
10	Indonesia

## Methodologies and Study Designs

Having considered in some detail the contexts under examination in prior research, we now turn our attention to the contributions made in the sample of studies and to the methods and theories most prevalent in prior knowledge regarding international sustainable supply chain research. We begin by evaluating the contributions made by articles, by drawing a primary distinction between articles that make essentially empirical contributions from those articles whose contributions are conceptual and those that make contributions in both areas. This analysis is presented in Figure 8. In common with, but to a greater extent than, earlier reviews in supply chain, and sustainable supply chain, research, we find that empirical research dominates in the sample of articles we studied. This prevalence of empirical research to some degree reflects not only our relatively strong orientation to practice-based knowledge but also a basic truth about the state of knowledge development in prior research, which we characterize as being relatively exploratory.

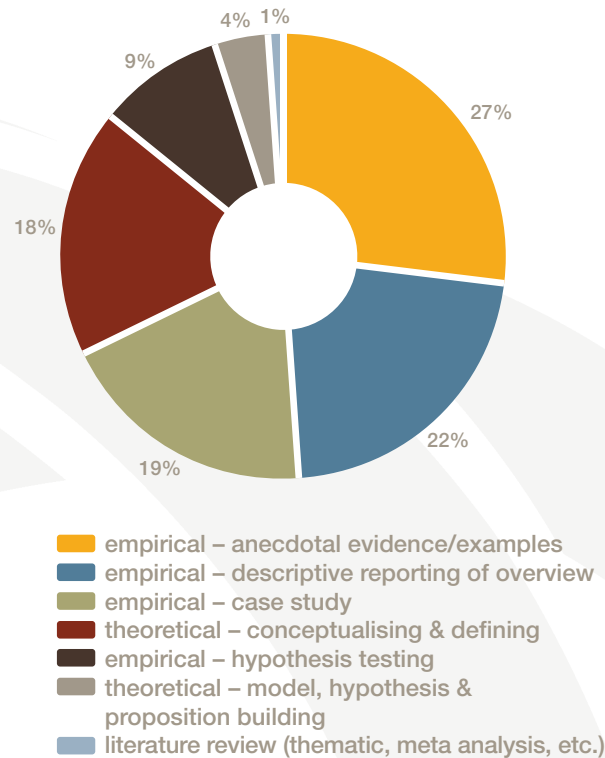
Figure 8  
TYPES OF ARTICLES



We next further explore the specific contributions of extant studies by more finely characterizing the orientation of the studies in our sample. This analysis is reported in Figure 9, which shows that dominating this literature are case-based and anecdotal empirical analyses that highlight the problems and issues faced in managing an international supply chain sustainably. The relative lack of theoretical contributions echoes wider reviews of supply chain research, which has tended to remain quite strongly oriented to practice. Overall, the pattern suggests that theoretical literature in this area is still quite embryonic.

Figure 9

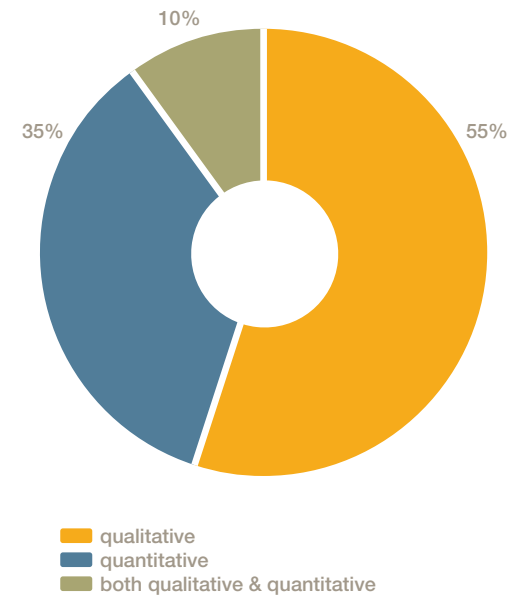
**CONTRIBUTIONS OF ARTICLES**



Consistent with an emerging area of research interests, a wide range of research methods were employed in prior research, with approximately 65% of the articles employing at least some qualitative evidence.

Figure 10

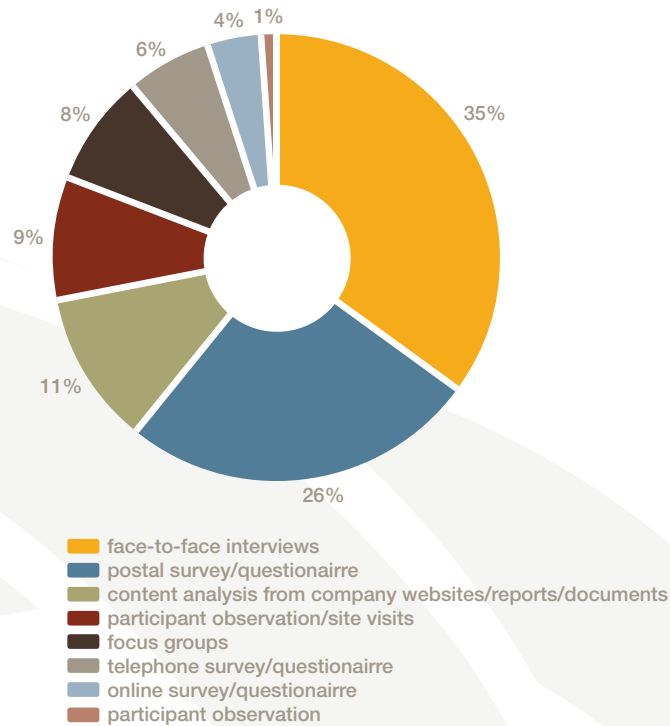
**METHODOLOGICAL ORIENTATION OF EMPIRICAL RESEARCH**



Regarding the particular methodological tools used in prior research, as shown in Figure 11, we see greatest use of face-to-face interviews, which reflects the overall emphasis on qualitative approaches. At the same time, 26% of the empirical studies employ postal surveys. Also common is the analysis of the content of company documents and websites.

Figure 11

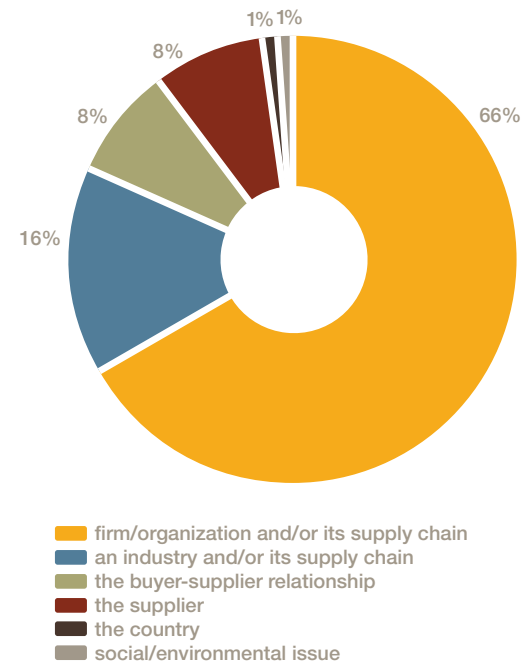
**SPECIFIC METHODOLOGICAL TOOLS USED IN PRIOR RESEARCH**



As illustrated in Figure 12, most work has been oriented either to the organizational level, often through case studies, or to a focal industry.

Figure 12

**FOCAL UNITS OF ANALYSIS IN PRIOR RESEARCH**



To summarize our discussion, many of the broad features of international sustainable supply chain research reflect the features of broader literatures in supply chain management and sustainable supply chain management. Research in the area of international sustainable supply chains appears to be at an earlier stage, reflecting the relatively recent salience of societal concerns related both to how firms source branded goods internationally and to the working conditions present in these overseas plants. The research we reviewed emphasizes the scope and nature of the issues encountered in international supply chains but seldom goes beyond problematizing the sustainability properties of international supply chains. The contexts under investigation are varied in all senses, providing little opportunity for triangulation or robust comparison of the specific themes present in each individual article.

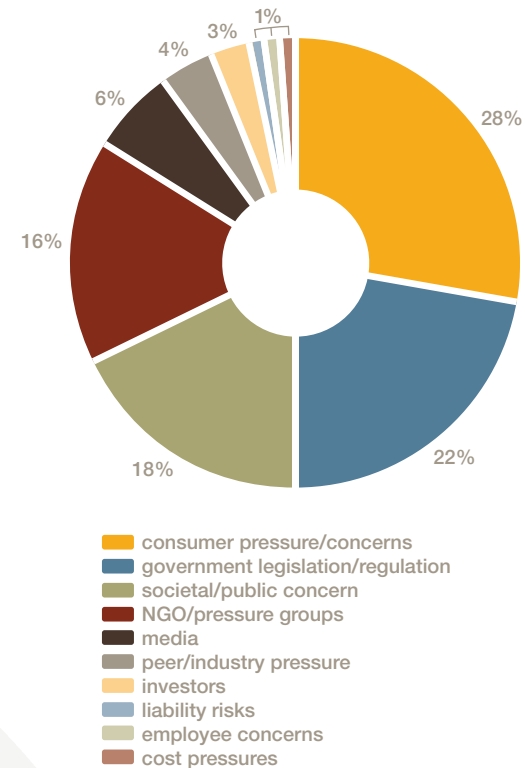
# Why: Pressures, Motivations, and Payoffs

## Pressures

While motivations for managing international sustainable supply chains reflect the benefits anticipated from addressing these issues, we also sought to explore the relative importance of a range of sources of pressure to engage in practices that address sustainability issues in international supply chains. These findings are presented in Figure 13 and support the analysis of motives for engagement with sustainable supply chain management by confirming the importance of three main sources of pressure to manage these issues. As with the motivations, consumer pressure is the most significant pressure, followed by the influence of government legislation and regulation. Significantly, social pressure exerted by the general public and pressure groups and non-governmental organizations (NGOs) plays a strong role in encouraging firms to engage in sustainable supply chain management.

