

Title

# Government Interventions in Sustainable Supply Chain Management in Chinese Private Enterprises: An Institutional and Contingency Analysis

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# DECLARATION

I declare that this thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration. I further state that no substantial part of my thesis has already been previously submitted, or being concurrently submitted for any such degree, diploma or other qualification at Lancaster University or any other University or a similar institution.

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# ABSTRACT

Sustainable Supply Chain Management (SSCM) is an evolving discipline that combines the environmental and social performance dimensions of sustainability with the traditional measures of economic performance in supply chain management. Extant literature on SSCM indicates that government institutional pressure has significant influence on the implementation of SSCM practices in industries. The institutional policy and regulatory context for SSCM in China represents a relevant research focus due to the institutional complexity and the scale and scope of the environmental and social regulations and policies being implemented in China. This thesis further recognises the need for academic research to focus on the Chinese private sector by investigating the implementation of SSCM practices amongst Chinese private enterprises to understand how and why they respond differently to government interventions and the potential contribution to developing more effective policy instruments for SSCM implementation in China.

A multiple case study method has been employed, and the research focuses on seven Chinese private enterprises of different sizes and sectors – with primary data collected from a series of semi-structured interviews and supported by secondary data gathered from company visits, publication and archival data. A combination of institutional and contingency theoretical lenses has been applied to inform the analysis.

The research has several novel findings. First, by examining the implementation levels of key SSCM dimensions in the seven case companies, the study has identified four SSCM profiles, namely, beginner, practitioner, satisfier and leader. These four SSCM profiles are largely associated with companies' characteristics including firm size and industrial sector. Second, the investigation of regulations and policies employed by the Chinese government has not only confirmed the six types of intervention actions proposed by King et al. (1994), but also expanded King's work by evaluating the effectiveness of different types of government interventions, i.e. regulatory and influential interventions, in the context of a developing country. Third, this research has conceptualised and examined the moderating effects of contingency factors on the effectiveness of government interventions. The findings indicate that the way in which government interventions are translated into specific SSCM practices within a focal company and along the supply chain is contingent on firm size, industry and government-corporate relationship. This helps explain why companies with different SSCM profiles have shown varied responses to government interventions, for example, SSCM beginners and practitioners are mainly driven by the compliance with regulations to implement basic and compulsory SSCM practices,

## Abstract

while satisfiers and leaders tend to go beyond legislative compliance and engage in more proactive SSCM practices driven by influential policies.

This thesis fulfils an identified need to study how SSCM practices are implemented amongst private enterprises operating in unique institutional environments in emerging countries like China. The proposed theoretical framework offers a novel way to explore the influence of government interventions on SSCM implementation. It contributes to knowledge in both the SSCM and sustainability policy research fields by considering both the specifics of Chinese government institutional pressures and the moderating effects of contingency factors. The research also provides suggestions and insights to Chinese private enterprise managers and the Chinese government (both national and local) in terms of the effective SSCM and policy formulation and implementation. The knowledge gained from this study is potentially useful for the understanding of SSCM implementation in other developing countries with challenging institutional environments.

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## Table of Contents

<b>Chapter 1 Introduction .....</b>	<b>11</b>
<b>1.1 Why China and Why the Private Sector? .....</b>	<b>11</b>
<b>1.2 Research Background .....</b>	<b>12</b>
<b>1.3 Theoretical Considerations and Research Gaps .....</b>	<b>14</b>
<b>1.4 Research Objectives, Approach and Questions .....</b>	<b>15</b>
<b>1.5 Overall Research Process and Thesis Structure.....</b>	<b>16</b>
<b>1.6 Research Contributions .....</b>	<b>18</b>
<b>Chapter 2 The Background to SSCM Policy and Regulations in China.....</b>	<b>20</b>
<b>2.1 Introduction .....</b>	<b>20</b>
<b>2.2 Government Administrative Structure .....</b>	<b>22</b>
2.2.1 Administrative Hierarchy .....	22
2.2.2 Governmental Relationships.....	24
2.2.3 The Administrative System Foretells Policy Implementation Issues.....	24
<b>2.3 Transitions in the Policy and Regulatory Context .....</b>	<b>26</b>
<b>2.4 Key National and Local Sustainable Development Strategies .....</b>	<b>29</b>
2.4.1 Five-Year Plans .....	31
2.4.2 China’s Agenda 21 .....	32
<b>2.5 The Legislative Framework Underpinning SSCM.....</b>	<b>32</b>
2.5.1 Environmental Legislation.....	34
2.5.2 Social Legislation .....	37
<b>2.6 Policy Context for SSCM .....</b>	<b>39</b>
2.6.1 Promotion of Green Innovation .....	40
2.6.2 Industrial Upgrading and Transformation.....	40
2.6.3 Building Eco-industrial Parks .....	41
2.6.4 Promotion of Circular-economy Mode.....	41
2.6.5 Green Supply Chain Pilot Programme .....	42
2.6.6 Economic Incentives .....	42
2.6.7 Green Procurement.....	43
<b>2.7 Chapter Summary.....</b>	<b>45</b>
<b>Chapter 3 Literature Review.....</b>	<b>46</b>
<b>3.1 Introduction .....</b>	<b>46</b>
<b>3.2 Sustainability, SCM and SSCM .....</b>	<b>47</b>
3.2.1 Sustainability in the Organisational Context.....	47
3.2.2 Supply Chain Management .....	52
3.2.3 Overview of Sustainable Supply Chain Management .....	54
<b>3.3 Literature Review on SSCM Practices .....</b>	<b>56</b>
3.3.1 Use of Terminology .....	56

## Table of Contents

3.3.2	Typology of SSCM Practices .....	57
3.3.3	Effectiveness of SSCM Practices .....	65
3.3.4	Discussion .....	67
<b>3.4</b>	<b>Literature Review on Factors Influencing SSCM Implementation .....</b>	<b>68</b>
3.4.1	Corporate Characteristics .....	71
3.4.2	Institutional Environment .....	72
3.4.3	Supply Chain Characteristics .....	75
3.4.4	Discussion .....	75
<b>3.5</b>	<b>Literature Review on Challenges to SSCM Implementation.....</b>	<b>77</b>
<b>3.6</b>	<b>Literature Review on SSCM Research in the Context of China .....</b>	<b>78</b>
3.6.1	Research Streams .....	81
3.6.2	Research Gaps.....	85
3.6.3	Private Sector Engagement in SSCM.....	86
<b>3.7</b>	<b>Chapter Summary.....</b>	<b>87</b>
<b>Chapter 4</b>	<b>Theoretical Framework .....</b>	<b>89</b>
<b>4.1</b>	<b>Introduction .....</b>	<b>89</b>
<b>4.2</b>	<b>Institutional Perspective.....</b>	<b>90</b>
4.2.1	Overview of Institutional Theory.....	90
4.2.2	King’s Institutional Framework.....	91
4.2.3	Institutional Perspective and SSCM Studies.....	92
4.2.4	Assessment of Institutional Theory .....	93
4.2.5	Summary.....	94
<b>4.3</b>	<b>Contingency Perspective .....</b>	<b>95</b>
4.3.1	Overview of Contingency-based Research.....	96
4.3.2	Contingency-based SSCM Studies .....	98
<b>4.4</b>	<b>Linking Two Theoretical Lenses .....</b>	<b>99</b>
<b>4.5</b>	<b>Constructing Theoretical Framework .....</b>	<b>101</b>
4.5.1	Employment of Institutional Perspective.....	103
4.5.2	Employment of Contingency Perspective .....	104
<b>4.6</b>	<b>Chapter Summary.....</b>	<b>105</b>
<b>Chapter 5</b>	<b>Research Methodology .....</b>	<b>107</b>
<b>5.1</b>	<b>Introduction .....</b>	<b>107</b>
<b>5.2</b>	<b>Research Philosophy.....</b>	<b>108</b>
5.2.1	Philosophical Views .....	109
5.2.2	Philosophical Stance of This Research .....	112
<b>5.3</b>	<b>Research Methodology.....</b>	<b>113</b>
5.3.1	Deductive vs. Inductive Research Approaches.....	114
5.3.2	Quantitative vs. Qualitative Research Strategies .....	114
5.3.3	Methodological Position of This Research .....	115
<b>5.4</b>	<b>Case Study Method .....</b>	<b>117</b>
5.4.1	Overview of Case Study Research .....	117
5.4.2	Rationale of Case Study Method .....	118

## Table of Contents

5.4.3	Multiple Case Studies .....	118
5.4.4	Data Collection Methods .....	119
<b>5.5</b>	<b>Overview of Research Design .....</b>	<b>121</b>
<b>5.6</b>	<b>Empirical Research Design .....</b>	<b>121</b>
5.6.1	Unit of Analysis.....	122
5.6.2	Case Study Design.....	123
5.6.3	Data Collection .....	126
5.6.4	Data Analysis.....	131
5.6.5	Research Rigour.....	132
<b>5.7</b>	<b>Chapter Summary.....</b>	<b>133</b>
<b>Chapter 6</b>	<b>Within-case Analysis .....</b>	<b>135</b>
<b>6.1</b>	<b>Introduction .....</b>	<b>135</b>
<b>6.2</b>	<b>Case Study 1 – Electronics Ltd.....</b>	<b>137</b>
6.2.1	Company Profile of Electronics Ltd.....	137
6.2.2	SSCM Practices in Electronics Ltd. ....	139
6.2.3	Policy and Regulatory Context for the Electronics Industry.....	143
<b>6.3</b>	<b>Case Study 2 – Metal Ltd. ....</b>	<b>149</b>
6.3.1	Company Profile of Metal Ltd. ....	149
6.3.2	SSCM Practices in Metal Ltd.....	152
6.3.3	Policy and Regulatory Context for the Rare Metal Industry.....	154
<b>6.4</b>	<b>Case Study 3 – Textile Ltd. ....</b>	<b>160</b>
6.4.1	Company Profile of Textile Ltd. ....	160
6.4.2	SSCM Practices in Textile Ltd.....	162
6.4.3	Policy and Regulatory Context for the Textile Industry .....	163
<b>6.5</b>	<b>Case Study 4 – Chemical Ltd. ....</b>	<b>167</b>
6.5.1	Company Profile of Chemical Ltd. ....	167
6.5.2	SSCM Practices in Chemical Ltd.....	170
6.5.3	Policy and Regulatory Context for the Chemical Industry .....	172
<b>6.6</b>	<b>Case Study 5 – Paper Ltd. ....</b>	<b>176</b>
6.6.1	Company Profile of Paper Ltd.....	176
6.6.2	SSCM Practices in Paper Ltd.....	179
6.6.3	Policy and Regulatory Context for the Pulp and Paper Industry .....	181
<b>6.7</b>	<b>Case Study 6 – Homeware Ltd. ....</b>	<b>184</b>
6.7.1	Company Profile of Homeware Ltd. ....	184
6.7.2	SSCM Practices in Homeware Ltd.....	184
6.7.3	Policy and Regulatory Context for the Homeware Industry.....	185
<b>6.8</b>	<b>Case Study 7 – Plastics Ltd. ....</b>	<b>186</b>
6.8.1	Company Profile of Plastics Ltd. ....	186
6.8.2	SSCM Practices in Plastics Ltd. ....	186
6.8.3	Policy and Regulatory Context for the Plastics Industry .....	187
<b>6.9</b>	<b>Chapter Summary.....</b>	<b>187</b>
<b>Chapter 7</b>	<b>Cross-case Analysis and Discussion.....</b>	<b>189</b>



## Table of Contents

<b>7.1</b>	<b>Introduction .....</b>	<b>189</b>
<b>7.2</b>	<b>Implementation of SSCM Practices (RQ1: How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?) .....</b>	<b>197</b>
7.2.1	SSCM Beginner (Plastics Ltd. and Homeware Ltd.).....	200
7.2.2	SSCM Practitioner (Textile Ltd.).....	202
7.2.3	SSCM Satisfier (Metal Ltd., Chemical Ltd. and Paper Ltd.).....	202
7.2.4	SSCM Leader (Electronics Ltd.).....	205
7.2.5	Discussion .....	206
<b>7.3</b>	<b>Government Interventions (RQ2: How do government interventions influence the implementation of SSCM practices amongst Chinese private enterprises?) .....</b>	<b>210</b>
7.3.1	Regulation.....	213
7.3.2	Economic Incentive.....	215
7.3.3	Knowledge Building.....	216
7.3.4	Knowledge Deployment.....	217
7.3.5	Innovation Directive .....	219
7.3.6	Mobilisation .....	220
7.3.7	Discussion .....	221
<b>7.4</b>	<b>Chapter Summary.....</b>	<b>232</b>
<b>Chapter 8</b>	<b>Conclusions .....</b>	<b>233</b>
<b>8.1</b>	<b>Introduction .....</b>	<b>233</b>
<b>8.2</b>	<b>Overview of the Research.....</b>	<b>234</b>
8.2.1	Area of Concern.....	237
8.2.2	Framework of Ideas.....	238
8.2.3	Methodology.....	239
<b>8.3</b>	<b>Thesis Contributions.....</b>	<b>239</b>
8.3.1	Contributions to Theory.....	240
8.3.2	Contributions to Practice .....	243
8.3.3	Summary of Contributions.....	246
<b>8.4</b>	<b>Research Limitations and Opportunities for Future Research .....</b>	<b>247</b>
<b>References.....</b>		<b>249</b>
<b>Appendix I</b>	<b>Guiding Interview Questions (First Fieldwork - Pilot) .....</b>	<b>280</b>
<b>Appendix II</b>	<b>Guiding Interview Questions (Second Fieldwork) .....</b>	<b>287</b>
<b>Appendix III</b>	<b>Definition of Private Enterprises in China.....</b>	<b>291</b>