Figure 13

**THE MOST PREVALENT PRESSURES IN INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT**



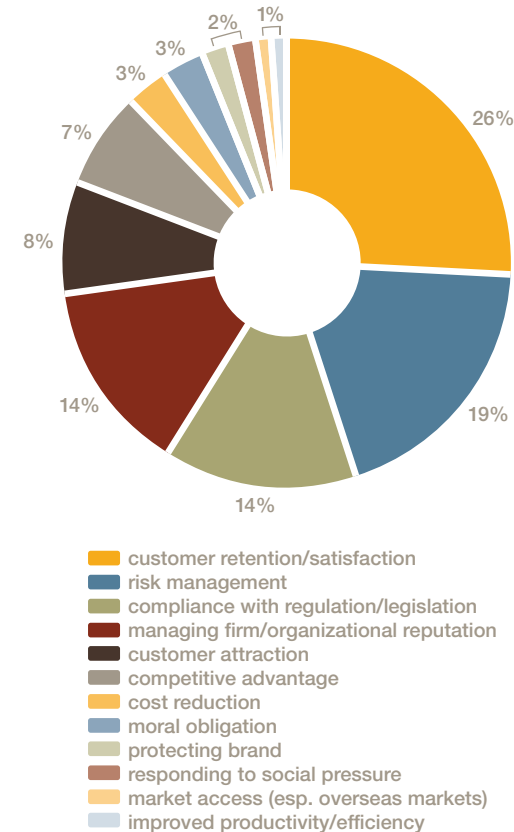


## Motivations

What motivates companies to embark on improving the sustainability of their international supply chains? What conditions appear to favour firms' involvement and success in sustainably managing their international supply chains? What evidence suggests payoffs for sustainably managing such supply chains? Earlier research has suggested that numerous factors play a role in shaping firms' desire to address sustainability in their international supply chains. At the same time, the lion's share of these motivations might be characterized as "defensive" or "reactive" in nature. Among the most prevalent motivations are a desire to maintain customers or to attract new customers (accounting, respectively, for 26% and 14% of the motivations expressed in prior research), the desire to manage supply chain risks (19%), and the goal of complying with regulation and legislation (14%). Appearing much less frequently in prior research are more "positive" or "pro-active" motivations, such as the desire to reduce costs, improve efficiency, or gain access to overseas markets.

Figure 14

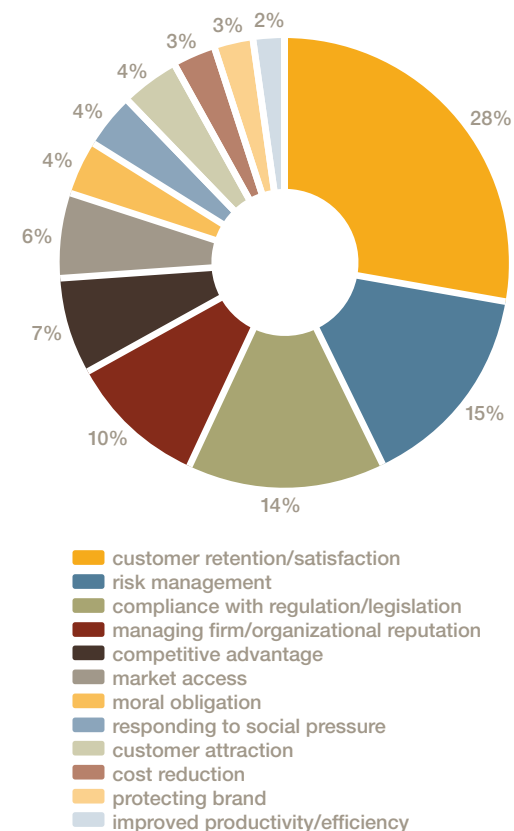
### MOTIVATIONS FOR ENGAGEMENT IN INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT



To explore whether the overall pattern of motivations for involvement in international sustainable supply chain research has evolved over time, we examined the pattern of motivations as seen in the most recent studies (those published since 2008) and compared this pattern to the patterns described above. This analysis is provided in Figure 15. Overall, several of the main observations made above seem to hold true over time. In particular, the most commonly cited motivation in the most recent research remains satisfying and retaining customers, followed by risk management, and then ensuring compliance with regulation and/or legislation. At the same time, the most recent articles show a lower reported prevalence of risk management and the management of firm reputation, whereas greater attention is paid to more pro-active motivations, such as gaining improved market access and more pro-social motivations such as addressing moral obligations and/or social expectations. These trends could suggest that more pro-active approaches to managing international supply chains sustainable are gaining ground, relative to more reactive approaches that are oriented to risk avoidance.

Figure 15

**THE MOST PREVALENT MOTIVATIONS IN RECENT (>2008) RESEARCH**



To see the specific motivations within the contexts in which they have been addressed by prior research, we next extracted examples for each key area of motivation in the research in which they had been cited. These findings are provided in Table 3, below.

Table 3

**MOTIVATIONS**

MOTIVATIONS	EXEMPLAR QUOTES
<p><b>Managing Risk</b></p>	<p>“Overall, two possible rationales underpin these decisions: seeking new opportunities to position a firm’s products and brands; and minimizing the risks of criticisms and concerns from NGOs, the public, and customers.” (Awaysheh and Klassen, 2010)</p> <p>“If poor remuneration or any labour abuses are exposed, ignorance of the supply chain and any attempts to abdicate responsibility on moral matters, irrespective of the structural or geographical distance between buyers and suppliers, will guarantee them a place in the villainous retailers league of shame.” (Berlan, 2008)</p> <p>“The food industry faces many significant risks from public criticism of corporate social responsibility (CSR) issues in the supply chain.” (Maloni and Brown, 2006)</p> <p>“The possibility of irresponsible practices puts global firms under pressure to protect their brands even if it means assuming responsibilities for the practices of their suppliers.” (Amaeshi et al., 2008)</p> <p>“There is acceptance that boundaries of responsibility now go beyond directly-owned operations, and consideration of issues within the supply chain are viewed as management best practice and a critical part of risk management in today’s business climate.” (Druckman, 2005)</p>

Table 3 Continued

**MOTIVATIONS**

MOTIVATIONS	EXEMPLAR QUOTES
<p><b>Managing Reputation</b></p>	<p>“In recent past, the public images of some global brand names like Nike and McDonald were strongly dented due to some unethical behaviors of their suppliers. Now manufacturers need to mind carbon emissions of their products similarly even out of the boundary of their firms.” (Lu et al., 2008)</p> <p>“Therefore, companies may lose customer trust, brand reputation, marketing opportunities and corporate image if they do not expand their CSR activities and standards into the entire supply chain.” (Lee and Kim, 2009)</p> <p>“Despite the potentially competing demands of profitability and compliance with ethical purchasing codes when sourcing internationally, there was little evidence that purchasing professionals in the retail sector would seek cost advantage to the total exclusion of a company’s code. The message appears to have got through that a retailer’s reputation might be seriously damaged if it was caught flouting an important element of its code.” (Pretious and Love, 2006)</p> <p>“This fact represents a significant risk to a company’s public reputation and its attractiveness on the sales market, because it has to take the responsibility for its suppliers in front of the media and critical non-governmental organizations.” (Koplin et al., 2007)</p>
<p><b>Meeting Consumer Expectations</b></p>	<p>“Although the direct customer support for corporate environmental responsibility is still limited to niche markets, media and public opinion groups (such as non-governmental organizations) may steer public opinion and create dramatic turning points by exposing negative (unethical, negligent, exploitive) corporate attitudes.” (Adriana, 2009)</p> <p>“The task of the labelling system is to provide information to consumers and assist consumers to judge the environmental impact of the consumption of the goods.” (Chen, 2005)</p> <p>“Initiated in 2001 with a pledge in their annual report, Westpac responded to a growing tide of consumer discontentment by making a commitment to improve corporate governance, increase transparency and undertake greater stakeholder engagement.” (Keating et al., 2008)</p> <p>“The analyzed companies are aware of the growing expectations coming from customers, which push them to bear some responsibility for the environmental, social and ethical impacts of their suppliers.” (Ciliberti et al., 2007)</p>

Table 3 Continued

**MOTIVATIONS**

MOTIVATIONS	EXEMPLAR QUOTES
<p><b>Attracting New Customers</b></p>	<p>“In light of these developments, the owner of Verner Frang saw the ability to provide certified organic cotton yarn and fabric as an opportunity to differentiate its products and target a growing niche market for eco-textiles.” (Kogg, 2004)</p> <p>“Consumers have indicated that they are willing to pony up more money for goods produced ethically, or for products labeled organic.” (Clark, 2007a)</p>
<p><b>Meeting Legislation/Regulation</b></p>	<p>“...the needs to comply with government regulations, to achieve greater profitability by reducing wastes, and to enhance corporate image through promotion of recycling have urged manufacturers to implement reverse logistics in their supply chains.” (Lau and Wang, 2009)</p> <p>“Other than stakeholders from the supply chain of a company, actors from its competitive and regulatory stakeholder environments are also assumed to have a stake in its environmental responsibility.” (Kovács, 2008)</p> <p>“Entered into 21st century, the problems of energy and environment are becoming more and more prominent. Each government has formulated strict environmental protection laws and regulations to limit the pollution of enterprises, encouraged enterprises which use more environmental and friendly ways in its process of production and operation and punished or forced the enterprises which didn't reach the environmental standards to close.” (Wexing, 2008)</p>
<p><b>Accessing Overseas Markets</b></p>	<p>“Ultimately, the social agenda for sustainability purchasing is about transforming the market to carry a wide range of products and services that encourage health and well-being, support healthy and productive jobs, and reward the operations of responsible businesses.” (Ras and Vermeulen, 2009)</p>

Table 3 Continued

**MOTIVATIONS**

MOTIVATIONS	EXEMPLAR QUOTES
<p><b>Competitive Advantage</b></p>	<p>“Few would do it if it didn’t produce a financial return, and it’s becoming a competitive advantage,” Kifer says. He cites environmental policies as an example, noting that reducing a data center’s cooling requirements can save serious cash in this era of escalating energy costs.” (Pratt, 2008)</p> <p>“Proposition 7. Organizations aiming to join MNC networks (Proposition 6) will adopt ISO 26000 to compete for contracts and opportunities to join the network.” (Castka and Balzarova, 2008)</p> <p>“Responsible sourcing is therefore a business imperative for Marks &amp; Spencer. We believe that this gives us an opportunity both to gain competitive advantage by initiating a proactive responsible sourcing program and to enhance our profile as a worldwide employer of choice and provider of responsibly manufactured products and high quality services.” (Johnson, 2004)</p> <p>“Among instrumental justifications, the two most common ones are references to a differentiation strategy or a competitive advantage through CSR (23% of all codes) followed by reputational gains (16%).” (Preuss, 2009)</p>
<p><b>NGO Pressure</b></p>	<p>“Frequent changes to the standards issued by non-governmental organizations (NGOs) and by governmental regulatory bodies lead to continuous alterations in the amount of pressure exerted on firms.” (Förstl et al., 2010)</p> <p>“NGO pressure for sustainable practices has particularly targeted companies leading global supply chains in diverse industries, including mining, forestry, agribusiness, electronics, garment, and footwear, among others.” (Perez-Aleman and Sandilands, 2008)</p> <p>“Extrinsic motivations for MNEs are gaining in importance as well: the risk of reputation damage triggered by critical NGOs precipitates MNEs to formulate international codes of conduct or principles of ‘corporate citizenship.’” (van Tulder et al., 2009)</p>
<p><b>Ethical Reasons</b></p>	<p>“At Eileen Fisher, responsible labor and environmental practices, grouped under the umbrella of “social consciousness” by the firm, are one of four key values that the company seeks to incorporate into every decision it makes, from ordering office supplies to supply chain decisions, Hall said.” (Casabano, 2010)</p> <p>““We just got into IT outsourcing within the past couple of years, and we’re trying to apply the same ideas: giving back to community, supporting the economies in which we live and work, green initiatives,” says Kifer, who is a group vice president at Applied Materials Inc.” (Pratt, 2008)</p>

## Payoffs

Given the salience of relatively instrumental motivations for sustainably managing international supply chains, we sought to examine the strength and character of evidence regarding the nature of payoffs for such sustainable practices. In stark contrast to broader literatures concerned with aspects of firms' social responsibilities, almost no extant research evaluates the efficacy of involvement in international sustainable supply chain management. Specifically, of the 194 articles analyzed in our study, only 38 (19.6%) directly address the outcomes or implications of sustainable supply chain practices, and only two studies provide quantifiable estimates of the size and direction of the relationship between involvement with sustainable supply chain management and financial and operational performance indicators. Furthermore, in these articles, the measures of performance took the form of perceptions of performance, not independent measurements of performance. More common in extant research are studies that provide qualitative perceptions of likely or experienced benefits from sustainably managing international supply chains.

Thirty-four of the thirty-eight articles that address performance cite evidence of a range of beneficial outcomes. Regarding the dimensions of performance most prevalent in prior research, benefits that are directly experienced by the participating firm feature strongly (in 36 out of 38 studies), whereas benefits to the wider society are less prominent (in only 12 out of 38 cases). Benefits to firms are seen as taking a variety of forms, including enhanced attractiveness to employees, reduced employee turnover and improved employee motivation, the elimination of reputational risks, the maintained or increased attraction to customers, and greater likelihood of compliance with government regulation and legislation. For example, Tencati et al. (2008) note that "our data indicate that the enterprises we studied are starting to benefit from policies that have improved through compliance with codes of conduct and international certifications. In particular, benefits include improvements in productivity, quality, competitiveness, and retention of skilled human resources" (522). Taking a broader view, the vast majority of the evidence suggests that, start-up costs notwithstanding, sustainably managing the supply chain can lead to some substantial, if unquantified and in some ways intangible, benefits.

# How: A Model of Global Sustainable Supply Chain Management Practice

In this section, we focus on the practice of sustainable supply chain management in an international context. We address two main goals. First, we explore evidence concerned with the conditions that facilitate effective engagement with international sustainable supply chain management. These, we show, encompass both inter- and intra-organizational aspects. We then inductively construct comprehensive models of international sustainable supply chain management, which are grounded in data regarding managerial practices, as identified in our systematic review of the literature. Our aim is to synthesize data from the systematic review of management practice to provide a comprehensive multidimensional framework of international sustainable supply chain management practice.

## Facilitators

Given that firms appreciate the motivations for managing their international supply chains more sustainably (which seems likely, given the clear messages embodied in the analysis above), then it becomes of primary importance to create the organizational and inter-organizational conditions that are most conducive to implementing sustainability within international supply chains. To explore the nature of these conditions, we examined articles for references to facilitators of engagement with sustainable supply chain management and distinguished between those that arise within organizations and those that are properties of inter-organizational relationships or the extra-organizational context.

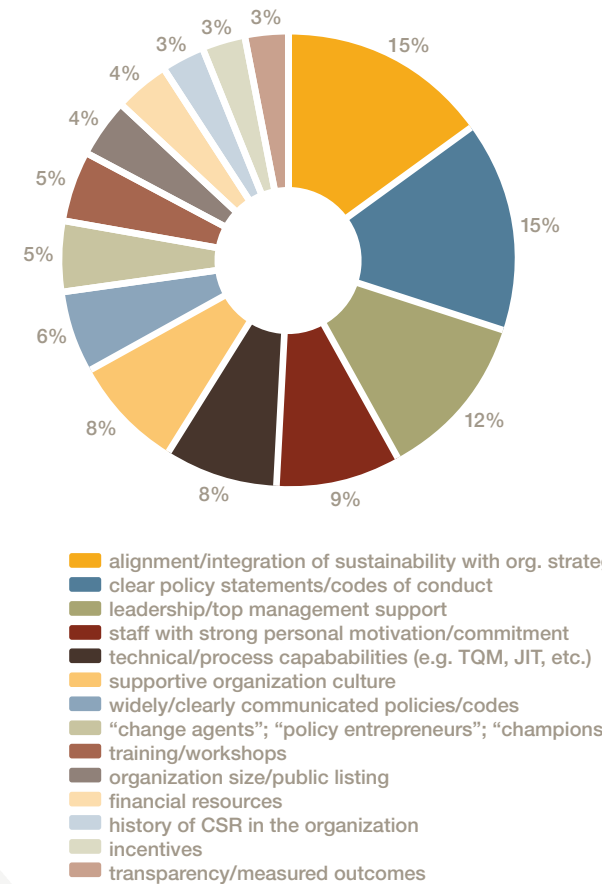


## Organizational Facilitators

Figure 16 illustrates the most commonly identified organizational facilitators of engagement with sustainable supply chain management. The first range of facilitators identified in prior research is very broad, encompassing elements of strategy, organizational design, and resourcing; patterns of policy and communication; and features of culture and individual personality. This diversity perhaps underlines the significant managerial challenge in successfully implementing and embedding sustainability within international supply chain activities. However, within a diverse picture, the strongest evidence suggests the important roles played by leadership support for sustainable international supply chain management are the development of clear policy statements in respect of this activity and the visible alignment of those policy goals with the overall strategies and goals of the company in commercial and strategic terms. The latter enable people within the firm to make sense of sustainable supply chain activities within the scope of their day-to-day activities and to see the contribution of these supply chain activities to the firms' ultimate performance.

Figure 16

### SIGNIFICANT ORGANIZATIONAL FACILITATORS OF ENGAGEMENT WITH INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT



Many, if not all of the facilitators involved, fall into three significant categories, represented in the synthetic model described in Figure 17. Several categories relate fundamentally to organizational purpose and to the congruence and extent of integration between those purposes and international sustainable supply chain practices. So, where firms have a history of involvement in CSR and/or issues of sustainability, and where sustainability is closely integrated with the commercial strategy of the organization, a strong alignment exists between organizational purpose and sustainable supply chain management.

Other areas relate strongly to the policy architecture, which generally accompanies and flows from the centrality to the organizational purpose of sustainability. The extent, clarity, and breadth of communication of these policies act both to set the tone within the organization in terms of sustainable supply chain management and to provide guidance in specific situations.

Lastly, several facilitators relate to people and their activities, both individually and collectively in their roles as leaders, by constructing and maintaining a supportive culture, and in the values and commitment they bring to their organizational roles. Taken together, the three elements of purpose, policy, and people encompass much of the organizational facilitators present in Figure 17.

Figure 17

**SUMMARY OF PRINCIPAL ORGANIZATIONAL FACILITATORS OF ENGAGEMENT WITH SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

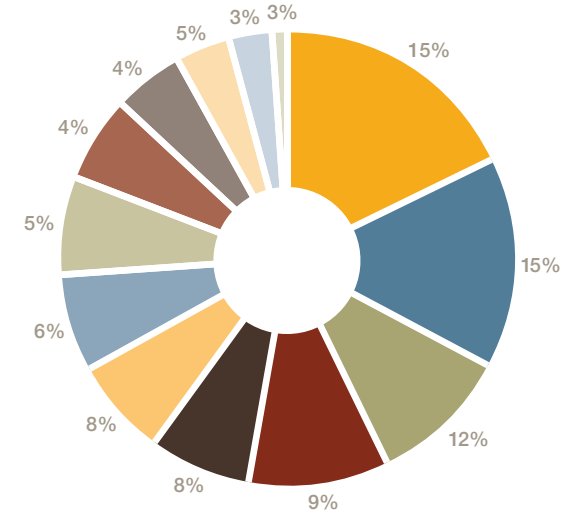


### Inter- and Extra-Organizational Facilitators

Not all of the facilitating conditions for engagement with international sustainable supply chain management originate within organizations. Some of the facilitating conditions relate to firms' environments and to their relationships with other organizations. Figure 18 shows the most prevalent inter- and extra-organizational facilitators of engagement with international sustainable supply chain management, as seen in the literature reviewed. Again, as with organizational facilitators, a rich variety of inter- and extra-organizational facilitators have been identified in the studies we analysed. Among the most commonly cited facilitators are the quality and depth of relationships between a firm and its suppliers and competitors. The importance of relational quality in both horizontal and vertical directions is a marked feature of the facilitators identified in Figure 18.