## List of Figures

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Figure 1.1 FMA Research Schema (Checkland and Holwell, 1998) .....	17
Figure 2.1 Sustainability Governance Structure in China (Adapted from Jin et al. (2016)) .....	21
Figure 2.2 Structure of Chapter 2 .....	22
Figure 2.3 Layers of Government Administrative Hierarchy (Adapted from Ma and Ortolano (2000)) .....	23
Figure 3.1 Structure of Chapter 3 .....	47
Figure 3.2 TBL View of Sustainability (Carter and Rogers, 2008) .....	48
Figure 3.3 Generic Illustration of a Focal Firm’s Supply Chain Composition (Adapted from Rushton et al. (2014)) .....	53
Figure 3.4 An Illustration of a Focal Firm’s Supply Chain Management Model (Adapted from Lambert et al. (1998)) .....	54
Figure 3.5 Typology of SSCM Practices .....	59
Figure 3.6 The Selection Process (Literature Review of SSCM Studies Adopting Contingency Perspective) .....	69
Figure 3.7 The Selection Process (Literature Review of SSCM Studies in the Context of China) .....	79
Figure 4.1 Structure of Chapter 4 .....	90
Figure 4.2 Theoretical Framework of This Research .....	102
Figure 4.3 Scope of the Research .....	106
Figure 5.1 Structure of Chapter 5 .....	108
Figure 5.2 Research Philosophy, Methodology and Method (Easterby-Smith et al., 2012) .....	109
Figure 5.3 Matrix of Research Designs (Easterby-Smith et al., 2002) .....	110
Figure 5.4 Overview of the Research Methodology of This Research .....	121
Figure 5.5 An illustration of a Focal Company's Perspective .....	122
Figure 5.6 Unit of Analysis for a Single Case .....	123
Figure 5.7 Data Collection Process .....	127
Figure 6.1 Structure of Chapter 6 .....	136
Figure 6.2 Supply Chain Structure of Electronics Ltd. ....	138
Figure 6.3 Rare Metal Industrial Chain .....	149
Figure 6.4 Supply Chain Structure of Metal Ltd. ....	150
Figure 6.5 Supply Chain Structure of Textile Ltd. ....	161
Figure 6.6 Supply Chain Structure of Chemical Ltd. ....	169
Figure 6.7 Supply Chain Structure of Paper Ltd. ....	178
Figure 7.1 Structure of Chapter 7 .....	190
Figure 8.1 FMA Research Schema (Checkland and Holwell, 1998) .....	233
Figure 8.2 The Implementation of SSCM Practices from Institutional and Contingency Perspectives .....	243

## List of Tables

---

Table 2.1 The Evolution of Sustainable Development in the Institutional Transition Process in China (Source: Author) .....	28
Table 2.2 Key Sustainable Development Strategies at National and Local Level (Source: Author) .....	30
Table 2.3 Key Legislations Related to Environmental and Social Sustainability .....	33
Table 2.4 Examples of Environmental Regulation Enforcement Measures (Source: Ma and Ortolano (2000)) .....	35
Table 3.1 Definitions of Corporate Sustainability at Different Levels (Adapted from van Marrewijk (2003) and van Marrewijk and Were (2003)) .....	49
Table 3.2 Different Dimensions and Elements of Corporate Sustainability (Baumgartner and Ebner, 2010).....	51
Table 3.3 A Summary of Economic Supply Chain Practices .....	60
Table 3.4 A Summary of Environmental Supply Chain Practices .....	62
Table 3.5 A Summary of Social Supply Chain Practices .....	64
Table 3.6 A Summary of Contingency Factors in SSCM Research .....	70
Table 3.7 Classification of Reviewed SSCM Papers in the Context of China .....	80
Table 3.8 Common Factors Influencing SSCM in China .....	82
Table 4.1 Summary of Institutional and Contingency Perspectives .....	99
Table 4.2 The Six Types of Institutional Intervention Actions (Adapted from King et al. (1994)) .....	103
Table 5.1 Ontology, Epistemology, Methodology and Method (Easterby-Smith et al., 2012) .....	108
Table 5.2 Contrasting Implications of Positivism and Social Constructionism (Source: Easterby-Smith et al. (2012)).....	112
Table 5.3 Deductive and Inductive Approaches to Research (Saunders et al., 2009; Neuman, 2013) .....	114
Table 5.4 Major Differences between Quantitative and Qualitative Research Strategies (Creswell, 2014; Bryman and Bell, 2015; Sarantakos, 2012) .....	115
Table 5.5 Overview of Case Organisations and Interviewees.....	125
Table 5.6 Overview of Candidate Case Organisations in Phase I .....	128
Table 5.7 Overview of Case Organisations Studied in Phase II .....	130
Table 6.1 Specific Regulations Related to Environmental Issues in Electronics Industry .....	144
Table 6.2 Government Subsidies for Metal Ltd.....	159
Table 7.1 SSCM Practices and Government Interventions Evidenced through Case Studies.....	191
Table 7.2 In-depth Explanation of Companies' SSCM Profiles (Source: Author) .....	199
Table 7.3 Examples of Chinese Government Interventions in SSCM (Source: Author).....	211
Table 7.4 Overview of Governmental Intervention Actions in Case Companies (Source: Author)....	222
Table 8.1 Alignment of Research Questions and Chapters .....	236
Table 8.2 Summary of Research Findings in Relation to Research Questions .....	247
Table III-1 Classification of Chinese Companies (Lardy, 2014).....	291

# Chapter 1

## Introduction

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### 1.1 Why China and Why the Private Sector?

This research explores government policy and regulatory intervention in the implementation of sustainable supply chain management (SSCM) practices among private enterprises in the context of China. The real-world rationale for conducting this research is compelling and threefold.

First, China as the second largest economy in the world, takes great responsibility for the global climate and environmental changes as well as the sustainable development of the world (Financial Times, 2017). The rapid economic growth has given rise to severe environmental deterioration and social issues in China, which have now become main concerns of the Chinese government and society (Engels, 2018). In China, the state guides all major aspects of its economy – directly in the case of state owned enterprises (SOEs) and indirectly for the private sector (Milhaupt and Zheng, 2014). Under this umbrella influence, the Chinese government plays a central role in promoting and advancing the implementation of sustainability initiatives among all enterprises. Hence, in recent decades, China has adopted a proactive stance towards sustainability and vigorous regulations and policies have been enacted to tackle environmental and social issues in the country (Song, 2018; Kostka and Zhang, 2018; Khan and Chang, 2018; Zhang and Wen, 2008). However, there remains a lack of understanding of the mechanisms and effectiveness of these government interventions on the implementation of sustainable practices (Li and Chen, 2018).

Second, a ‘whole-of-supply chain’ approach that integrates environmental and social considerations into traditional supply chain processes has emerged as a new and innovative way to address global sustainability challenges (GRI, 2018). The supply chain approach to sustainability has drawn the attention of the Chinese government and a growing number of new regulations and policies have been initiated to advocate and introduce this approach to Chinese industries (Zhang et al., 2017). Chinese manufacturers like Huawei and Lenovo are increasingly encouraged by the government to adopt a holistic approach and take a broader responsibility towards sustainability impacts of their operations by extending sustainable practices beyond company borders, to the supply chain as a whole (People's Daily, 2019; China Today, 2018b; Webwire, 2019). Despite the global importance of supply chain sustainability for China, this area of research is underdeveloped.

Third, Chinese private enterprises have made considerable contribution and shown intrinsic value to the development of the economy and society in China. By 2019, the whole private sector contributed more than 50 percent of tax revenue, 60 percent of China's Gross Domestic Product (GDP), 70 percent of technological innovation, and provided 80 percent of the urban employment and 90 percent of new jobs and new firms (World Economic Forum, 2019; The State Council, 2019). Beyond the traditional impacts on business areas such as economic growth, job creation and provision of goods and services, Chinese private sector has been increasingly contributing to the sustainable development in China by adopting responsible business practices in areas such as environmental protection, human rights and philanthropy (Tsui et al., 2017). With the rise of private enterprises as the main actor in the Chinese economy, the Chinese government has been increasingly reliant upon the private sector to achieve the country's sustainability development goals (Lardy, 2014). Despite the importance of the private sector engagement in sustainable development, most of previous SSCM studies in the context of China either have exclusively focused on state owned enterprises (SOEs) or used the majority of survey samples from SOEs in China (e.g. Zhu and Geng (2006), Chun (2009), and Zhu and Zhang (2015)). The Chinese private sector has been neglected in the SSCM literature due to the traditional view of the dominant role of SOEs in the Chinese economy, the short lifespan of the Chinese private enterprises and the lack of company information in English (Qi and Miller, 2011). This pattern of China research, which privileges studies in the state sector over the private sector, is longstanding and rooted in funding sources, sector legitimacy and issues of access.

Whilst the above provides a real-world rationale for the research, it also provides the necessary opportunity to develop and advance the theory and concepts in SSCM, especially in the context of government interventions in the implementation of SSCM practices. This latter theme, which is the focus of the thesis, is introduced in the sections that follow.

## 1.2 Research Background

Sustainable development is 'the development which meets the needs of the present without compromising the ability of future generation to meet their own needs' (WCED, 1987, p.43). Although sustainability can be conceptualised and interpreted in different ways and in relation to different contexts, the core of the concept incorporates the triple bottom line (TBL) consideration of economic, environmental and social impacts of organisations (Elkington, 1998a). When applied in the context of supply chain management (SCM), sustainability requires organisations to consider the environmental and social impacts of its operations within the supply chains, alongside the traditional organisational imperative of profits (Carter and Rogers, 2008).

## Chapter 1: Introduction

In recent years, Sustainable Supply Chain Management (SSCM) has become a rapidly growing research area that draws the interest and attention of business, academia and society. Given the complex nature of supply chains and the scale and scope of the environmental and social impacts, focal companies have been increasingly challenged by different stakeholders to address environmental and social issues not only within organisations but also across the entire supply chain (Gimenez and Tachizawa, 2012; Formentini and Taticchi, 2016). Indeed, as almost every organisation is part of at least one supply chain, the impacts of an organisation's products and services are not limited to the production stage but apply to the full extent of the supply chain including the supplier base, product and process management, logistics and marketing (Baumgartner, 2014).

Although SSCM has gained increasing recognition and importance all over the world, initially, it has been adopted and implemented primarily in developed countries (Saeed and Kersten, 2019; Jia et al., 2018). Today, SSCM is also being promoted in developing countries, but in a few – China, India, Brazil – rather than the many (Jia et al., 2018). However, in those economies that have undergone continuous and profound economic, social and political changes, the drivers and approaches taken to SSCM can be different due to their unique contexts (Zhu et al., 2017; Silvestre, 2015; Zhou et al., 2016). For China, this unique context has been the unprecedented national economic growth in recent decades and the corresponding need to confront the crucial task of protecting its ecological environment and building a sustainable society (Li et al., 2016; Wang and Juslin, 2009; Zheng and Tok, 2007). Different from developed countries in which market considerations are prime, in China, the engagement of companies in SSCM has been mainly pushed by the Chinese government (Moon and Shen, 2010; CSR-Asia, 2015; Zhu, 2016). Since 1992, when sustainable development was set down as a basic national strategy (Zhang and Wen, 2008), the concept of sustainability has been institutionalised through numerous policy initiatives (Wang, 2010; Zhang et al., 2007) and, as a result, significantly influenced the 'rules of the game' at both firm and supply chain levels (Yin and Zhang, 2012; Wu and Jia, 2018).

Historically, the view is that the implementation of sustainability initiatives in China is mostly evidenced in SOEs, or in publicly owned enterprises that were transitioned from SOEs, which has been confirmed by early studies (Zhu and Geng, 2013; Zhu et al., 2007). Indeed, SOEs have always played an important role in the Chinese government's toolbox for sustainable development. However, with the emergence of the private sector as the main engine of China's economic growth in recent decades (Garnaut et al., 2014), the crucial role of the private sector in achieving sustainable development goals has been gradually recognised by the Chinese government (Ma and Zadek, 2015). Together with other stakeholders like international aid agencies, financial institutions and civil society organisations, the Chinese government is increasingly developing relationships with private sector partners to harness

private capital, core business, innovation and expertise to address sustainable development challenges (UNDP, 2016; MFPRC, 2016). Against this backdrop, it is important to gain a comprehensive understanding of the Chinese private sector's engagement in SSCM and the role of government in driving and supporting Chinese private enterprises' implementation of SSCM practices. In spite of this, at the time of this research in 2017, the literature review of SSCM in the context of China found only one study (i.e. Qi and Miller (2011)) that has focused exclusively on Chinese private enterprises' SSCM implementation (see Chapter 3, Section 3.6). Similarly, a recent literature review conducted by Jia et al. (2018) also points out that there is a deficit in studies focusing particularly on private sectors in developing countries.

### 1.3 Theoretical Considerations and Research Gaps

The institutional perspective has been widely employed in the SSCM literature to explain the drivers and enablers for the engagement of focal companies on SSCM initiatives (Glover et al., 2014; Chu et al., 2017; Zhu et al., 2013c). The most common institutional driving forces are listed as regulatory pressures, market competition pressures, and response to coercive stakeholders' sustainability expectations (Zhu and Sarkis, 2007; Zhu et al., 2013a; Foerstl et al., 2015; Saeed and Kersten, 2019). Among these institutional factors, government regulatory force has been identified as one of the most crucial drivers to SSCM implementation (Walker and Jones, 2012; Vermeulen and Kok, 2012; Mahmoudi and Rasti-Barzoki, 2018). Traditionally, the institutional perspective has provided a way of explaining the rationale behind SSCM – by answering the question of 'why' companies implement SSCM practices. However, the 'process' remains unclear – the question of 'how' government institutional forces such as regulations and policies are truly tied to the implementation of SSCM practices in companies has been significantly underexplored (Vermeulen and Kok, 2012; Heydari et al., 2017).

Moreover, although organisations are increasingly subject to institutional pressures to incorporate sustainability considerations into operations and supply chain management, previous studies have confirmed that the ways in which organisations perceive and act upon institutional pressures are likely to be shaped by the specific circumstances in which they find themselves (Tate et al., 2010; Simpson et al., 2012; Delmas and Montiel, 2009), for example, the effectiveness of institutional pressures can be moderated by a number of contingency factors like firm size (Holt and Ghobadian, 2009; Tate et al., 2010), industry (Tate et al., 2010), and internal capabilities (Simpson et al., 2012). However, few studies have explicitly examined the effectiveness of different forms of government interventions (Vermeulen and Kok, 2012), and particularly, there are no explanations to the effectiveness in relation

to specific contingency factors, i.e. how government policies and regulations are interpreted and translated into SSCM practices in different contexts. Given the above, the key question, therefore, is how do governments – both national and local – intervene in the implementation of SSCM practices, and how effective are these interventions in relation to specific contingency factors? Current and possible future role of government policy and regulation and the implementation in promoting SSCM can be evaluated based on such information, though remarkably, little work has yet been done in this field. This research therefore addresses the gap in knowledge of how government institutional interventions drive the implementation of SSCM practices in the context of Chinese private enterprises and how the effectiveness of such influence can be moderated by contingency factors.

### 1.4 Research Objectives, Approach and Questions

The overall objective of this research is to explore the experience of Chinese private enterprises in the implementation of SSCM practices under the influence of government regulatory and policy interventions. In doing so the research aims to deepen our understanding of SSCM concepts and theories in this institutional setting. Although the research is specifically focused on China, the knowledge and experience gained may potentially shed light on the apparent power of government interventions and influences on sustainable supply chain governance globally.

In this research, both institutional and contingency perspectives are employed to inform the analysis. At the outset, institutional factors were considered as a type of contingency factor, along with factors like firm size, industry and ownership (Tachizawa and Wong, 2014). However, the pilot empirical study undertaken at the beginning of the research indicated that institutional regulation and policy factors appeared to be disproportionately important. For this reason, they were separated from ‘other’ contingency factors, and the latter were then reconceptualised as moderating factors acting on the relationship between government institutional pressures and the implementation of SSCM practices. This was an important conceptual development which influenced both the shape of the research and the research questions and provided the basis of a research contribution.

Given the likely importance of government policy and regulation, institutional perspective was recognised as an appropriate lens to investigate the coercive and supportive roles of government interventions in the implementation of SSCM practices. In particular, King et al.’s (1994) institutional policy specific framework (consisting of standard setting, knowledge building, knowledge deployment, subsidy, mobilisation and innovation directives) is employed to further understand how different government interventions impact upon companies’ SSCM initiatives. Complementing King et al.’s (1994) institutional framework, contingency perspective was employed to examine the effectiveness



of government interventions, with a focus on the moderating role of contingency factors including company size, industry sector and government-corporate relationship. The combination of institutional and contingency perspectives offers a solid interpretive frame to address the raised concerns and gain rich understanding of the studied phenomena.

The following research questions are informed by the extant literature, both academic and professional, and the early empirical pilot study. Together they are designed to achieve the objectives of this research outlined above. The questions are addressed in the research through seven case studies, and they provide the basis for the research findings and contributions for both theory and practice.

**RQ1:** How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?

Sub-RQ1: What are the implementation levels of SSCM practices?

Sub-RQ2: How is the implementation of SSCM practices influenced by contingency factors?

**RQ2:** How do government interventions influence the implementation of SSCM practices amongst Chinese private enterprises?

Sub-RQ3: What is the effectiveness of regulatory and influential government interventions?

Sub-RQ4: How is the effectiveness of government interventions moderated by contingency factors?

## 1.5 Overall Research Process and Thesis Structure

A generic model of research process introduced by Checkland and Holwell (1998) has been adopted as the overarching structure for this research (Figure 1.1).

The model consists three main parts:

- Framework of ideas (F) – the interpretive framework that guides the study of research concerns;
- Methodology (M) – the research methodology adopted to interpret the area of concerns;
- Area of concern (A) – the research area that needs to be explored to answer the raised research questions.

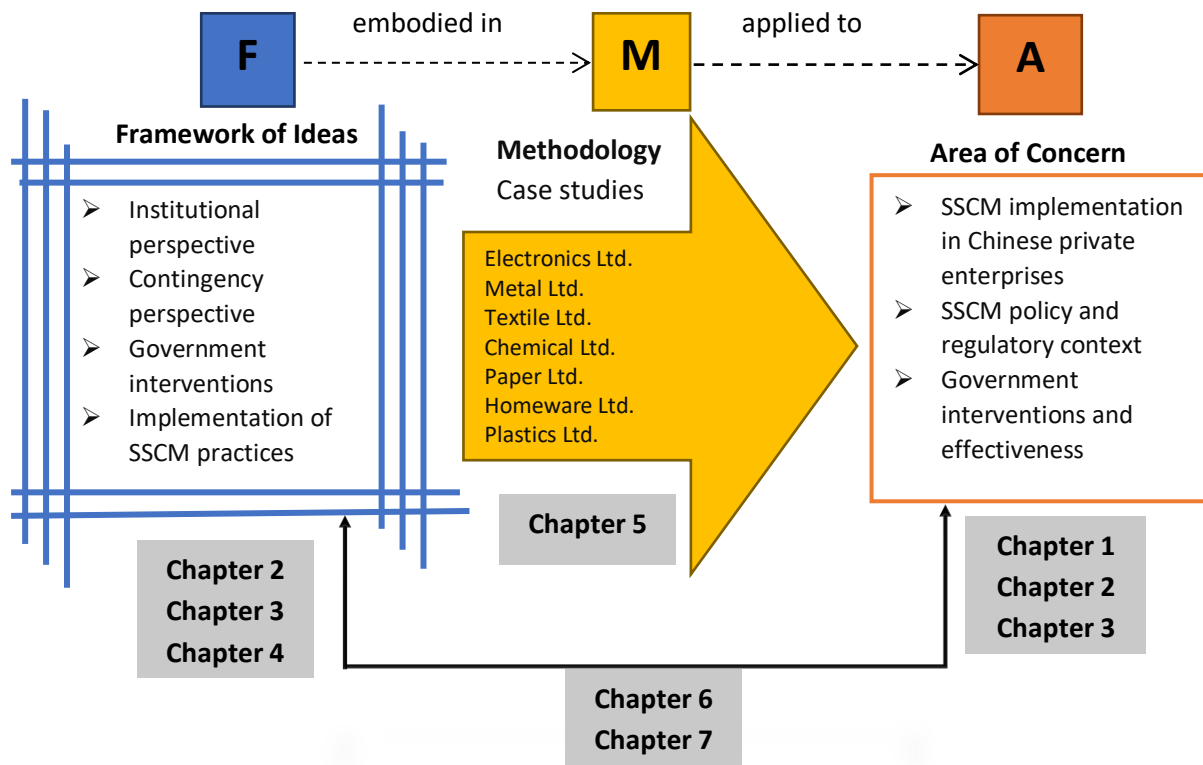


Figure 1.1 FMA Research Schema (Checkland and Holwell, 1998)

Figure 1.1 depicts the FMA model for this research. Research findings and contributions are generated from interactions between the framework of ideas (F) and the area of concern (A). This thesis comprises eight chapters. The relationship between the chapters is illustrated in Figure 1.1. The structure of the thesis and highlights of the main content are organised as follows:

Chapter 1 introduces an overview of the thesis, including the research background, research gaps, research objectives, questions and approach.

Chapter 2 examines the Chinese government policy and regulatory context in relation to SSCM, providing the institutional background for the implementation of SSCM practices in Chinese private enterprises.

Chapter 3 presents a literature review exploring the knowledge in the areas of sustainability, supply chain management and sustainable supply chain management. This enables the exploration of the research gaps and provides justification of the intent of this research.

Chapter 4 elaborates the employed theories in detail and introduces the theoretical framework. This chapter justifies the selection of institutional and contingency theories and analyses the joint application of the two complementary theoretical lenses in the context of SSCM.

Chapter 5 outlines the research design by setting out the philosophical paradigm of this research. It identifies the research methodology and techniques. The empirical design is presented with a highlight of the data collection and analysis process.

Chapter 6 presents in-depth within-case analysis of the seven cases. This provides empirical evidence for the research.

Chapter 7 advances the understanding of government interventions in SSCM implementation by presenting a cross-case analysis of the seven cases. The patterns and findings emerging from the cases are discussed based on the theoretical framework and in relation to the existing literature.

Chapter 8 summarises the main contributions of the thesis in relation to both research and practices. Limitations of the research and future research opportunities are also presented.

## 1.6 Research Contributions

This is developed in full in Chapter 8 but in brief the research makes an original and significant contribution towards furthering the understanding of the institutional influence on SSCM, especially government policy and regulatory interventions in the private sector of the world's second biggest economy, China. The research investigates government influence in SSCM implementation, based on institutional theory considering the unique policy and regulatory context and characteristics of China. Furthermore, by employing contingency theory, the research examines contingency factors in terms of the influence on both firms' SSCM implementation levels and the effectiveness of government interventions. The empirical results provide policy and managerial implications for both the Chinese government and enterprises operating in China and to better establish and advance SSCM therein.

Theoretically, and in practice, the research will make an original and significant contribution towards furthering our understanding of the levels of influence from government interventions in the implementation of SSCM practices. First by mapping out for the first time the unique institutional policy and regulatory context and characteristics of China, which not only provides practical insights for managers who are seeking to utilise policy initiatives for improving corporate and supply chain sustainability performance, but also generates possible implications for policy makers to adopt mandatory and advisory policies to reinforce sustainability implementation. Second, by systematically identifying, and classifying, different types of government interventions that have not been previously explored in the literature and evidencing their impact on organisations' behaviour. Third, the research demonstrates how institutional and contingency perspectives can be combined to examine both institutional and contingent influence on a firm's behaviour. It explores the effectiveness of

## Chapter 1: Introduction

government interventions by conceptualising the moderating role of contingency factors. This is the first time that institutional and contingency perspectives have been linked in this way.

# Chapter 2

## The Background to SSCM Policy and Regulations in China

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### 2.1 Introduction

Against the backdrop of the rapidly aggravating environmental crisis over time, many countries in the world have been proactively promoting sustainable development (Choi, 2018). As the largest emerging economy in the world, China has been placing sustainable development as a key priority. Although previously China has been criticised for the lack of enforcement of social and environmental laws and regulations (Zhang et al., 2014), in recent decades, the Chinese government has been implementing tougher regulations and promulgating relevant policies to address sustainability issues in supply chains. The involvement and intervention of the Chinese government, including regulation, guidance, support, recognition and rewards, has become the most important incentive and driver for Chinese enterprises to pursue sustainability initiatives (CSR-Asia, 2015).

The Chinese government arguably exerts strong hierarchical influence and control over the social and economic development in China. Such influence is manifested in the issued policies, laws and regulations, including those targeting sustainability issues and corporate behaviours and performance among Chinese enterprises. Scoping and appreciating this government policy and regulatory context is central to the thesis, and is a necessary antecedent to inform both the research design and data analysis. Chapter 2, therefore, is designed to identify, track and interpret relevant government regulation and policy initiatives within which the implementation of SSCM practices among Chinese private enterprises are framed.

Drawing upon the accumulated knowledge from Chinese open-access policy documents and governance literature (e.g. Ma and Ortolano (2000)), this chapter lays out a holistic picture of the policy and regulatory context in China. The policy context is complex in nature and requires a mapping of the institutional composition and dynamics of the Chinese government administrative system, as well as the channels through which policies and regulations are formulated and implemented.