Figure 18

### INTER- AND EXTRA- ORGANIZATIONAL FACILITATORS OF INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT

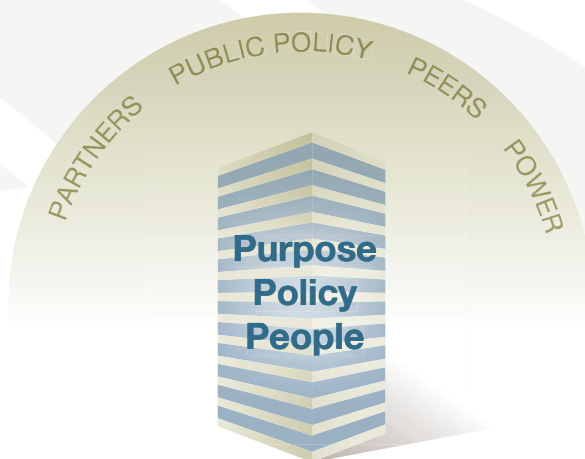


- honesty/respect/trust in supplier engagement
- industry collaboration/partnerships
- capacity to influence/power over suppliers
- collaboration/working with suppliers
- working with NGOs/stakeholders
- presence/use of/working with third-party certification
- knowledge/experience sharing with suppliers
- training/investment in suppliers
- supportive legislation/regulation
- long term contracting/relations with suppliers
- communication/dialogue with suppliers
- incentives in supply relationships
- shared vision with suppliers

Given the distinctive character of the facilitators identified in the previous analyses, we sought to integrate these facilitators into a synthetic model that captures the primary conditions that favour successful engagement with sustainable supply chain management. This model is presented in Figure 19. The model shows the organizational facilitators embedded within, and shaped by, a broader extra- and inter-organizational environment that is characterized by four key factors: (1) the extent of collaboration and cooperation among peer companies in developing industry-level approaches to sustainability issues; (2) the quality of relationships with partners (including suppliers, communities, and NGOs); (3) the demands and supportiveness of the public policy environment; and (4) the power balance in the relationships between buyers and suppliers.

Figure 19

**AN INTEGRATED MODEL OF INTRA-, INTER-, AND EXTRA-ORGANIZATIONAL FACILITATORS OF ENGAGEMENT WITH INTERNATIONAL SUSTAINABLE SUPPLY CHAIN MANAGEMENT**



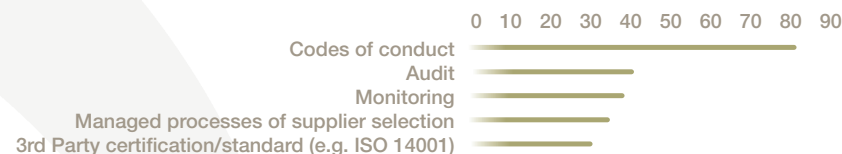
**Baseline Practices Model**

Having considered the conditions that favour a firm’s engagement with sustainable supply chain management, we now turn our attention to the particular practices involved with addressing sustainability in global supply chains. We begin with a discussion of the evidence regarding the most prevalent management practices discussed in the literature concerned with managing international supply chains in a sustainable manner; we then use these data to construct a baseline model of managerial practice that encompasses the most commonly identified practices. After discussing the baseline model, we offer an analysis of problematic features of that model before developing a more comprehensive model, which we describe as a model of “best practice” for managing international supply chains sustainably.

We begin our analysis with an overview of the prevalence of managerial approaches and practices related to managing an international supply chain sustainably that emerged in the analysis of the articles reviewed. Although a large number of specific managerial practices arose in our analysis, five practice areas were vastly more prevalent than the others, as shown in Figure 20. No other managerial practice arose in more than 10% of the articles analyzed.

Figure 20

**THE MOST PREVALENT MANAGEMENT PRACTICES IN RESPECT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT**



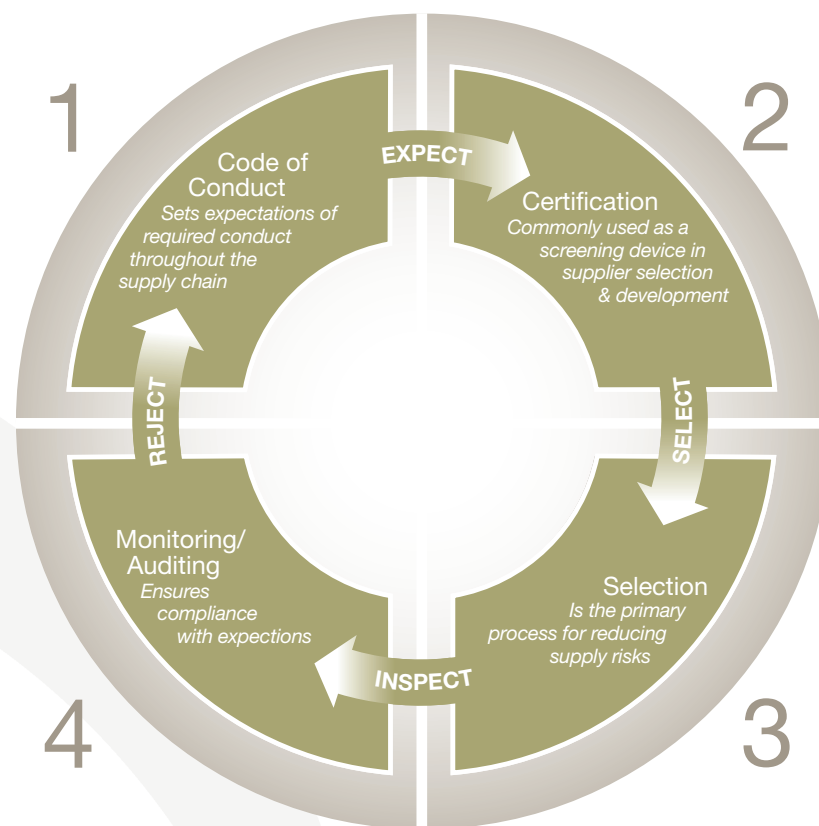
Before describing our baseline model of engagement in international sustainable management, we note two caveats. First, the model emphasizes the processes and tools that apply to identifying and working with new suppliers in respect to their sustainability, not, for example, the tools for implementing principles of sustainability within an existing “legacy” supply base, a point that we revisit, below. Second, although we ultimately highlight some powerful concerns with this baseline model of integrating sustainability into international supply chains, we note at the outset that several of this model’s elements – especially when worked on in conjunction with external entities – stand as a significant positive step toward “fully integrating” sustainability into supply chains relative to situations where these practices are absent or only partially present. Hence, from a normative standpoint, although we offer critiques of the baseline model, we must also recognize its benefits to less developed or absent managerial practice.

The baseline model, described below, embodies four principal processes and four arenas of management practice, which are most commonly discussed in the extant literature. The first element is the use of codes of conduct and related documents (e.g., codes of ethics and standards expectations) by which expected conduct in supply chain partners is codified.

Significantly, such codes are often unilaterally developed by lead companies in supply chains and thus reflect those elements seen as being most problematic or risky from the perspective of these companies. Along with statements of expectations typically come demands for third-party certifications (e.g., SA8000 and ISO14001) that take the form of institutionalized expectations in relations between buyers and suppliers. These expectations can be applied to both existing and new suppliers.

Figure 21

**A "BASELINE" APPROACH TO SUSTAINABLE SUPPLY CHAIN MANAGEMENT**



In contexts where firms are selecting new suppliers, codified expectations and requests for certifications are understood as being central elements of minimizing risks associated with operating in international supply chains. Having set clear expectations and, as far as is practical, selecting suppliers that have the certifications that offer assurance of a capability or willingness to meet those expectations, the most important management practices relate to evaluating supplier performance through processes of monitoring and, sometimes, the more formal process of auditing. The specific practices involved in evaluating suppliers through processes of inspection can be varied – for example, processes of data collection in respect to key performance indicators might be approached through a supplier questionnaire or visits to suppliers’ sites; visits can take various forms, such as announced versus unannounced visits, can occur at different frequencies, and can involve a range of different actors, such as company representatives or managers or independent auditing organizations. Although the particulars of the practices may exhibit considerable variety, all practices share the same fundamental purpose – to inform buying organizations whether their expectations of sustainability issues are being met in suppliers’ operations. This information feeds the final process in our model, which involves retention versus rejection of suppliers on the basis of the evidence identified in the inspection phase. Where noncompliance is identified, suppliers risk losing contracts as firms may choose to shift their orders to compliant suppliers, not necessarily instantaneously and without dialogue, but certainly as part of the core process by which such risks are managed in these international supply chains.

Overall, the model describes a process that places great emphasis on the guidance of the lead buyers in the various stages of the process. In one sense, this process may be described as a “command and control” system, whereby the rules of engagement and the processes of accountability lie principally, and almost exclusively, with the lead buying organizations.

## Limitations of the Baseline Model

As we note above, although research in this area has yet to provide robust analysis of the efficacy of specific managerial practices in relation to sustainable supply chain management, and although the baseline model offers numerous advantages, both from a normative and a business standpoint, relative to the absence of practices, many themes arose from the literature in relation to the problematic aspects to this model. These issues are identified in Table 4. In Table 5, we have included examples of some of these problems as they arise in studies in our survey.