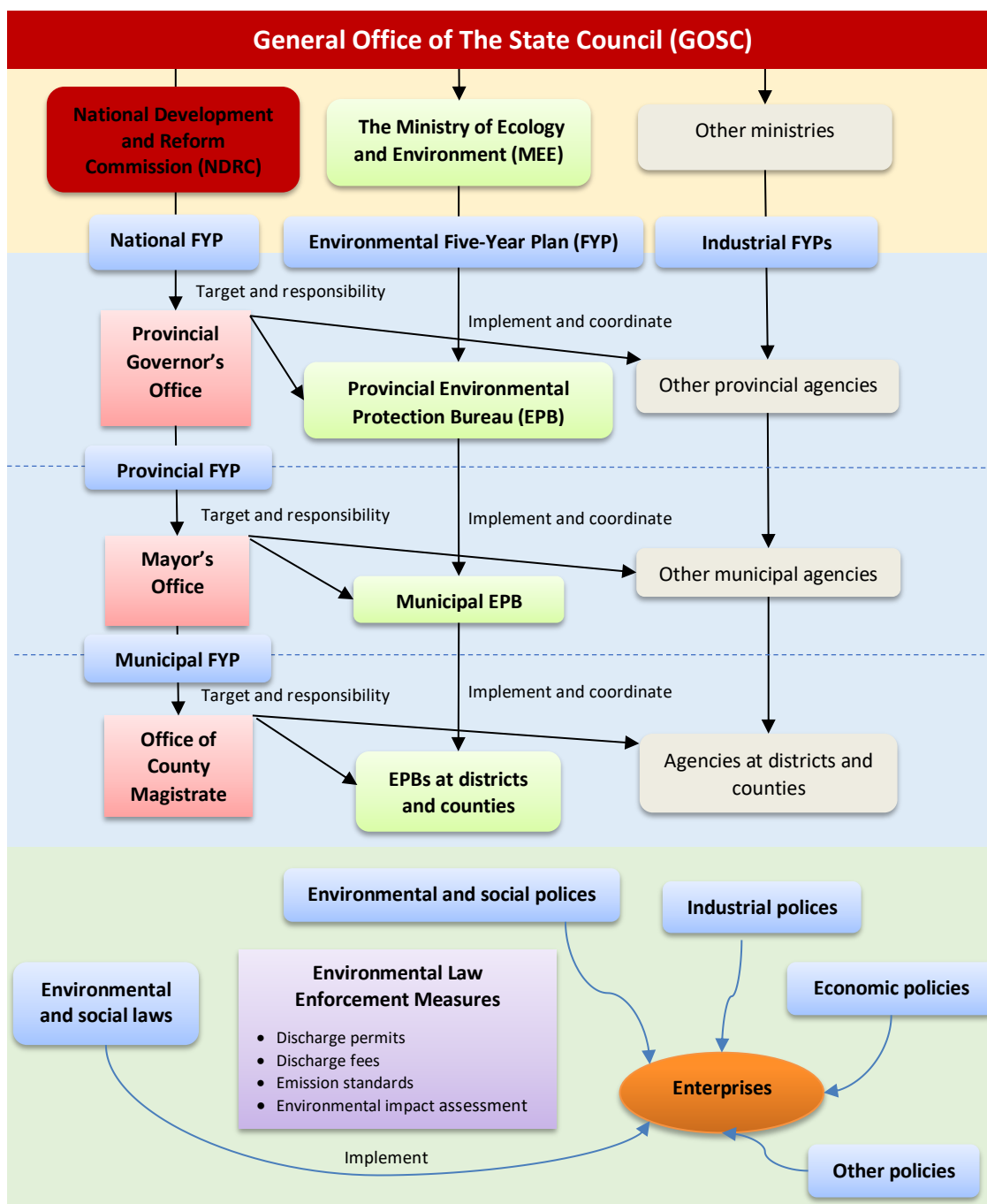


Figure 2.1 Sustainability Governance Structure in China (Adapted from Jin et al. (2016))

Figure 2.1 provides an overview of the sustainability governance structure in China, which is discussed further in the following sections in terms of the government administrative structure, institutional transitions, key sustainable development strategies, the legislation framework and relevant policies with regard to SSCM in China. The structure of this chapter is presented in Figure 2.2.

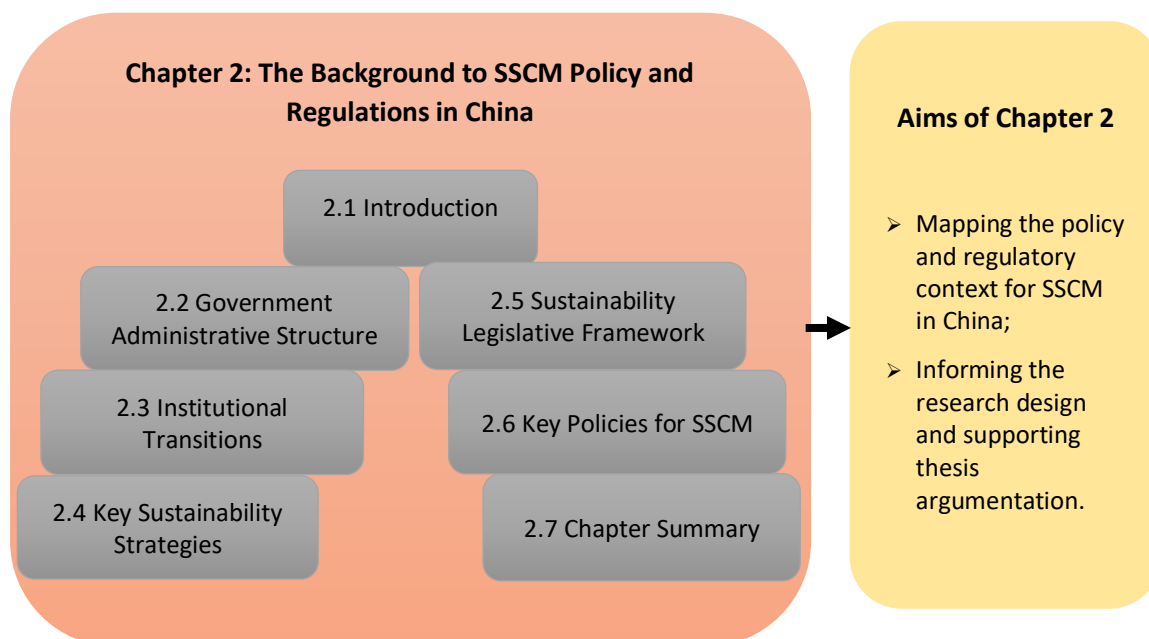


Figure 2.2 Structure of Chapter 2

## 2.2 Government Administrative Structure

Sustainability governance system in China is a comprehensive regime, which is characterised by the multi-layered hierarchy and a multi-regional structure. The central government sets the tone and direction of sustainability policy, which forms the foundation of regulation and enforcement of sustainable practices at the local level. Within each jurisdiction level, the management and control of the government policies are exerted through different functional departments that are responsible for, and committed to, the corresponding areas (e.g. environmental protection bureau and tax bureau). The government administrative structure is illustrated in the following subsections in terms of the administrative hierarchy and government relationships within the administrative system. In addition, the potential policy implementation issues derived from the administrative system are also briefly discussed.

### 2.2.1 Administrative Hierarchy

Chinese government administrative structure is strictly organised as a unitary hierarchy (Qi and Wu, 2013). As described in Figure 2.3, the top level is national level – the 'centre'. One level down in the hierarchy is the 'provincial level' which consists of three types of distinct entities: provinces, autonomous regions, and centrally administered municipalities (i.e. Beijing, Chongqing, Shanghai, and Tianjin). Below the provincial-level are 'prefectural level' municipalities, and one level down is the 'country level' which includes counties, districts and country-level cities. One level below the county

level is ‘township level’, and villages are a level down from townships. All governments below the Centre are referred as the ‘Local’. Governments at the township level and above are ‘official’ in the sense that they receive budgetary support from the Centre, while a village is governed by a ‘village committee’ which is not considered as an official administrative entity.

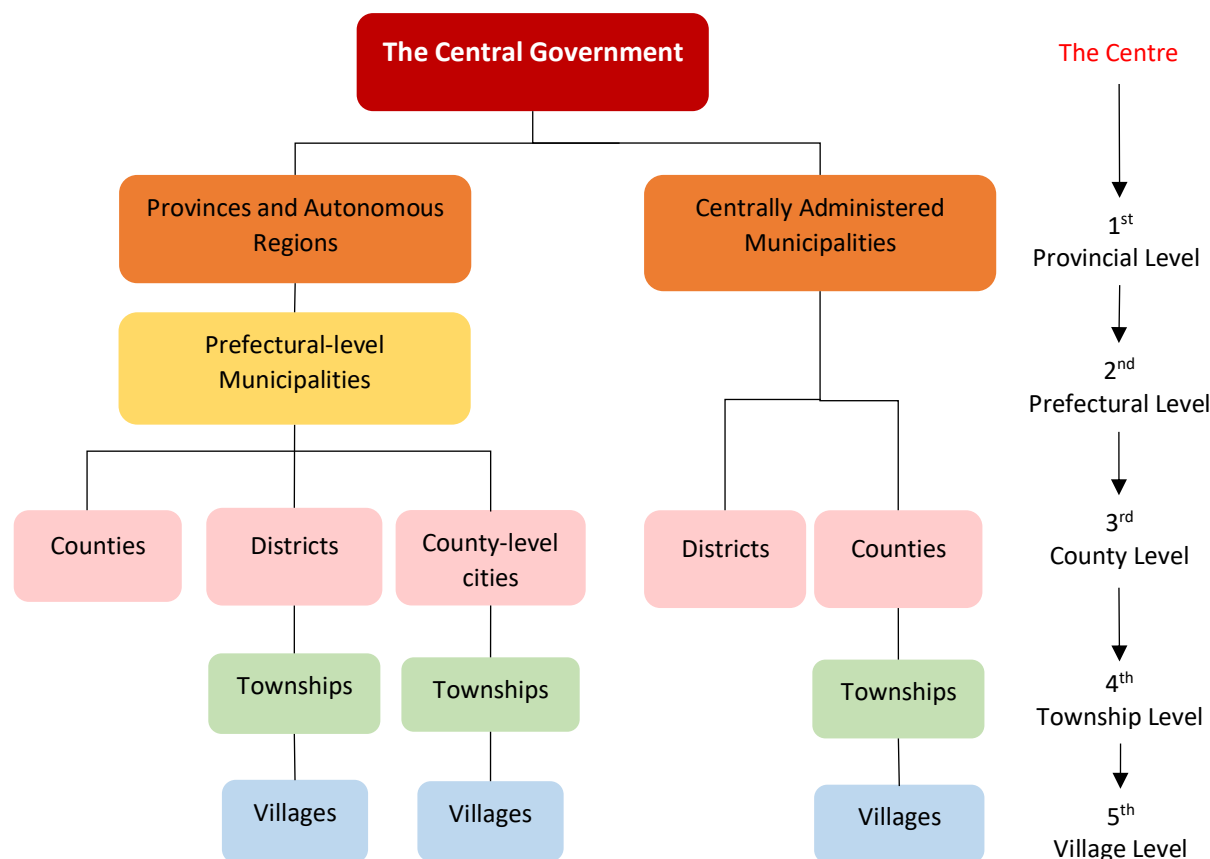


Figure 2.3 Layers of Government Administrative Hierarchy (Adapted from Ma and Ortolano (2000))

At the central level, legislative and administrative power is centred in the National People’s Congress and its Standing Committee (NPCSC) which formulates general principles for each sector’s development. The General Office of the State Council (GOSC) promulgates national environmental and social administrative regulations and policies in accordance with the actual needs of the nation’s socioeconomic development. The National Development and Reform Commission (NDRC) is responsible for formulating and promoting key national strategies, plans and policies for sustainable development, which guide other ministries and commissions under the GOSC to work out specific departmental rules as well as development strategies, plans and policies in their particular areas.

At the local level, the local people’s congresses and their standing committees (i.e. provinces, autonomous regions and municipalities directly under the central government, and the larger cities) may actively exercise local legislative functions and powers to formulate local regulations and policies



in the light of the specific local socioeconomic conditions and actual needs. The concrete tasks of enforcement and implementation of these regulations and policies are left to relevant local agencies.

## 2.2.2 Governmental Relationships

There are two types of governmental relationships within the Chinese administrative system – the area relationship and the line relationship. Accordingly, bureaucratic control can be exercised in two distinct ways: by geographical area (i.e. ‘area relationship’) and by function (i.e. ‘line relationship’) (Ma and Ortolano, 2000). Figure 2.1 provides an illustration of the administrative system featured by government relationships and bureaucratic control. For simplicity, township and village levels are not included in the figure as governments at county level are usually the lowest ones responsible for the implementation of environmental and social regulations and policies in China.

As shown in Figure 2.1, a local agency is a subordinate functional department of the local government and it connects with other government units within the jurisdiction area through an ‘area relationship’ (slanted arrows), whereas it also formulates ‘a line relationship’ with the functionally-related agency above or below it (vertical arrows). For instance, Guangdong provincial Environmental Protection Bureau (EPB) is under the jurisdiction of the Guangdong provincial government, but it also reports to the upper-level functional department (i.e. the Ministry of Ecology and Environment (MEE)) and supervises municipal EPBs within the province. As another example, the Administration of Work Safety of Guangdong Province is a work unit of the People’s Government of Guangdong Province, but it also reports to the Ministry of Emergency Management (MEM) and supervises the Work Safety Bureaus (WSB) that are units of municipal governments within the province.

## 2.2.3 The Administrative System Foretells Policy Implementation Issues

Policy implementation is largely plagued by issues associated with the governmental system. Two major difficulties for the sustainability policy implementation are manifested in the administrative system. First, the contextual and legacy structural obstacles such as the so called ‘fragmented authoritarianism model’ have made the effective implementation of conventional regulatory approaches difficult (Wang and Lin, 2010; Orr et al., 2014). Second, the vertical, top-down approach to sustainable development faces anticipated problems like local resistance (e.g. resentment of central authority) and/or local functional departments’ lack of resources for implementation at the local level (Tal and Cohen, 2007).

Chinese government administrative system is largely functional-regional fragmented (Jin et al., 2016; Wang and Lin, 2010). In terms of functional dimension, the central government manages national

plans through different ministries, and each ministry and the functional-related agencies under it are responsible for the development of an individual area. Such line relationship between upper and lower level functional departments might facilitate a nationwide coordination of efforts within an industrial sector, however, it is poorly suited for the cross-functional coordination given that different government departments formulate their own policies and plans considering only their self-interest (Ma and Ortolano, 2000). Although in recent years some departments have been encouraged by the centre to collaborate with other authorised units over relevant subject areas, however, there is still a lack of effective communication and cooperation among different functional lines (Wang and Lin, 2010).

In terms of the regional dimension, the top-down approach to sustainability policy implementation is featured by the decentralisation of regulatory authority. The central government's role in resource allocation has deconcentrated to that of jurisdictional-based local governments since the economic reform in the 1980s (Jin et al., 2016). Although the central government still has strong power to coordinate national plans and marshal the requisite forces and budget, local governments are granted more authority over and responsibility for resource allocation in industrial activities within their geographic jurisdiction. Many of the national plans and policies issued by the state are 'administratively subcontracted' to the local (Zhou, 2014). As a result, the implementation of policies and regulations are not only often weakened through protracted political power negotiation, but also frequently ignored further down the regional dimension (Orr et al., 2014).

Despite the laudable ambition of the centre, the implementation of regulations and policies encounters plenty of obstacles at the local level. The economic decentralisation in China has provided huge incentives for the competition between local governments for economic development, whereas ecological race has been pushed to the bottom (Wang, 2010). Sustainability policy implementation is commonly hampered by the collusive alliances of power and fiscal resources among local governments for the purpose of maximising their own interests (Ma and Ortolano, 2000). For example, local government officials' efforts in fulfilling subcontracted jurisdictional obligations are largely driven by the promotion mechanisms (Jin et al., 2016). While facing multiple subcontracted tasks assigned by the upper government that cover various areas, local officials are more likely to focus on the ones related to economic growth (e.g. GDP) as it has been considered as an important factor determining local official's promotion. Environmental issues, however, rarely draw attention of local government authorities unless the situation is so severe and urgent that it will hamper local officials' promotion, or local government chiefs are mandated by the upper level government to deal with the problems (Jin et al., 2016).

Local governments' lack of interest and attention is compounded by the incapability of relevant environment regulatory authorities (e.g. EPB). Although the power and functionality of the ministries in the centre (e.g. MEE) have been greatly strengthened since the institutional reform in 2008, local EPBs are often marginalised in the allocation of fiscal budget and personnel (Jin et al., 2016). In addition, there are inevitable competition and conflicts between local EPB and other local functional departments. For example, a local EPB might not be able to enforce strict environmental supervision on a polluting company that brings enormous benefits to almost all other local authorities as it might encounter a boycott of other departments and cause tension within the local government.

### 2.3 Transitions in the Policy and Regulatory Context

Institutional transitions are 'fundamental and comprehensive changes introduced to the formal and informal rules of the game that affect organisations as players' (Peng, 2003, p.275). Emerging economies are often characterised by sudden and unpredictable institutional transitions which distinguish them from institutionally stable developed countries (Rottig, 2016). China as world's biggest emerging economy has gone through different stages of economic and social development, particularly, the transition from central planning economy to market competition has resulted in dramatic changes in the institutional environment (Peng, 2003). The notion of sustainability development has been institutionalised and adequately integrated as a fundamental and mainstream principle of governance into the institutional transition process in China (Swanson and Pintér, 2007).

The fundamental transition started from the launch of the open-up policy and the economic reform introduced by Deng Xiaoping in 1970s. Economic development became the priority with a guiding ideology of 'building up a socialist market economy with specific Chinese characteristics' (Luo, 1999). Together with the rapid economic growth, however, has come substantial environmental degradation and social disparities and conflicts (Chan, 2010; Luo, 1999). This resulted in the next phase development of 'building up a harmonious society' in Hu Jintao's era. The institutional pursuit of 'harmony' has had a focus on both social stability and environmental protection, leading to an increased level of government commitment to environmental regulation. Since 2012, the 'Chinese dream' proposed by President Xi Jinping has become the main political ideology in China with the intention of promoting a sustainable, stable, prosperous and harmonious society (Li et al., 2016; Chan, 2010) and offering an ambitious and brand-new model of prosperity and sustainable development in China (Zhang et al., 2012). Most recently, the Chinese government proclaimed, the so-called 'Xi-Jinpingism', as the new guiding ideology for future sustainable development. One of the most important paradigms of 'Xi-Jinpingism' is based on the new construction of 'Ecological Civilization'

(Shengtai Wenming), implying that the Chinese government shall focus more on environmentally friendly sustainable development to lead the global economy (Choi, 2018).

The changes to Chinese sustainability approach are manifested in the dynamic institutional policy and regulatory context. As shown in Table 2.1, Chinese political and economic structures have undergone the transition from an orientation based on the narrow pursuit of economic growth to a broader objective of sustainable development. Now, the concept of sustainability has been embedded in the overall macro social-cultural-political-environmental context. At the national level, the national 12<sup>th</sup> and 13<sup>th</sup> FYPs have clearly stated the development of a resource-saving and environment-friendly society as a goal. At the local level, Chinese central government is redefining local economic progress priorities by adopting environmental indicators for evaluating progress and shifting local policies towards sustainability (Guo et al., 2013; Li and Higgins, 2013). The main Chinese national and local sustainability strategies and policies are discussed in more detail in the following subsections.

## Chapter 2: The Background to SSCM Policy and Regulations in China

Table 2.1 The Evolution of Sustainable Development in the Institutional Transition Process in China (Source: Author)

	Beginning of Transition	Post-transition		
	First introduced by Deng Xiaoping in 1978, officially announced in 1992	11 <sup>th</sup> five-year plan period (2006–2010)	12 <sup>th</sup> five-year plan period (2011–2015)	13 <sup>th</sup> five-year plan period (2016–2020)
<b>Ideological Theme</b>	<i>‘Socialist market economy with Chinese characteristics’</i>	<i>‘Socialist harmonious society’</i> in 2004; <i>‘Scientific concept of development’</i> in 2007	<i>‘Harmonious society’</i> <i>‘Chinese dream’</i>	<i>‘Chinese dream’</i>
<b>Main Policies and Priorities</b>	Economic development placed as top priority	<ul style="list-style-type: none"> <li>• Sustainable long-term economic growth;</li> <li>• Building new socialist countryside;</li> <li>• Adjusting industrial structures;</li> <li>• Enhance service sectors;</li> <li>• Narrow regional disparity.</li> </ul>	<ul style="list-style-type: none"> <li>• Economic restructuring;</li> <li>• Mitigating social inequity;</li> <li>• Conserving the environment and resource;</li> <li>• New energy.</li> </ul>	<ul style="list-style-type: none"> <li>• Shifting from capital accumulation-led growth to innovation-led growth;</li> <li>• Integrated urban-rural development;</li> <li>• Green development;</li> <li>• Finance and SOEs reform;</li> <li>• Opening up to the world.</li> </ul>
<b>Sustainability Orientation and Objectives</b>	Sustainability viewed by government as a foreign-imposed requirement with protectionist aims	<ul style="list-style-type: none"> <li>• Articulating objectives that are related to issues including sustainability, energy consumption, and environmental conservation;</li> <li>• Strengthen the integration and harmony of development and environment;</li> <li>• Strengthen capacity building for sustainable development by enhancing people's understanding in this regard.</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing urbanization, narrowing the income gap between urban and rural citizens;</li> <li>• Strengthen energy targets, setting policies for new energy;</li> <li>• Improving social insurance, healthcare services, and education;</li> <li>• Supporting new industries and innovation particularly energy conservation, new energies, and new materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Stepping up comprehensive environmental governance;</li> <li>• Developing green and environmentally friendly industries;</li> <li>• Promoting international environmental cooperation through ‘one road one belt’;</li> <li>• Formulating and implementing green supply chains.</li> </ul>

## 2.4 Key National and Local Sustainable Development Strategies

Sustainable development has become a key part of the Chinese government's national and local strategic concern. At the national level, the Five-Year Plans for Economic and Social Development of the People's Republic of China (hereinafter referred as National FYPs) and China's Agenda 21 are the two most prominent strategic frameworks that set the tone for sustainable development in China. Under the guidance of the National FYPs and China's Agenda 21, provincial and municipal governments can formulate and implement their own Local FYPs and Local Agenda 21s. At functional level, different functional departments under central and local governments can create specific FYPs for the development of various industries and business areas at national and local level. Table 2.2 provides an overview of main national and local sustainable development strategies.

## Chapter 2: The Background to SSCM Policy and Regulations in China

Table 2.2 Key Sustainable Development Strategies at National and Local Level (Source: Author)

Sustainable Development Strategies		Key Formal Agencies	Explanation
<b>Five-Year Plans (FYPs)</b>	National FYPs	Formulated by the National Development and Reform Commission (NDRC) under the General Office of the State Council (GOSC);  Approved by the Chinese Communist Party (CCP) and the National People's Congress and its Standing Committee (NPCSC), issued by NDRC.	Plans that set the sustainability development goal and guides the implementation of environmental protection in next five years.  E.g. 13 <sup>th</sup> FYP for Economic and Social Development of the People's Republic of China.
	FYPs for specific industries and business areas (National level)	Formulated by NDRC and ministries under GOSC;  Approved by GOSC, issued by NDRC.	Plans that set the targets and guide the development of specific areas.  E.g. 13 <sup>th</sup> FYP for Ecological and Environmental Protection (formulated by MEE).
	Local FYPs	Formulated by Local Development and Reform Commission (LDRC) under local governments;  Approved by Local People's Congress and its Standing Committee (LPCSC), issued by LDRC.	Plans that set the targets and guide the development of local provinces, autonomous regions, and municipalities.  E.g. 13 <sup>th</sup> FYP for Economic and Social Development of Guangdong Province (formulated by Guangdong Provincial Development and Reform Commission).
	FYPs for specific industries and business areas (Local level)	Formulated by LDRC and functional departments under local governments;  Approved by local governments, issued by LDRC.	Plans that set the targets and guide the development of specific areas in local provinces and municipalities.  E.g. Guangdong Provincial 13 <sup>th</sup> FYP for Energy Saving and Pollution Control (formulated by Guangdong Provincial EPB).
<b>China's Agenda 21</b>	National China's Agenda 21	Formulated and supervised by the National Leading Group for Promoting Sustainable Development (chaired by the NDRC and vice-chaired by the Ministry of Science and Technology (MOST));  Implemented by the Administration Centre of China's Agenda 21 (ACCA21).	A white paper on China's population, environment and development in the 21 <sup>st</sup> century.
	Provincial and Municipal-level Agenda 21	Formulated and implemented by local governments	Local sustainable development strategies based on China's Agenda 21.

### 2.4.1 Five-Year Plans

National FYPs are formulated by the National Development and Reform Commission (NDRC) under the General Office of the State Council (GOSC), and approved by the Chinese Communist Party (CCP) and the National People's Congress and its Standing Committee (NPCSC) (Wang, 2013). National FYPs are the highest-level governing policies in China, aiming to achieve the macro-control by integrating government decision-making in the economic, environmental and social spheres. National FYPs are designed to be roadmaps for sectoral regulators and provincial officials, providing key indicators of the direction and changes in development philosophy at the high-level Chinese leadership (Zhang et al., 2014).

At the local level, provincial and municipal governments are encouraged to develop their own local FYPs to set specific goals and targets with sustainable development as an underlying theme. For instance, Guangdong province released the 13<sup>th</sup> provincial FYPs in 2016, to promote a mid- and long-term plan of local development with a focus on quality, efficiency, fairness and sustainability (Newsgd, 2016; NDRC, 2016).

In addition, based on the national FYPs, different functional departments of both central and local governments can formulate specific plans to guide the sustainable development for individual sectors during a certain Five-Year period, for example, the National Environmental Protection FYPs created by the MEE and other FYPs for various industrial and business areas (e.g. National FYPs for Textile Industry, FYPs for Safe Production etc.).

Sustainability-related issues like environmental protection was first addressed in the 9<sup>th</sup> Five-Year Plan (1996-2000) in 1996, and the concept of sustainable development was brought up for the first time as a major strategy for China to push forward its modernisation. The 10<sup>th</sup> Five-Year Plan (2001-2005) listed specific goals for each phase in various fields of sustainable development and presented planned implementation of some key ecological construction and environmental protection projects like water conservation, clean energy, and sustainable agriculture. The 11<sup>th</sup> FYP (2006-2010) is the milestone in which for the first time compulsory quantitative environmental and energy targets have been set. The concept of sustainable development has been prioritised and defined in later FYPs (12<sup>th</sup> and 13<sup>th</sup> FYPs), featuring innovative, coordinated, green, open, and shared development model and lifestyle. Table 2.1 presents the main policies and priorities regarding sustainable development in China in the most recent FYPs.



## 2.4.2 China's Agenda 21

On the global stage, China has been fulfilling its commitment to sustainable development by following and asserting its leadership over international sustainability agenda (OECD, 2007). As the first country formulated its national strategy on sustainable development after the Rio United Nations Conference on Environment and Development (UNCED) Conference in 1992, the Chinese government issued China's Agenda 21 in March 1994 – a white paper on the management of population, environment and development in China in the 21<sup>st</sup> century. Based on China's specific institutional context, China's Agenda 21 sets up a strategic goal of promoting the coordinated development of economy, society, resources and environment in China. It consists of four main parts: comprehensive strategy and policy of sustainable development, sustainable economic development, sustainable social development and rational utilization of resources and environmental protection (Zhou, 2009).