Many of the difficulties and critiques expressed in the literature stem from the top-down and unnegotiated approach that many firms use when developing codes of conduct that set out their expectations of suppliers. The unilateral development of supplier expectations generates several related problems. First, in the eyes of the suppliers, the codes lack legitimacy, which tends to generate resistance to their content. Secondly, such codes are typically poorly communicated, reinforcing local resistance to, and ignorance of, the expectations embodied in policies or codes. Thirdly, codes and policies, by their nature, tend to be relatively static, whereas the issues present in supply chains and in wider societies can change relatively quickly, leading to gaps and ambiguities in their implications. Lastly, codes can embody culturally alien and counter-productive demands that don’t fit with local needs and perspectives. This lack of alignment not only leads to resistance, reducing the effectiveness of codes to manage risks, but where implemented, can lead to unforeseen negative consequences.

Table 4

**BARRIERS TO THE EFFECTIVENESS OF THE BASELINE MODEL**

<b>EXPECT</b>	<ul style="list-style-type: none"> <li>• Unnegotiated expectations lack legitimacy with local stakeholders.</li> <li>• Expectations codified in codes of conduct tend to remain relatively static and are thus unresponsive to new issues or changes in stakeholder expectations.</li> <li>• Codes and their underlying rationale are seldom communicated effectively to supply chain partners, rendering them ineffective.</li> <li>• Implementation of culturally unsophisticated codes can lead to unforeseen negative consequences (for firms or society).</li> </ul>
<b>SELECT</b>	<ul style="list-style-type: none"> <li>• Selection tends to favour those with developed capabilities over those without such capabilities; suppliers with developed capabilities are not always available.</li> <li>• Suppliers often lack the know-how to implement sustainable practices.</li> <li>• Certification imposes considerable costs on supply chain partners.</li> </ul>
<b>INSPECT</b>	<ul style="list-style-type: none"> <li>• Monitoring and auditing approaches undermine trust and commitment in buyer–supplier relationships.</li> <li>• Intensive monitoring can incentivize unethical practices that hide issues from supply chain partners.</li> </ul>
<b>REJECT</b>	<ul style="list-style-type: none"> <li>• Lack of security of contract undermines suppliers' willingness to invest in alternative (more sustainable) practices.</li> <li>• De-selection of suppliers leads to a restriction of firms' supply base to the point where, in some circumstances, sourcing sustainably is impossible.</li> <li>• Suppliers often lack the resources to implement new approaches, and countervailing pressures (for example, the need for timely deliveries) tend to undermine the conditions necessary for compliance among partners.</li> </ul>

Prior research also suggests that selection is a problematic part of managing an international supply chain sustainably. To some degree, this difficulty reflects our earlier observations regarding the presence of a large existing “legacy” supply base within most companies; the strength and value of these existing relationships mean that ensuring that sustainability issues are addressed through processes of selection and rejection alone are unlikely to be practical. In addition, selection carries other concerns and issues, including imposing on supply

chain partners significant cost burdens that often accompany third-party and other certification processes. Perhaps more problematic than either of these issues is the essential competitive viability of selecting only from among those suppliers with developed capabilities when most international supply chain activities involve sourcing from less developed and emerging economies, typically characterized by relatively weak institutional infrastructures and firms that generally lack the capacities and competencies to meet Western operating

standards without considerable support and investment from the buying organizations. Attempts to source only from well-qualified organizations from these contexts risks an over-concentration of a firm's supply base, and, thereby, the attendant risks of opportunism, lack of security in supply, and dependence upon firms offering higher costs of sourcing.

Finally, inspection through monitoring, and the more formal process of auditing, has been subject to significant criticism in prior research. The most prominent reasons relate to the implications of rigorous and robust processes of inspection on the overall quality of the buyer-supplier relationship. According to this perspective, the act of inspecting suppliers' plants signals a lack of trust and confidence that suppliers intend to comply with buying firms' expectations in relation to sustainability performance, which thus undermines the buyer-supplier relationship by emphasizing the power and status of buying companies. This undermining of the mutual character of the buyer-supplier relationship can lead to suppliers acting opportunistically in respect not only to sustainability but also in other areas of the buyer-supplier relationship, such as in terms of product quality, perhaps by withholding specific investments that are necessary to meeting buyers' expectations. These concerns are perhaps more pronounced in terms of the more invasive elements of inspection systems, such as unannounced company visits to suppliers, which belie a lack of shared interests between buyers and suppliers and emphasize a "policing" of the supply chain within the processes of monitoring.

## Best Practices Model

In light of these issues and other, less commonly cited, practices in the extant literature, we propose a revised synthetic model that builds upon the core of the baseline model but encompasses adaptations specifically designed to address the baseline model's possibly problematic elements. Hence, this revised synthetic model of best practice, provided in Figure 22, attempts to address the perceived failings of the orthodox model by introducing new areas of practice and substantial revisions to the practices by which existing areas are implemented. Overall, the revised model is characterized by three key underlying areas of practice:

- a) **Externality/Inclusiveness** – working closely with a range of external actors – in particular, with the suppliers themselves, NGOs, communities, and industry peers – to develop (i) improved visibility of emerging issues, (ii) enhanced buy-in among local stakeholders, (iii) a clearer understanding of how existing practices undermine the effectiveness of sustainable supply chain initiatives, and (iv) a more specific set of practices that directly address the underlying issues.
- b) **Supplier development** – increased attention to suppliers' situational impediments to developing sustainable practices, followed by investment and changes in practices designed to overcome these difficulties. Greater willingness is needed to support and invest in supplier development to help build suppliers' capacity to meet buyers' needs and to reduce the willingness to withdraw contracts from non-compliant suppliers in favour of pursuing a developmental route.
- c) **Reflexivity and learning** – inclusion within all sub-processes, and within the model as a whole, those practices from which experience and learning can be capitalized upon to develop more robust future practice. Central to this approach are iterative processes of communication and measurement that inform practice development.



Table 5

**ADVERSE CONSEQUENCES OF THE BASELINE MODEL**

ADVERSE CONSEQUENCES OF THE BASELINE MODEL OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT		
AREA	CONCERN OR PROBLEM WITH THE BASELINE MODEL	EXEMPLAR QUOTE(S)
<b>Expect</b>	Un-negotiated and culturally naive expectations lack legitimacy with local stakeholders	<p>Inactive and re-active codes represent a 'liability' approach towards the management of international supply chains, in which the interaction with stakeholders generally is one of confrontation and/or evasion. Pro-active codes require an active involvement of stakeholders. (Rob van Tulder, Jeroen and Van Wijk and Ans Kolk, 2009)</p> <hr/> <p>It is thus important to realize that the implementation of codes of conduct can have serious unintended consequences. To simply assume that suppliers should implement a code of conduct which is drawn up in an office in London or New York, and that this will improve workers' conditions in the developing world, seems not only unrealistic but also naive. It is vital to anticipate the ultimate impacts of implementing codes of conduct, to contextualize their application (instead of simply demanding compliance with conditions that make little sense in a developing country context), and to incorporate the voices of suppliers, workers and communities in the design, implementation, monitoring and impact assessment of codes in order to ensure a better fit between what the latter groups actually prioritize as opposed to what Northern companies, trade unions, NGOs and consultants think they ought to prioritize. (Peter Lund-Thomsen, 2008)</p>
<b>Select</b>	Codes, and their underlying rationale, are seldom communicated effectively to supply chain partners, rendering them ineffective	<p>The effectiveness of codes may be constrained by unsolved tension between corporations' impetus for profit maximization and commitment to social responsibility, hard-nosed competition realities at marketplace, and insufficient state protection of labor rights. (Xiaomin Yu, 2008)</p>

Table 5 Continued

**ADVERSE CONSEQUENCES OF THE BASELINE MODEL**

ADVERSE CONSEQUENCES OF THE BASELINE MODEL OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT		
AREA	CONCERN OR PROBLEM WITH THE BASELINE MODEL	EXEMPLAR QUOTE(S)
<b>Select</b>	Suppliers often lack the know-how to implement sustainable practices	The main challenge for the future is moving away from an inspection and auditing mentality and towards capacity building on the ground and creating longer term trusting relationships down the supply chain. This is not going to be easy, particularly for SMEs, which will need the cooperation of a range of agencies, NGOs and business throughout the supply chain. Unfortunately, CSR managers report that in a number of locations it is almost impossible to find local partners that have the ability, knowledge and know-how to help. (Richard Welford and Stephen Frost, 2006)
<b>Inspect</b>	Certification imposes considerable costs on supply chain partners	<p>Obstacles with the implementation encountered by the general management were associated with a lack of support from the buyers, since they are not sharing the costs involved to become compliant with the standard, nor are there any contracts to ensure that the standard represents a safe investment. The "costs" refers to increased labour costs as well as substantial costs for certification, audits and consultation. Combining the standards' requirements while also keeping attractive prices for the buyers is therefore difficult. Another challenge for the human resource managers was to integrate SA8000 into the daily procedures and to increase the comprehension of SA8000 among workers, despite a high labour turnover and a weak union affiliation. Having a committed top-management, in addition to buyer support, appears to be facilitating factors for implementing a labour standard. (Ingrid Stigzelius and Cecilia Mark-Herbert, 2009)</p> <p>High certification and consulting fees create an impression of commercialization of corporate social accountability standards in China. In order to be a certified supplier of a particular multinational company or to be certified under a particular set of corporate social standards established by a non-governmental organization, suppliers have to go through a complex certification procedure. (Li-Wen Lin, 2007)</p>