The responsibility of the implementation of national sustainable development strategy has been devolved to the planning departments and multi-sectoral agencies. A National Leading Group for Promoting Sustainable Development and the Administration Centre of China's Agenda 21 (hereinafter referred as ACCA21), under the direction of the NDRC and the Ministry of Science and Technology (MOST), were formally established in 1994 to undertake the overall governance responsibility concerning the implementation of China's Agenda 21 (Zhou, 2009).

In response to China's Agenda 21, several provinces have formulated their own Local Agenda 21 strategies and action plans to publicise China's Agenda 21 nationwide, for example, establishing leading groups and offices for the implementation of Local Agenda 21 activities, providing training on sustainable development, and allocating financial resources for Local Agenda 21 projects (Lin, 1998; Zhou, 2009).

## 2.5 The Legislative Framework Underpinning SSCM

As the Chinese government has been primarily relying on the top-down 'command-and-control' approach to achieving sustainable development goals, legislation has been playing a key role in the implementation of national and local sustainability strategies in China. As an emerging economy, the start of social and environmental legislation came late in China compared with developed countries, but it has been steadily expanded and strengthened in past decades. The past two decades have seen impressive reforms of laws in China in terms of the number of new or revised legislations (Buhmann, 2005). Many legislative reform initiatives have been initiated in response to the growing concern in China with respect to environmental and social issues in industries. Although the effectiveness of legal

enforcement still needs to be improved continuously, strengthened legislation and regulations on sustainability issues (e.g. environmental protection and labour conditions) have become the major incentives for companies to pursue socially and environmentally responsible behaviours (CSR-Asia, 2015).

China has many environmental and social laws at different legislative levels as well as numerous administrative rules and detailed environmental standards, which are systematically intertwined in the functional-regional institutional system. Four laws have been predominately influential in the implementation of environmental and social practices in industries: The Environmental Protection Law, Cleaner Production Promotion Law, the Labour Law, and the Corporate Law. These laws provide sophisticated and comprehensive coverage of various aspects regarding environmental protection, labour conditions and corporate social responsibility in China (Mu et al., 2014). Table 2.3 provides a summary of predominately influenceable laws in addressing sustainability issues in China. The main legislative framework for environmental and social aspects of sustainability are discussed respectively in the following subsections.

*Table 2.3 Key Legislations Related to Environmental and Social Sustainability*

<b>Main Environmental Laws</b>	<ul style="list-style-type: none"> <li>• Environmental Protection Law</li> <li>• Cleaner Production Promotion Law</li> <li>• Law on Environmental Impact Assessment</li> <li>• Circular Economy Promotion Law</li> </ul>
<b>Laws Relating to Specific Fields of Environmental Protection</b>	<ul style="list-style-type: none"> <li>• Atmospheric Pollution Prevention and Control Law</li> <li>• Marine Environment Protection Law</li> <li>• Water Pollution Prevention and Control Law</li> <li>• Soil Pollution Prevention and Control Law</li> <li>• Government Procurement Law</li> </ul>
<b>Main Social Laws</b>	<ul style="list-style-type: none"> <li>• Labour Law</li> <li>• Labour Contract Law</li> <li>• Trade Union Law</li> <li>• Corporate Law</li> </ul>
<b>Laws Relating to Specific Fields of Labour Rights, Health and Safety</b>	<ul style="list-style-type: none"> <li>• Law on Mining Safety</li> <li>• Law on Employment Promotion</li> <li>• Law on Labour-dispute Mediation and Arbitration</li> <li>• Law on Prevention and Control of Occupational Diseases</li> <li>• Law on Work Safety</li> <li>• Law Safeguarding the Rights and Interests of Women and Elderly</li> <li>• Law on Donation for Public Welfare</li> </ul>

### 2.5.1 Environmental Legislation

The origin of environmental issues and the development of corresponding environmental regulations and policies in China have undergone several distinct phases (Lin, 1998; Wang and Lin, 2010; Wang, 2010). The environmental regulatory framework expanded particularly rapidly in past decade when a number of new environmental laws were enacted, such as the Law on Environmental Impact Assessment (EIA) and the Law on Cleaner Production (Wang, 2010). Recently, a number of main legal acts were amended to incorporate a broader range of environmental issues, e.g. the newly revised Environmental Protection Law and the Air, Water and Waste Prevention and Control Laws, which have clearly stated the scope, procedure and responsibilities of environmental information disclosure by relevant organisations and companies.

The environmental legislative system is supported by a number of specific regulatory instruments for industrial pollution control, such as the Pollutant Discharge Permit System, Environmental Impact Assessment (EIA) system, auditing of the Cleaner Production (CP), 'three synchronisations' ('3S'), Environmental Protection Tax, and the Environmental Responsibility System.

EPBs at county level or above can take various enforcement measures in relevant enterprises in case of violations of environmental regulations, such as conducting on-site inspections, seizing and impounding the polluting facilities and equipment, ordering the suspension of production or demand remediation, applying the summary procedure and imposing an administrative penalty onsite. These measures differ in harshness: warnings are less severe than fees and fines, whereas court actions and permit revocations have the highest degree of scope and severity (See Table 2.4). The authorised environmental supervision institutions, which are subordinated to the administrative departments for environmental protection at all levels, can also conduct on-site inspections, but cannot make administrative penalty decisions. In addition, public security departments at county level or above can detain an individual who is directly responsible for the violation of environmental laws and refuses to comply with an order.

Table 2.4 provides some examples of environmental regulation enforcement measures and the three main categories of environmental regulatory instruments that are most commonly employed by the Chinese government are described below.

Table 2.4 Examples of Environmental Regulation Enforcement Measures (Source: Ma and Ortolano (2000))

Regulations	Enforcement Action	Severity Level of Action
<b>Environmental Permits</b>	Issue warnings for refusing to register or cheating during registration	Low
	Impose fines for refusing to register or cheating during registration	Medium
	Issue warning for violating discharge permit conditions	Low
	Impose fines for discharge permit conditions	Medium
	Revoke permits for serious violations of permit conditions	High
<b>Environmental Impact Assessment (EIA)</b>	Order to stop construction projects that haven't obtained EIA approval	Low
	Degradation of the organisation's level of qualification for cheating in EIA appraisal document	Low
	Impose fines for violators	Medium
	Increased fine of up to three times the commissions	Medium
	Criminal penalties, where a crime is committed	High
	Order to close the business	Extremely high
<b>Environmental Protection Tax (Discharge fees)</b>	Issue warning when fees are not paid on time	Low
	Impose a penalty of 0.1% per day on over-standard fees paid late	Medium
	Initiate a court action if an enterprise refuses to pay fees	High

### 2.5.1.1 Environmental Permits

So far there is no integrated environmental permitting regime in China, that is, enterprises must obtain various separate environmental permits addressing specific issues, such as air and water pollutant discharge permits, permits for the exploitation and use of resources, permits for construction projects, and permits for operation and disposal of solid wastes and hazardous wastes. Different industries are regulated under pollutant permission permits based on industry-specific standards. For example, in September 2017, the MEE issued the 'Technical Specification for Application and Issuance of Pollutant Permit - Textile and Dyeing Industry (HJ 861-2017)' which guides and regulates the implementation of pollutant permits in the textile and dyeing industry. In addition, different enterprises discharging pollutant are divided into key management entities and simplified management entities based on the amount of discharge and the severity of environmental damage caused by it.

### 2.5.1.2 Environmental Auditing

There are three important environmental auditing instruments: the EIA system, Cleaner Production Auditing, and the Environmental Information and Disclosure and Reporting Framework.

Environmental impact assessment (EIA) law articulates that new construction projects that may impact the environment must be assessed and seek the EIA approval before the construction can be conducted. After obtaining the EIA approval, a new EIA and its approval is required for any alteration, such as renovation or expansion of the project. The MEE examines and approves the EIA of special construction projects (e.g. nuclear facilities and secret projects) and construction projects that cross the borders of local jurisdiction, while the provinces, autonomous regions and municipalities can set the scope of authority for examination and approval of EIA documents for local construction projects.

Cleaner production has been promoted to prevent pollution at the source and to initiate a continuous preventive improvement of environmental performance of organisations. According to the Cleaner Production Promotion Law, enterprises in heavy polluting industries are subject to compulsory cleaner production auditing, especially those enterprises that have exceeded the national emission standards or the total emission control targets set by the local government. For example, papermaking, steel, nitrogen fertilizer, printing and dyeing, pharmaceutical, and leather are some key areas. In addition, enterprises that use toxic and hazardous materials for the production or discharge toxic and hazardous substances in the production also face regular cleaner production auditing.

Enterprises are subject to either mandatory or voluntary disclosure of environmental information requirements. Pollutant discharge entities under intensified supervision must publicly disclose environmental information such as pollutant discharging information, construction and operation of environmental protection facilities, and emergency programme for environmental pollution incidents, however, entities that are not under intensified supervision can voluntarily disclose such information. On 12<sup>th</sup> June 2017, the MEE and the Security Regulatory Commission signed the 'Cooperation Agreement on Jointly Carrying out Environmental Information Disclosure of Listed Companies', which specifically puts forward the establishment and improvement of the mandatory environmental information disclosure system for listed companies and bond companies.

### 2.5.1.3 Environmental Protection Tax

The Environmental Tax Law of the People's Republic of China (PRC) came into force on 1<sup>st</sup> January 2018, which has replaced the previous 'pollutant discharge fee system'. Under the Environmental Protection Tax Law, industrial enterprises and entities that directly emit taxable pollutants to the environment within the territory and other sea areas under PRC jurisdiction are required to pay

environmental protection tax. There are four categories of taxable pollutants governed under the Environmental Tax Law: atmospheric pollutants, water pollutants, solid waste (hazardous waste) and noise. Taxes on pollutants emitted by enterprises are differentiated according to these categories. The tax bureau official interviewed commented on the environmental protection tax regulation:

*'Replacing "fee" with "tax" has been considered as a significant regulatory reform in the environmental protection area, which is expected to provide stronger regulatory and economic incentives for enterprises to adopt more proactive environmental protection practices to reduce emissions and pollutants.'* – Tax Bureau Official (Q city)

## 2.5.2 Social Legislation

Following the principle of social justice and harmony, China has enacted a large body of state laws as well as local regulations concerning various social issues like labour relations, safeguarding workers and social security. The Labour Law lays out the foundation of China's basic labour administrative system, dealing with labour relations and other relationships closely related to them, such as labour protection, labour safety and hygiene, occupational training, labour disputes and labour supervision (The State Council, 2011). Other principal social laws include the Labour Contract Law, the Trade Union Law and the Corporate Law. In addition, there are laws targeting specific fields of labour rights like the Law on Mining Safety, Employment Promotion Law and the Law on Labour-dispute Mediation and Arbitration.

The Chinese government has made great efforts to enhance the protection of workers' rights (e.g. minimum wages and working conditions) and to facilitate the processes of conflict resolution between workers and employers (Hofman et al., 2015). The most significant change in the social regulatory system was the incorporation of the Labour Contract Law, which has led to an increase of workers claiming their legal rights and a decrease of workers without a written labour contract (Li and Freeman, 2015; Gallagher et al., 2015).

Conventionally, China has been monitoring enterprises' labour standards compliance through codes of conduct and audits. In addition to the audit approach, the Chinese government has been increasingly developing more mature enforcement approaches to tighten social regulations (Wang, 2014). Recently the Chinese government issued three sets of measures to strengthen the enforcement of labour laws in China (Lau and Zheng, 2017):

- Measures for Publicising Acts in Material Violation of Labour Protection Laws ('Publicising Measures') (2017);

- Measures for the Credit Rating of Enterprises for Labour Protection Compliance ('Rating Measures') (2017);
- Notice on Promotion of Making Random Inspection Relating to Human Resources and Social Security Matters ('Random Inspection Notice') (2016).

These measures are aimed at cracking down on material violations of labour laws and improving employers' compliance in China. Under these new measures, employers' non-compliance behaviours are linked with their credit ratings, which is a significant step taken by China to facilitate the implementation of the Social Credit System (Stepan and Mokry, 2015).

### 2.5.2.1 Publicising Measures

In addition to usual administrative penalties, enterprises with serious violations of labour laws will be publicised on the labour authorities' official websites as well as in major local media (e.g. newspapers, magazines and TV etc.). These public non-compliance announcements will reveal the violator's information including company name, address, and registration code, along with the full name of the legal representative or key person in charge and the exact violation and fines or other sanctions imposed.

Consequences in addition to usual labour administrative penalties include:

- Publication of the non-compliance on the labour authorities' official websites and local major newspapers, TV and other media;
- Blacklisting in the employer's labour protection compliance and credit archives and system;
- Sharing non-compliance information with other government authorities and social organisations and subjecting the employer to further penalties by other authorities.

### 2.5.2.2 Rating Measures

Employers will be rated A, B or C based on their compliance in various areas such as misuse of third-party hiring agencies, employment contracts, child labour laws, overtime and vacation compliance. Employers that have certain non-compliance behaviours will be rated C, for example:

- Having received sanctions more than three times for violation of labour protection laws;
- Violation that causes serious workplace accidents or serious adverse social impacts; or
- Refusal to make timely rectification or honour the decision or punishment from labour authorities.

C-rated employers are subject to increased scrutiny and will face more routine inspections by labour authorities, while supervision over A-rated employers will be lessened. Employer grades information will be archived in the employer's labour protection compliance and credit system for a minimum of 3 years. In addition, the non-compliance information will eventually be shared with other government agencies like the administration of industry and commerce, finance, land, construction, tax, which may impose further sanctions on non-compliant employers.

### 2.5.2.3 Random Inspection Notice

A 'dual-random' inspection mechanism has been introduced as an important enforcement measure for labour legislation. Under the Random Inspection Mechanism, government officials may be randomly selected for social compliance check and inspection in randomly selected enterprises. This mechanism aims to help promote transparency and efficiency of the enforcement activities conducted by local labour authorities.

## 2.6 Policy Context for SSCM

The legislative system in China lays the foundation for the promotion of comprehensive, balanced and sustainable economic and social development in China. However, relying solely on regulatory measures to manage sustainable issues in industries is not enough, and the challenges and limitations in just adopting a command-and-control approach to sustainability have been increasingly recognised by the Chinese government. Therefore, in recent years, a series of 'new' policies have been developed to coordinate economic, social and ecological relations and promote sustainable development among industries (Wang, 2010; Wang and Chang, 2014). In particular, the importance of adopting a supply chain approach to sustainable development has been increasingly recognised by the Chinese government, and therefore, a broad range of market-based mechanisms and policies have been introduced, e.g. different modes of subsidies (Zhang et al., 2013), tax incentives, moral exhortation and green public procurement (Zhu et al., 2013b). These policies aim to support the implementation of SSCM practices in industries by creating a favourable business environment for SSCM, affecting industrial supply, or promoting market for sustainable products on the demand side of supply chains. The following subsections provide a description of the main government policies that drive SSCM practices in industries.



### 2.6.1 Promotion of Green Innovation

Chinese economy has reformed itself into a new era where the country's national policies shifted from resource-intensive development mode towards creating an ecologically civilised society. China's sustainability-oriented innovation policies and overall innovation capacity have positioned the country well to achieve this ambitious move (Guo et al., 2013). The Chinese government considers green technological innovation (e.g. product and process innovation) as vital to achieving a balance of economic development and ecological civilisation through green supply chains (Zhu et al., 2012b). The Ministry of Science and Technology (MOST) has established a number of programs promoting research and development (R&D) of environmental technologies. The most prominent examples are the '863 Program' and '973 Program'. The '863 Program' was known formally as the 'National High-Tech Development Plan', which was established to boost innovation in strategic high technology sectors in China. As a complement to the '863 Program', the '973 Program' (i.e. the 'National Basic Research Program') has highlighted the role of green technological innovation since the establishing in 1997. These programmes have greatly motivated and supported the implementation of national sustainable development strategies, where billions of dollars have been invested in green technology projects (Campbell, 2011).

### 2.6.2 Industrial Upgrading and Transformation

The 'Made in China 2025' plan was promulgated by the GOSC in May 2015, which is another strategic plan of China with the aim of promoting domestic manufacturing industries in the direction of advanced, innovative, intelligent and green-oriented development within three decades. Sustainable supply chain is a key feature highlighted in the plan, which incorporates the following five main aspects: 1) establishing green standards for the product life cycle management; 2) establishing a management system and standards for green supply chain implementation; 3) Establishing green product standards and ensuring the coordination of main actors in green supply chains; 4) Implementing the Extended Producer Responsibility Regime; 5) Establishing evaluation standards for green supply chains (The State Council, 2015).

As a necessary complement to the 'Made in China 2025' agenda, a series of policies have been established to facilitate the actual implementation of the plan in specific areas. For instance, in 2016, the 'Guideline of the Implementation of Green Manufacturing Programme (2016-2020)' was published to promote a green industrial development focusing on incorporating green design, green technology, green production, green management, green supply chain and green recycle into the product life cycle (MIIT, 2016).

### 2.6.3 Building Eco-industrial Parks

The Chinese government initiated a demonstration program of eco-industrial park (EIP) in 2001, which has served as an important means of achieving sustainable development at both the national and local level in China (Qu et al., 2015; Zhu and Cote, 2004). As of May 2013, 20 development zones had been accredited as the national demonstration EIPs in China, and another fifty EIPs are planned for construction during the 12<sup>th</sup> FYP period (2011-2015) (Tian et al., 2014). The eco-industrial park policy has extensively promoted the practical application of a sustainable supply chain approach to facilitate the industrial development in China (Zeng et al., 2017). Benefiting from the EIP policy, enterprises in industrial parks implemented green supply chain practices to achieve both economic growth and improved environmental performance. Guitang Group Industrial Park and Lin-Hai Industrial Park are two good examples of the successful integration of green supply chain management into eco-industrial development (Zhu and Cote, 2004; Li et al., 2015). As in the case of Lin-Hai Industrial Park, the implementation of green supply chains using waste-to-resources technologies has brought the park an annual economic benefit of USD 100 million (Li et al., 2015).

### 2.6.4 Promotion of Circular-economy Mode

As an extension of the eco-industrial park initiatives, in 2004 the Chinese government promoted the circular-economy industrial system with a 'win-win' ecological and economic development model as a new paradigm for the Chinese manufacturing. The circular-economy model applies a life-cycle approach by addressing the '3R' principle, i.e. reducing, reusing and recycling (Ying and Zhou, 2012), which conforms to the concept of sustainable supply chain as it not only emphasises green production in the supply chain but also changes the traditional view of the supply chain as a one-way linear process of 'cradle-to-grave' to the closed-loop circular mode of 'cradle-to-cradle' (Yuan et al., 2006).

Since the promulgation of the Circular Economy Promotion Law in 2009, this macro economy development policy has filtered to the disaggregated micro level of industries and organisations (Zhu et al., 2012b). County-level governments and above are required to establish the environmental responsibility system and use various policies like fiscal support, investment opportunities, and government procurement to promote circular economy in local industries (Xue et al., 2010; Yuan et al., 2006). By 2010, the NDRC has implemented two rounds of circular economy pilot projects involving 178 entities at different levels, e.g. enterprises, industrial parks, cities and provinces (Xue et al., 2010).

### 2.6.5 Green Supply Chain Pilot Programme

Green supply chain approach has been increasingly applied by the Chinese government to achieve comprehensive sustainability goals at both the national and local level. The most successful example is the establishing of the Asia-Pacific Economic Cooperation (APEC) Cooperation Network on Green Supply Chain Demonstrating Centres (APEC, 2015), which has been gradually implemented in four pilot cities in China (i.e. Tianjin, Shanghai, Dongguan and Shenzhen) since 2014. Local governments of these four cities have issued their own policies to promote the implementation of green supply chain according to the actual conditions and needs. The programme has made some major achievements, for example, the Tianjin government issued the 'Guideline of Green Supply Chain Management Practices in Government Procurement' in July 2014, which has helped the Tianjin local government to successfully conduct several green public procurement projects. In the same year, the local government of Shenzhen in Guangdong province, in coordination with some voluntary leading enterprises like Huawei Technologies Co. Ltd., published 'Green Procurement Declaration' and conducted several pilot green supply chain management projects (China Today, 2018a). Following the efforts of Tianjin and Shenzhen city, in August 2016, the local government of Dongguan city in Guangdong province published the 'Notice of Dongguan Green Supply Chain Management Experiment Work Scheme', where a theory of 'promoting ecological civilization, constructing green Dongguan' was proposed and promoted (Zhang et al., 2017).

### 2.6.6 Economic Incentives

Supply-side policies provide enterprises with necessary knowledge and resources to assist the implementation of SSCM practices, such as subsidised R&D activities, financing, manpower planning and training, technological inputs and support. Particularly, enormous financial resources have been devoted to the promotion of sustainable development in China in past decades. The Chinese government has made a strong financial commitment to the nationwide development of green area. For instance, a large chunk of 863 and 973 programme funding has been directed to environmental technology projects (e.g. renewable energy technology) and the funding increased about fifty times from 1991 to 2005 – far more than for any other major areas of research (Campbell, 2013). Recently, the MOST's 12<sup>th</sup> FYP for Technology Development (2012-2016) set a goal of \$300 billion investment in environmental technology R&D projects within the five-year period.

Fiscal funding and tax reductions have been increasingly applied by the Chinese government to encourage manufacturers to embark upon sustainable practices in their operations. For example, the NDRC, the Ministry of Industry and Information Technology (MIIT), and the Ministry of Finance jointly

promoted the implementation of the 'Energy-saving Products Benefiting People Project' in 2009, where financial subsidies were provided for ten types of highly efficient energy-saving products with energy efficiency grade one or above. Government subsidies partially offset enterprises' investment in the R&D of green technologies and production costs of environmentally friendly products. Fuelled by the government funding, many domestic enterprises are actively developing and improving their technological capacity for sustainability, which has created a booming domestic green market.

### 2.6.7 Green Procurement

On the demand side, the Chinese government has employed market-based policies to create market demand for sustainable products and facilitate sustainable trade. One popular policy tool that government uses to promote the implementation of SSCM practices is the green procurement. Since 2004, the Chinese government has initiated a number of procurement policies to create a demand for new products or processes that are more environmentally friendly. These include both public green procurement policies and guidelines for industrial procurement:

- 'The Government Procurement Implementation Opinion for Energy Saving Products' (2004)
- 'Implementation Suggestion of Environmental Labelling Products in Government Procurement' (2006)
- 'Circular on Establishing System of Compulsory Government Procurement of Energy Conservation Products' (2007)
- 'Government Procurement List for Environmental Labelling Products' (2008)
- 'Enterprise Green Procurement Guidelines (Trial)' (2014)

The Chinese Environmental Development Centre affiliated with the MEE has established the Chinese Green Purchasing Network (CGPN) for the promotion of green public procurement and sustainable consumption (Qiao and Wang, 2011). To mainstream sustainable public procurement in China, the project – 'Sustainable Public Procurement in Urban Administrations in China' was implemented in Chinese pilot cities (Tianjin, Qinhuangdao and Lanzhou) with the help of EuropeAid's SWITCH-Asia Programme (Sebastian et al., 2011).

On 24 October 2006, the Ministry of Finance (MOF) and Ministry of Environmental Protection (MEP) jointly issued Recommendations on the Implementation of Environmental Labelling Products in Government Procurement and the first government procurement 'List for Environmental Labelling Products', which included 14 categories of products meeting environmental standards. These two documents mark the launch of the Chinese Governmental Green Procurement (GGP). They define

government procurement, product categories, processes and regulations and provide support for carrying out government procurement on Environmental Labelling Products.

The Chinese GGP policy requires all levels of state bodies, institutions and organisations to give priority to purchasing Environmental Labelling products and prohibit them from purchasing any products which harm the environment or human health. Products with similar performance, technology and service attributes but less environmental impact should be preferred over other products. If a purchasing agency does not meet the above requirement, this will be made public by responsible departments in accordance with relevant laws, rules and regulations and financial sectors can refuse to pay. This requirement came into effect on 1 January 2007 in the budget departments at the central and provincial level, then implemented across other levels of government.

Green public procurement is a strong case for the Chinese government to use its substantial purchasing power to catalyse consuming markets for more sustainable products. The above-mentioned policies have clearly expressed a market demand for sustainable products, which drives industries push back technological frontiers to meet government's needs. In order to enter the governmental green procurement scope, enterprises will have to adopt green raw materials, develop new processes and pursue sustainability innovations to improve the environmental performance of their products so that they can meet the guaranteed long-term and high-volume demand of government. This, in turn, will make positive effects to sub-suppliers and incentivise more businesses to invest in and innovate in green and responsive products and services.

In addition to public procurement, the Chinese government has been driving and guiding enterprises to implement the green procurement, in such way, they will force their suppliers of raw materials, products and services to continuously improve environmental management and promote the green production, and as a result, gradually guide and promote the formation of green procurement chain and promote green consumption in the whole society. For example, in December 2014, three government authorities (i.e. the Ministry of Commerce, the Ministry of Environment Protection, and the Ministry of Industry and Information Technology) jointly issued the 'Guideline for Green Purchasing of Enterprises' ('The Guide') to guide and promote the implementation of green supply chains among industries. The Guide plays a significant role in promoting the sustainable supply chain approach to environment protection. It provides a code of conduct for socially responsible enterprises. The new Environmental Protection Law and the 'Measures for Enterprise Environmental Credit Rating (Trial)' also provide important policy basis for further strengthening the corporate environmental protection rules and the internal drive mechanism.

So far, green procurement in China has been mostly implemented at the national level (e.g. Beijing Green Olympic in 2008) and in bigger cities like Guangzhou, Shenzhen and Beijing. This is not surprising considering China is still in the pilot stage of promoting and implementing sustainable supply chain. The implementation of green procurement programmes has also encountered several challenges, for example, lack of publicity and promotion, unfavourable market environment for green products, lack of uniformity in green production definition and evaluation criteria and poor green procurement program management system (Qiao and Wang, 2010; Qiao and Wang, 2011).