Table 5 Continued

**ADVERSE CONSEQUENCES OF THE BASELINE MODEL**

ADVERSE CONSEQUENCES OF THE BASELINE MODEL OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT		
AREA	CONCERN OR PROBLEM WITH THE BASELINE MODEL	EXEMPLAR QUOTE(S)
<b>Inspect</b>	Monitoring and auditing approaches undermine trust and commitment in buyer-supplier relationships	High levels of monitoring can signal distrust on the part of the monitoring party, and lead to opportunistic acts including noncompliance with established agreements. Monitoring also increases the tendency of the supply chain partner who is being 'bullied' to push the boundaries and engage in non-productive, even harmful, activities just to show its dislike for the bully's actions. (D. Eric Boyd, Robert E. Spekman, John W. Kamauff and Patricia Werhane, 2007)
<b>Reject</b>	Intensive monitoring can incentivise unethical practices that hide issues from supply chain partners	<p>Central to the whole debate surrounding auditing and inspections is the issue of the extent to which companies are able to cheat in order to cover up non-compliance with codes of conduct and regulatory requirements. We have been told that companies often keep several sets of books in order to be able to show auditors that staff work and are paid for a number of hours as specified in the code of conduct. Competition in the auditing business has seen prices for audits plummet as smaller and local companies enter the market with cut price terms (in the Pearl River Delta in China, for instance, audits are being offered for prices under US\$300). As a consequence, audits are done more quickly and with little attention to quality. Staff are under-trained and turnover is high. (Richard Welford and Stephen Frost, 2006)</p> <p>A related debate over codes of conduct and monitoring focuses on whether those conducting the compliance audits can be trusted to make accurate and honest assessments of factory conditions and transparently report their findings. Critics identify a number of important conflicts of interest that exist. (Richard Locke Thomas Kochan, Monica Romis and Fei Qin, 2007)</p>

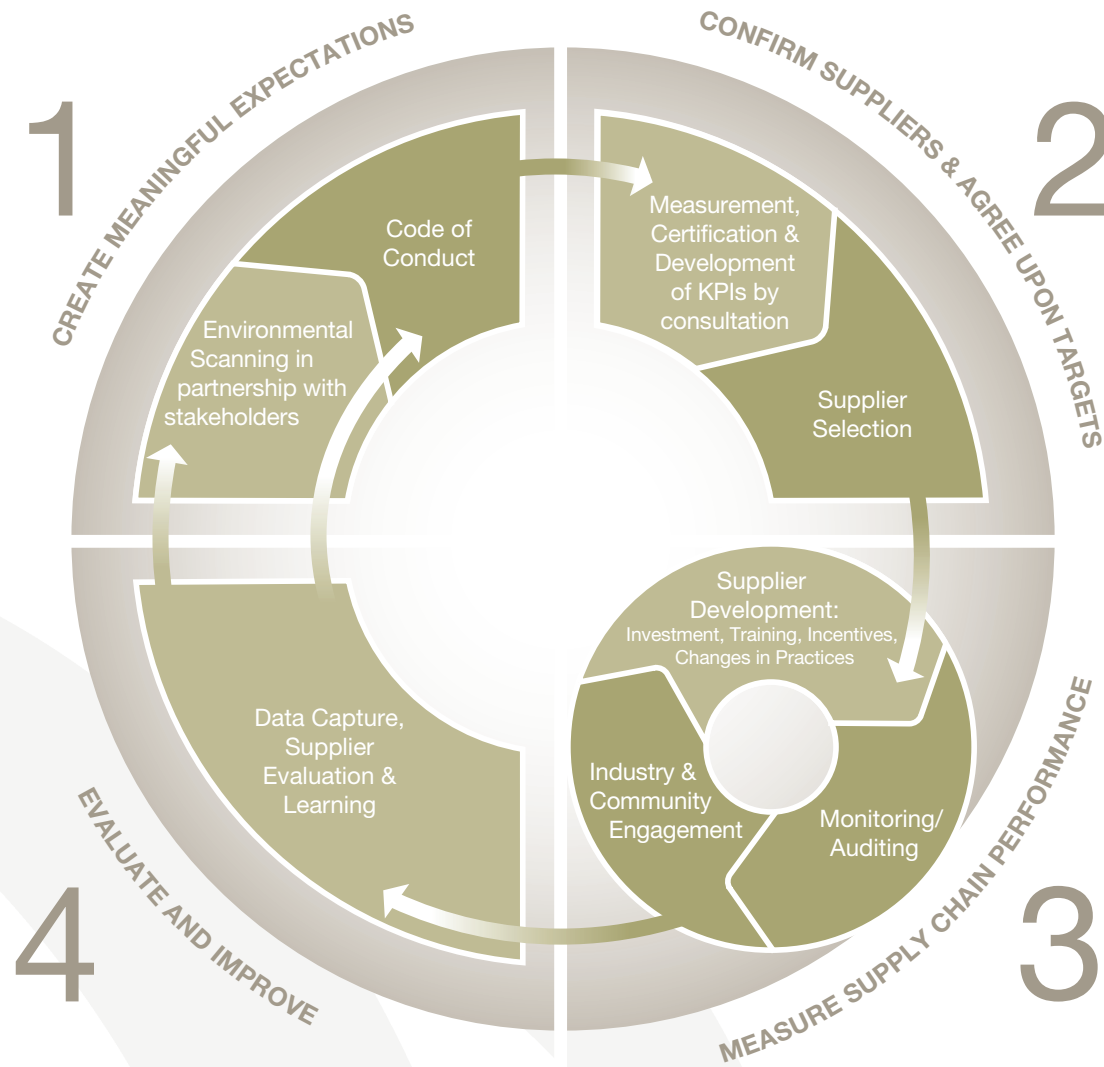
Table 5 Continued

**ADVERSE CONSEQUENCES OF THE BASELINE MODEL**

ADVERSE CONSEQUENCES OF THE BASELINE MODEL OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT		
AREA	CONCERN OR PROBLEM WITH THE BASELINE MODEL	EXEMPLAR QUOTE(S)
<b>Reject</b>	De-selection of suppliers leads to a restriction of firms' supply base to the point where, in some circumstances, sourcing sustainably is impossible	<p>In most procurement situations, a supplier phase-out, resulting from deficient standards, is not an option, as this would further enhance dependency on the remaining suppliers in that market. By sustainable supplier development, we foster competition among our suppliers. (Kai Foerstl, Carsten Reuter, Evi Hartmann, and Constantin Blome, 2010)</p> <hr/> <p>It should also be stressed that the greening of the supply chain came at a cost for Verner Frang. The company pay a premium, at all stages of the chain. In comparison with conventional production, the cost of sourcing, purchasing, administration and control is considerably higher than before and Verner Frang has lost some of its negotiating power as the company has become dependent, to a higher degree than before, on a limited number of suppliers. (Kogg, 2003)</p>
	Suppliers often lack the resources to implement new approaches, and countervailing pressures (for example, for timely deliveries) tend to undermine the conditions necessary for compliance among partners	<p>First, price pressure, production complexity, and contract duration have been frequently related to supplier's social and ethical conduct. However, the reality of suppliers' compliance with Supplier Codes of Conduct (SCC) is inconsistent with these intuitive antecedents. The mediating effect of interorganizational governance clearly highlights that buyers play a significant role in the implementation of SCC in developing countries. The absence of enforcement on relevant rules, laws and governmental enforcement of CSR in the developing world is propelling local suppliers in a race to the bottom in wages, working conditions and other social and ethical issues (Ross and Chan, 2002). The enforcement of SCC, therefore, has to be mainly through the efforts of Western buyers. (Bin Jiang, 2009)</p>

Figure 22

**PROPOSED BEST PRACTICE MODEL OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT**



## Develop Expectations

The revised model begins by improving the policy development processes for engaging with stakeholders, in order to encourage suppliers to be more open to complying with emerging issues that might have fallen outside the scope of the lead suppliers' policy development. In addition, engagement helps those policy frameworks that are developed to exhibit a greater cultural sensitivity, thereby providing more useful and more legitimate advice to suppliers. The involvement of suppliers in these processes helps to ensure the setting of reasonable goals that suppliers buy into, thereby reducing barriers to implementation of practices that improve the sustainability of international supply chains.

Practices related to this sub-process focus on two core aims: (i) developing an enhanced capacity to anticipate new challenges and issues as they arise in the context of international supply chains through robust processes of environmental scanning, and (ii) engaging with widely drawn stakeholder groups to encourage their participation in the development of a firm's code of conduct and other policy documents to enhance the applicability, legitimacy, and efficacy of firm's policy architecture.

### *Specific practices in the area of environmental scanning include:*

- Expert assessments through workshops with academics, NGOs, etc.
- The establishment of an issues-oriented workshop series
- Sourcing country risk analysis through engagement with local experts and NGOs
- Scanning of media reports on a wide range of industries and geographical contexts to determine patterns of issues arising and their relevance for businesses
- Frequent communication with on-site managers to discuss new issues

### *Specific practices in the area of stakeholder engagement include:*

- Detailed and objective communication with suppliers, using mediation where necessary and/or useful
- Frequent interaction with suppliers, often involving on-site dialogue
- Explicit acknowledgement of cultural issues and challenges within supplier dialogue
- Communication of CSR values
- Use of multiple communication channels, e.g., websites, codes of conduct, and training
- Inviting suppliers' representatives to visit buyers' headquarters and/or plants
- Translation of company documents into numerous local and regional languages and dialects to enhance understanding and communication

### Agree on Targets

As in the baseline model, the expectations generated by this process can be applied differently to new and existing suppliers, with policies guiding both the selection of new suppliers and the development of existing suppliers. However, unlike the baseline model, this process has less of a slavish reliance upon simple tick-box criteria as a means of selecting suppliers and a more prominent recognition that supplier development may take place concurrently with, or even before, the inclusion of a new supplier into a firm's supplier base. The second sub-process also reflects a more subtle, contextually informed, and negotiated development of performance metrics that permit, and even encourage, firms to accept suppliers with poor current sustainability performance with a view to embarking on a step-by-step process of supplier development and improvement in this respect.

Practices related to this sub-process focus on developing an agreed-on, or at least a previously discussed, set of performance metrics with respect to sustainability issues in international supply chains. Discussions with actual or potential supply chain partners regarding the application of broad expectations of sustainability in the buyer-supplier

relationship are pre-emptive in nature. They are intended to secure buy-in from suppliers and to highlight areas of concern with respect to suppliers' capacity to meet performance thresholds. For existing suppliers, this process is part of an ongoing dialogue within which a variety of performance metrics can be discussed. For new suppliers, the ability and apparent willingness of suppliers to engage in this dialogue can form a part of supplier selection processes.

*Specific practices in the area of developing targets for sustainability include:*

- Holding awareness seminars with suppliers to explore and raise issues and to offer opportunities for supplier-led solutions to those issues
- Developing detailed sets of key performance indicators (KPIs) with suppliers
- Benchmarking of KPIs across suppliers and industry peers to ensure robustness of criteria to external scrutiny
- Consulting with both company and external stakeholders (e.g., environmental non-governmental organizations) to evaluate practicality and validity of performance measures
- Defining clear systems and processes through which reliable performance data are to be obtained

## Supplier evaluation and development

The third sub-process retains from the baseline model the central aim of evaluating the sustainability performance of international supply chain partners, but reflects a more subtle range of management practices designed to avoid alienation and mistrust among suppliers in favour of developing an investment culture within the supply chain and encouraging candour among suppliers regarding the origins and character of any sustainability risks. Freedom from the immediate threat of contract cessation (in all but the most egregious instances) encourages a longer term perspective within buyer–supplier relationships, which, in turn, creates the conditions for deep investments in training, equipment, and processes that support improved sustainability performance. As in other process areas, more subtle managerial practices in existing areas are accompanied by additional practice areas designed to both improve the legitimacy of the buyers’ policies within the local context and generate information and learning regarding the position of suppliers within local communities. Through this process, the extent and focus of a given supply chain’s spillovers into local communities can be maximized, and any revealed unanticipated harms can be eliminated.

Practices related to this sub-process focus on evaluating the progress made by suppliers in terms of achieving sustainability targets and, where performance goals are unmet, diagnosing the underlying reasons for such failures so that a program of supplier development activities can be implemented to improve future performance.

*Specific practices in the area of evaluating progress with respect to sustainability targets include:*

- Developing clear and structured action plans for non-compliant suppliers
- Implementing “probation periods” during which suppliers have sufficient time to develop and implement plans of action to address issues
- Implementing a “risk register” that records the incidence of non-compliance so that suppliers’ performance and remediation can be evaluated over time
- Using local community-based evaluators (e.g., NGOs, key independent informants) to gather informal intelligence on conditions in suppliers’ plants and suppliers’ impacts on communities
- Introducing a series of supplier recognition and reward programs that award praise and publicity to suppliers achieving excellence in the management of sustainability

*Specific practices in the area of supporting supplier development to enhance their capacity to meet targets for sustainability include:*

- Involving company staff in on-site training of suppliers
- Working with suppliers to develop enhanced capabilities for data and information capture with respect to sustainability information
- Training suppliers to develop knowledge and awareness through issue-based sessions, role-playing, multilingual training materials and manuals
- Hosting supplier conferences to facilitate cross-supplier learning and knowledge sharing
- Working with a reduced supplier base to concentrate resources and attention on the development of a smaller number of suppliers
- Fostering and incentivizing long-term relationships with suppliers through long-term contracts and by paying price premia to compliant suppliers
- Investing in suppliers by providing equipment, implementing changes in working practices, offering low interest rate loans for new equipment and technology, and improving safety equipment



## Evaluate and Learn

The fourth sub-process involves developing (1) an organizational capacity for managers to learn on a continuing basis from their experiences in managing a sustainable international supply chain and (2) external transparency and accountability in terms of achievements related to sustainable supply chain management. Transparency and accountability help reinforce commitments the firm is making in terms of sustainable supply chain management. They provide a mechanism by which governance processes can evaluate the efficacy of such company initiatives. Communication with internal and external stakeholders reassures stakeholders that company commitments are material and are a core vehicle through which sustainability practices are leveraged. Lastly, analysis and evaluation of company experiences help to feed into revised expectations and management practices, thus “closing the loop” on a firm’s engagement with sustainable supply chain management.

*Specific practices in the area of learning from, and communicating on, sustainable supply chain management include:*

- Comprehensive and verified reporting of supply chain compliance data, in addition to case studies of best practices and examples of non-compliance
- Establishing an industry-leading position by hosting cross-industry problem-sharing workshops and a supplier benchmarking group
- Establishing a company taskforce composed of in-house professionals and external academic and NGO expertise that reviews performance evidence on a quarterly basis to identify patterns and explore possible solutions

# conclusions

## Next Steps for Practitioners

Our systematic review of knowledge on managing sustainability in international supply chains holds significant implications for evolving patterns of practice in this arena. We have shown that the pattern of issues in international sustainable supply chains are distinct from those typically addressed in supply chain research and, specifically, that issues related to employee welfare and rights are the most pressing and prevalent issues. Raising awareness regarding the subtleties and breadth of these issues among supply chain professionals is, we believe, an important first step toward developing stronger managerial practice with respect to international supply chain sustainability.

A second area where our study has identified significant challenges is that of developing the necessary organizational and inter- or extra-organizational capabilities to effectively manage sustainability within international supply chains. We identified the need to strongly tie the management of these issues to a firm's purpose and core commercial strategy; the need to support this strategy with a clear, and clearly communicated, policy infrastructure; and the need to recruit, retain, and develop staff that have the capacity and commitment to implement those policies. In our research, we see the first of these challenges as the area in which firms are typically most lacking. Also, firms often fail to communicate the strategic importance of managing sustainability, especially when a countervailing strategic logic is available (for example, the need

to speed up the time to market, or the need to manage costs in difficult commercial conditions). Managing international supply chains sustainably is a core responsibility of firm leadership and a clear priority for most businesses.

We showed that other pre-conditions for engagement with sustainability lie outside the organization and are strongly associated with how the firm relates to its peers and to its supply chain partners. Here, the evidence suggests that coordinated industry action often plays a critical role in successfully developing sustainability throughout an international supply chain by developing a norm of compliance and excellence in sustainability, which creates a competitive level playing field through which incentives for unsustainable supply chain management are reduced. Therefore, we see a clear imperative for firms, wherever possible, to engage in developing the capacity for action across an industry sector.

Perhaps most importantly, our research suggests that a developmental, supportive, and mutually trusting approach to managing sustainability issues in international supply chains may offer the most robust set of practices by which firms can minimize their exposure to risks and at the same time exploit a range of opportunities for performance enhancement in the buyer-supplier relationship. While we recognize that these “high commitment” practices require substantial engagement from lead procurers and that these practices may not be suited to every organizational context, our view is that they stand as aspirational “best practices” by which companies can benchmark their own progress toward managing their international supply chains sustainably.

## Future Research Agenda

Our review demonstrates that much research can be done to advance our understanding of the development, implementation, and performance of sustainable practices within international supply chains. We have highlighted that the existing research is highly diverse and relatively limited in both quantity and, to some degree, in quality, relative to related fields. These observations offer the potential for significant contributions to be made in a number of important areas. We restrict our attention to three areas that we believe are particularly important to address. The first area concerns research that examines the performance implications of sustainable supply chain management, particularly with respect to the range of “high commitment” practices that we advocate in this review. Existing evidence is very thin but the evidence that does exist suggests that significant and varied performance benefits can be achieved by engaging with sustainability in supply chains in the ways we suggest. Addressing this deficit in existing research involves real challenges, particularly in relation to the units of analysis addressed (such as the buyer-supplier relationship and the entire supply chain, the firm); developing concrete performance metrics, given the variety of these present; and selecting appropriate time frames over which performance is to be judged. Nonetheless, this is an important challenge to meet, not least because our evidence suggests that firms understand sustainable supply chain management primarily with respect to its risk management aspects rather than its opportunity creation aspects.

The second area that future research should address is the challenge of building and testing theory. Supply chain management, for many positive reasons and with numerous benefits, remains a largely atheoretical field. This limits the scholarly and pragmatic contributions that can be made, particularly in light of the vastly diverse, largely case-based body of empirical knowledge. Without theory, it is impossible to aggregate the wide range of evidence seen in the studies we have analyzed to promote deeper understanding of the mechanisms and processes involved in managing international supply chains sustainably. Without greater understanding of these processes and mechanisms, it is difficult to offer to practitioners empirically validated predictions that can guide future research questions. We have sought to inductively build descriptive theoretical models to guide practice, but research needs to complement our models with deductive theory building from which further implications for practice and research can flow.

Finally, there is a need for more broadly based empirical research in this arena. While the variety of anecdotal case study and industry-oriented research that abounds provides a sound exploratory basis for identifying important issues and themes, this research is, by its nature, unable to offer the sorts of robust cross-industry, cross-context, benchmarks for research and practice that future research needs. Clearly, the research we have examined focuses primarily on industry sectors for which international sustainability issues are prominent. Further large-scale research that offers these comparative elements would help us better understand the extent and character of variation in how firms approach the challenges of managing sustainability in their international supply chains and would offer more insight into the contingencies involved in these approaches.

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# appendices

## Appendix A: Full Methodology

### The systematic review approach

The systematic review approach, developed as a counterpoint to the traditional thematic literature review, originated to provide a more robust evidential basis for public policy formulation in the fields of healthcare, medical research, and education (Tranfield et al., 2003). Traditional literature review approaches have been identified with numerous problems, including a high degree of subjectivity and lack of generalizability (Mulrow, 1994). To mitigate, if not entirely avoid, these concerns, the systematic literature approach reviews literature through a structured approach that is transparent, replicable, and (comparatively) scientifically objective (Tranfield et al., 2003).

The hallmarks of systematic literature reviews include “clear goals, reproducibility, a broad and inclusive search based on merit thereby reducing reviewer bias, and incorporating a synthesized approach to organize the literature” (Walker, 2010, 358). The perceived benefits of the systematic review process have contributed to a growing popularity within business and management studies in recent years (Greenhalgh et al., 2004; Pittaway et al., 2004; Crossan and Apaydin, 2010; Rashman et al., 2009; Walker, 2010). Systematic literature reviews proceed according to a discrete series of steps: (1) identifying relevant literature and assessing its relevance and usefulness, (2) systematically extracting data from the identified studies, (3) analyzing the collected data, usually comprising a descriptive overview of the data and a synthetic overview. We discuss our approach to these steps in turn.

### Identifying relevant literature

As we note above, a primary hurdle in conducting a systematic literature review arises from the breadth and contestation of the term *sustainability* and its relation both to a variety of parallel terms, such as *corporate social responsibility* and *ethics*, and to a larger number of subsidiary terms that relate to elements of sustainability. Being aware that a wide range of meanings and dimensions of sustainability have been applied in prior research, we deliberately took a broad approach to selecting search terms to encompass the variety of both the definitions being used and the associated constructs present in existing research. Thus, following Carter and Rogers (2008), we began with a broad conception of sustainability as encompassing “three components: the natural environment, society, and economic performance [which] corresponds to the idea of the triple bottom line, a concept which simultaneously considers and balances economic, environmental and social goals from a microeconomic standpoint” (364). While this view of sustainability offers a convincing high-level view of the phenomenon, such a view encompasses a wide range of concepts and constructs that need to be operationalized for the concrete purposes of identifying relevant literature.

To compile our list of search terms, we first reviewed several recent literature reviews (Carter and Rogers, 2008; Carter and Easton, 2011; Seuring and Muller, 2008; Sarkis et al., 2011; Srivastava, 1997) and recent contributions from leading journals in the operations management field (e.g., Kleindorfer et al., 2005; Linton et al., 2007). After having established a primary set of 45 keywords to be used as search terms (some with variants and/or extensions, for example *sustainab\**, which encompasses both *sustainable* and *sustainability*), we sought feedback from a panel of industry, academic, and public policy experts to refine the set of concepts for our initial search string (described fully below). This process led to the addition of five new terms.

Like *sustainability*, *supply chain management* is a term with contested meaning and encompasses a wide range of processes and practices (New, 1997; Lummus et al., 2001; Mentzer et al., 2001; Kauffman, 2002). Reflecting this view, Kathawala and Abdou (2003, 141) note that supply chain management “has been poorly defined and there is a high degree of variability in people’s minds about what is meant.” As is the case with the term *sustainability*, our approach with *supply chain management* is to try to reflect the plurality of meanings in our search terms. Mentzer et al. (2001) defined *supply chain management* as “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (18). While that definition provides a sound basis upon which to define *supply chain research*, it suffers from a similar weakness to that noted above by not articulating the specific practices and activities that constitute supply chain management. In terms of issues of sustainability, in addition to reviewing sustainable supply chain research, we examined literature reviews that sought to clarify the scope and content of supply chain

management (Croom et al., 2000; Burgess et al., 2006) and a sample of recent studies in leading outlets. This process led to an initial list of 13 search terms, which, using the same process of soliciting advice from experts described above, was expanded to a final list of 18 search terms.

Building upon this process, we constructed a search string that used two Boolean terms: “OR” to incorporate alternative terms within each of the two categories of keywords and “AND” to establish links between the categories of keywords. Hence, our search string was: (carbon emissions OR carbon footprint OR carbon mapping OR corporate social OR responsibility OR diversity OR energy management OR environment OR environmental OR Fair Trade OR health OR human rights OR ISO 14001 OR MBE OR minority OR minority business enterprise OR MWBE OR philanthropy OR resource conservation OR safety OR social enterprise OR social responsibility OR sustainability OR sustainable OR sweatshop OR triple bottom line OR women-owned OR working conditions OR ethics OR ethical OR responsible OR responsibility OR codes of conduct OR pollution OR green OR ecological OR unethical OR waste OR child labour [or labor] OR discrimination OR SA 8000 OR monitoring OR moral OR closed-loop OR life-cycle OR reverse logistics OR recycling)

AND

(distribution OR procurement OR purchasing OR supplier OR supply chain OR supply chain management OR supply management OR buying OR supply OR logistics)

We applied this search strategy to initial literature searches using the Web of Science and EBSCO Business Source Premier databases, which we chose for their complementary strengths. The Web of Science database offers the benefits of an in-built quality criterion – inclusion on the Institute for Scientific Information (ISI) Social Science Citation Index (SSCI) – and a broad coverage across numerous disciplines. This database has also recently begun to encompass conference papers, thus widening the potential scope of our review to encompass unpublished research. EBSCO has a broader range of

coverage in the business and management domain, including several prominent journals in the areas of operations and supply chain management, ethics, and sustainability, which are not represented on the SSCI. EBSCO also gave us access to business and practitioner literature. In addition, we followed many of the steps taken by other researchers in the course of their systematic reviews, including a) a careful analysis of those papers included in previous literature reviews that might potentially have relevance; b) a search for practitioner and business articles using the Factiva database of global print media; c) the use of Google web searches to identify consultancy and practitioner knowledge outside of the databases we used; d) a manual search for relevant research on the websites and publications of organizations and associations involved in the fields of sustainability and CSR and/or supply chain management (such as Business in the Community and the Chartered Institute of Purchasing and Supply); e) requests to the project's oversight committee regarding practitioner knowledge that they were aware of.

Our initial search strategy provided more than 30,000 pieces of evidence for our original sample. The first step in refining this body of work involved eliminating duplicates of articles obtained through the multiple steps of the search process. Secondly, we refined the sample further by establishing a set of exclusion criteria for conducting an initial selection process. This stage aimed to remove articles that clearly had no relevance to our research but had been included in our searches because of the breadth of our search terms. Examples of the search terms occurring in different (and irrelevant) contexts included distribution interpreted in the sense of a statistical *distribution*, carbon in the sense of the chemical element, *diversity* in the sense of the range of species in a given area, environment in the sense of the "business environment," the "marine environment," or other *environments*.

Exclusion criteria were discussed in advance and tested on 100 papers before the total set of articles was split equally between two of the co-authors with the aim of using the established criteria in a conservative fashion, favouring inclusion rather than exclusion. The remaining approximately 17,000 articles were reviewed in more detail by both researchers, who examined each article's title, abstract, and keywords to eliminate more proximate, but nonetheless irrelevant, topics, such as research focusing on energy and water supply, organ procurement, and social and environmental issues in consumer behaviour. This process led us to a primary database of 2,132 articles relating to sustainability (broadly defined) and supply chain management (broadly defined).

The final stage of identifying relevant literature required a finer judgement regarding whether the studies related to the particular challenges involved in sustainably managing international supply chains. Once again, a set of exclusion criteria were developed whereby researchers selected relevant from irrelevant studies. The primary criteria were references in the article's titles, abstracts, or keywords to any of several key terms (overseas, international, global, transnational, cross-national, etc.) or reference to particular contexts (China, India, Asia, developing countries, emerging economies, etc.). As in the previous stage, both researchers independently assessed each paper, and a concordance was conducted between the attributions made by each researcher. A third researcher adjudicated in cases of divergence between the two primary coders. Overall, inter-coder reliability was extremely high throughout these processes of literature identification and selection. Ultimately, 194 articles were identified as being relevant for further study.

As a final note on our approach to identifying relevant literature, we observe that our approach to systematic review differs from many approaches in the prior literature in one key respect. Systematic reviews typically select a focal sample of studies for review that meet a prescribed "quality" threshold that reflects either



the number of times a given study has been cited or the status of the journal in which studies are published (for example, including only articles in SSCI-listed journals). Implementing a screen that relied on journal quality or of the citation patterns of particular journals was felt to be incompatible with our stated intention to encompass the full range of knowledge (including practitioner knowledge) relating to international sustainable supply chain management.

### **Data extraction and processing**

The second step in a systematic review is data extraction and processing. This step generally involves a standardized data extraction process designed to reduce author subjectivity (Tranfield et al., 2003). To facilitate this process, we developed a pro forma or structured coding frame that used Microsoft Excel to record several features of the articles. The grid included basic elements such as the author(s), title of the article, year published, and the number of times an article had been cited, according to Google Scholar or (in the case of articles published in ISI journals) the Web of Science. In addition to these items, we developed a coding frame to permit the extraction of a range of attributes of the studies, the issues and concepts under investigation, the contexts within which these issues and concepts were studied, the details of the methods and conceptual perspectives used and referred to, the motivations and performance outcomes from involvement in sustainable supply chain management in an international context, the organizational conditions that favoured or hindered involvement in sustainable supply chain management, and the specific management practices that comprised managing international supply chains sustainably. In all, for each study, the original coding frame encompassed more than 60 distinct pieces of information.

As with the literature search strategy, a team of experts was consulted regarding the content of the proposed coding strategy, and several clarifications and amendments were made as a result of both the feedback received and a pilot process whereby two researchers independently coded 10 articles and then discussed discrepancies in the codes applied. Having refined the coding frame, the full content of the complete sample of articles was split into two parts and analyzed by two researchers. At several points in the analytical process, further refinements were made to the coding frame, which, in two cases, necessitated a second review of articles already reviewed by the team of researchers.

### **Data analysis**

After having produced the primary grid of data through careful and systematic analysis of each of the articles identified in our search, we were in a position to conduct various analyses. Where the coding process had identified the incidence of features of studies numerically, analysis could take a quantitative form, principally by comparing the frequencies and patterns with which specific features appeared in the articles. This approach is useful in that it provides a robust sense of “what is” present in the extant literature. However, in light of the absence of simple a priori coding schemes for all categories of data, and given our goal in this review is partially conceptual in the sense that we aimed to consolidate the state of knowledge in respect of management practices concerned with international sustainable supply chain management, we pursued a mode of analysis helpful when trying to inductively build theory – pattern matching and explanation building (Yin, 1994).

## Appendix B: Articles reviewed in this study

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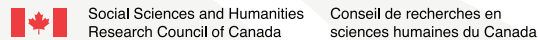
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A Canadian non-profit established in 2005, the Network for Business Sustainability produces authoritative resources on important sustainability issues – with the goal of changing management practice. We unite thousands of researchers and professionals worldwide who believe passionately in research-based practice and practice-based research.

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