### 2.7 Chapter Summary

As Roome (2005) has pointed out, every country is unique in its approach to driving organisations to adopt sustainable practices, given that the sustainable development is a dynamic process which can encapsulate a number of different elements such as the institutional structure, political style and processes, social structure, local and national views of the role of organisations, culture and historical traditions. China's approach to sustainability has been largely determined by the dynamic and complex political and institutional structure. The macro-meso-micro policy and regulatory context in China not only affects relationships between Chinese enterprises and governments at all levels, but also shapes the way of reconceptualising the role of organisations in a society that takes sustainability as its core value. In this chapter, the examination of the major Chinese regulations and policies with regard to sustainability provides a better understanding of such institutional influence in the China context.

The complexity of the policy and regulatory context encourages this research to further explore the reactions of Chinese enterprises to government interventions regarding the implementation of SSCM practices. The understandings gained from this chapter help to investigate policy and regulation interventions in the case analysis chapters.

# Chapter 3

## Literature Review

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### 3.1 Introduction

Chapter 3 is focused on the literature of sustainable supply chain management (SSCM) and presents the findings of the literature reviews. SSCM literature is very large and reviewing the entire repository is beyond the scope of this study. This chapter intends to provide an overview of the main research streams relevant to the research phenomenon which can assist this thesis in answering the research questions. The literature review includes four main bodies: 1. Review on the broader sustainability, SCM and SSCM literature; 2. Review on SSCM practices; 3. Review on factors that influence SSCM; 4. Review on challenges to SSCM; and 5. Review on SSCM research in the context of China.

SSCM is a multidisciplinary field with synergies across the sustainability and supply chain management (SCM) disciplines (Ağan et al., 2016; Reefke and Sundaram, 2017). Therefore, this chapter starts with a review on the broader sustainability and SCM literature in order to provide a brief theoretical background on the field of SSCM, which is followed by an overview of the theoretical understanding of the SSCM concept along with its definitions (Section 3.2). Thereafter, this chapter provides an overview of two important areas related to this study, i.e. implementation of SSCM practices (Section 3.3) and factoring influencing SSCM implementation (Section 3.4), so as to provide theoretical foundation of the research area. The challenges associated with the integration of sustainability into SCM are presented in Section 3.5. Finally, it explores the current status of SSCM research in the context of China and examines the existing knowledge specifically relating to Chinese private sector engagement in SSCM initiatives (Section 3.6). These reviews assist this thesis in identifying the research gaps and justifying the research findings in later chapters.

The structure of this chapter is illustrated in Figure 3.1 below:

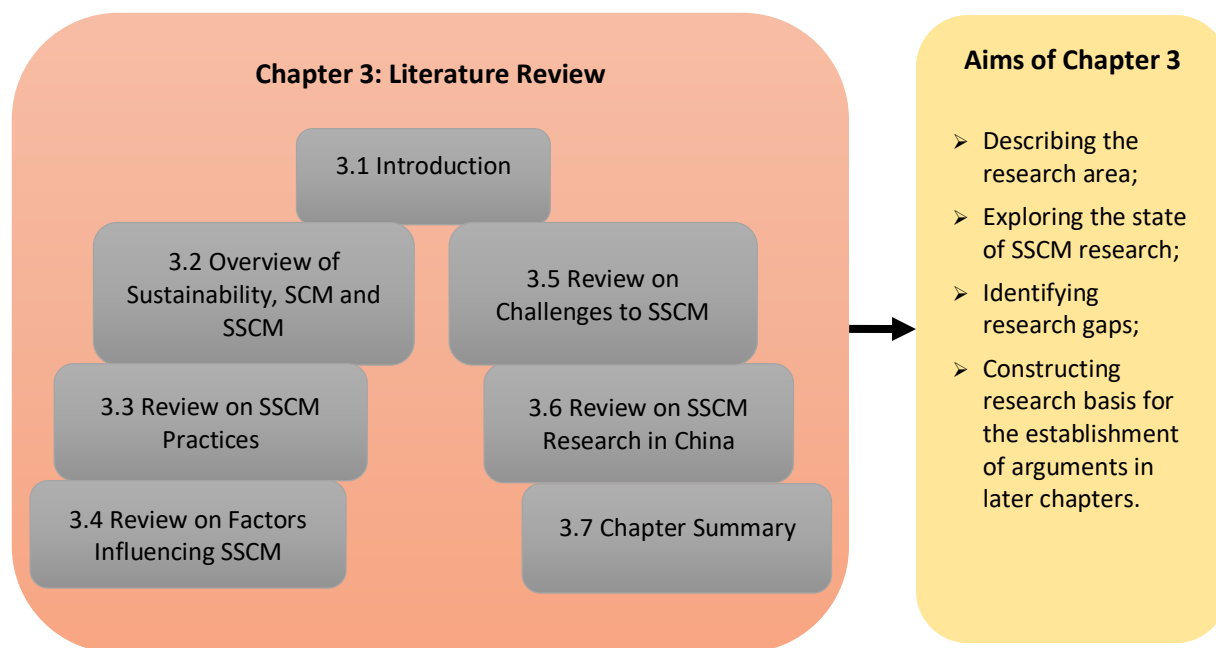


Figure 3.1 Structure of Chapter 3

## 3.2 Sustainability, SCM and SSCM

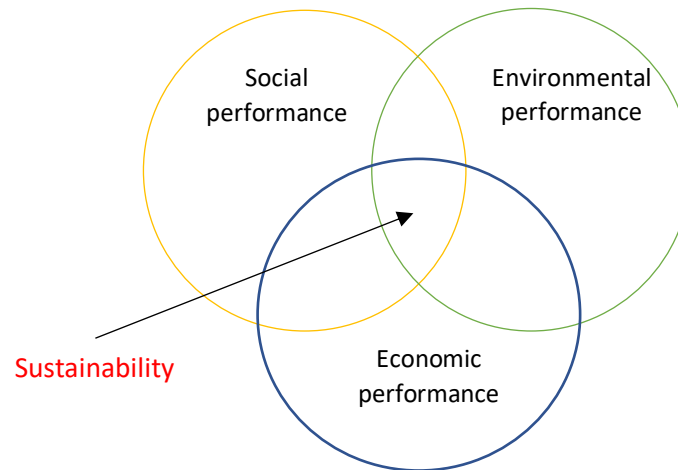
### 3.2.1 Sustainability in the Organisational Context

Sustainable development has been interpreted and used in numerous disciplines and in a variety of contexts but it has been generally viewed as ‘a desired goal of development and environmental management’ (Brown et al., 1987, p.713). One of the earliest and the most commonly accepted definition of sustainable development was brought by the World Commission on the Environment and Development (WCED) in the 1987 Brundtland Report of ‘Our Common Future’ –‘the development which meets the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987, p.43). Based on this broad definition, various views of sustainability have emerged in the literature (Costanza and Patten, 1995; Gatto, 1995). Although each of these viewpoints can be argued as addressing sustainability issues to some extent, they do not identify the conditions in which sustainability is truly being achieved in practice. The literature indicates that there is no single ‘right’ approach to achieving sustainable development goals, emphasising the challenges in operationalising the concept within a business paradigm (Stubbs and Cocklin, 2008).

Within a business context, sustainable development has evolved as a result of economic development, environmental degradation and the need of social justice and equity (Elkington, 1998a). The core of business sustainability is embedded in the triple bottom line (TBL) concept of Elkington (1998b) – people, planet and profit – combining the environmental, social, and economic dimensions of



performance of an organisation. According to the TBL concept, social, environmental and economic performance dimensions are intrinsically linked, and the intersection of these three is the primary place where sustainability is generated (Carter and Rogers, 2008) (See Figure 3.2).



*Figure 3.2 TBL View of Sustainability (Carter and Rogers, 2008)*

The concept of sustainable development has been translated into a corporate context by many authors (van Marrewijk, 2003; Baumgartner and Ebner, 2010; Amini and Bienstock, 2014). Parallel to the growth in the significance of sustainability has been the growth in the number of associated names and different definitions that are used, often interchangeably, in literature and in the business world. Amongst the many different terms can be found:

- business ethics (e.g. Quarshie et al. (2016))
- business sustainability (e.g. Rezaee (2018))
- corporate sustainability (e.g. Morali and Searcy (2013), van Marrewijk (2003) and Baumgartner and Ebner (2010))
- corporate social responsibility (e.g. Andersen and Skjoett-Larsen (2009) and Salam (2009))
- corporate citizenship (e.g. Mirvis and Googins (2006))

There is, realistically, no 'true' name or definition that can be applied to these different terms. Scholars like van Marrewijk (2003) suggest that various and more specific definitions should be developed and accepted in order to accommodate an organisation's sustainability awareness, ambition and development goals. Although other phrases such as corporate social responsibility (CSR) or corporate citizenship continue to be used, they are increasingly superseded by the broader term corporate sustainability which pervades the entire value chain (Dočekalová and Kocmanová, 2016). Therefore, the term corporate sustainability (CS) has been adopted in this thesis to represent sustainability in the

business context (Amini and Bienstock, 2014). The concept of corporate sustainability and the key components are clarified in the following subsections.

### 3.2.1.1 Definitions of Corporate Sustainability

Corporate sustainability (CS) can be broadly defined as corporate activities that address social and environmental concerns in business operations and in interaction with stakeholders (van Marrewijk, 2003). In the literature, CS has been interpreted from a variety of perspectives. For example, Amini and Bienstock (2014) provide a comprehensive framework of CS that includes five sustainability dimensions (i.e. business level, scope of organisational focus, sustainability innovation, TBL focus, and compliance stance) based on four levels of maturity. Baumgartner (2014) suggests that CS can be interpreted in three different ways according to the underlying motivation for sustainability: innovation, productivity and cost savings. Alternatively, van Marrewijk and Werre (2003) define five types of CS based on a corporation’s ambition levels and the motives for CS decisions: compliance-driven, profit-driven, caring, synergistic and holistic CS (See Table 3.1).

*Table 3.1 Definitions of Corporate Sustainability at Different Levels (Adapted from van Marrewijk (2003) and van Marrewijk and Were (2003))*

		<b>Definition</b>	<b>Motivations</b>
<b>Corporate Sustainability</b>	<b>Compliance-driven</b>	Providing welfare to society, within the limits of regulations from the rightful authorities, e.g. creation of jobs, profits & tax payment	Legal compliance; CS is a duty and obligation
	<b>Profit-driven</b>	Integrating social, ethical and ecological dimensions into business operations and decision-making, provided it contributes to the financial bottom line	Business case; CS is promoted for profitability
	<b>Caring</b>	Balancing economic, social and ecological concerns and going beyond legal compliance and profit considerations	Human potential, social responsibility and care for the planet
	<b>Synergistic</b>	Creating value in the economic, social and ecological realms of corporate performance, in a synergistic, balanced and win-together approach with all relevant stakeholders	Value proposition; CS being the inevitable direction
	<b>Holistic</b>	Integrating sustainability in all aspects of the corporation to contribute to the quality and continuation of current and future generations	Sustainability being the only alternative; the universal responsibility of every corporation/person towards all other beings

Comparing the above-mentioned various ways of defining CS, we can see that CS can mean different things for different organisations. As Amini and Bienstock (2014) point out that there are many complex and far-reaching issues surrounding the complex concept of CS. Some scholars suggest that a comprehensive CS conceptual framework requires the integration of diverse elements from all kinds of interpretations as each dimension provides specific insights for CS management and they are all necessary to achieve sustainable development in organisations (van Marrewijk, 2003; Amini and Bienstock, 2014). The key aspects of CS are illustrated in the next subsection.

### 3.2.1.2 Dimensions of Corporate Sustainability

To determine the components of CS, a number of international organisations have provided systematic guidelines for sustainability dimensions, for example, the Global Reporting Initiative (GRI), and Dow Jones Sustainability Index (DJSI). Based on popular concepts in sustainability literature, Baumgartner and Ebner (2010) construct a comprehensive framework that identifies and classifies various sustainability aspects according to their focus on economic, environmental and social issues (See Table 3.2):

- *The economic dimension of sustainability* is often viewed as the ‘generic dimension’ that consists of elements that are fundamental to the continuing operation of the organisation and retaining its competitiveness in the market for long time (Güler and David, 2008; Baumgartner and Ebner, 2010), including innovation and technology, collaboration, knowledge management, processes, purchasing and transparency (Baumgartner and Ebner, 2010).
- *The environmental dimension of sustainability* considers the environmental impacts caused by corporate operations like use of natural resources and energy, pollution of air, water and soil, waste, and use of hazardous materials.
- *The social dimension of sustainability* concerns the impact of corporate activities on social stakeholders and goes beyond the economic, technical and legal requirements of corporations (Carter, 2005). Elements included in the social dimension are corporate governance, employee practices, employee rights, workplace health and safety, ethical behaviour and corporate citizenship.

Table 3.2 Different Dimensions and Elements of Corporate Sustainability (Baumgartner and Ebner, 2010)

<b>Sustainability Dimension</b>	<b>Elements</b>	<b>Explanation</b>
<b>Economic Dimension of CS</b>	<b>Innovation and Technology</b>	Effort in sustainability related R&D in order to reduce environmental impacts in new products and in business activities. Environmental and safety concerns are reflected in both design and operational criteria of a firm's technology, such as cleaner production and zero-emission technologies.
	<b>Collaboration</b>	Cooperation and collaboration with various stakeholders (e.g. suppliers, buyers, R&D institutions, government etc.). Working in common programmes and networks on innovative products and technologies. Exchange of information and knowledge.
	<b>Knowledge Management</b>	Activities and approaches to deploy sustainability related knowledge in the organisation. Methods to plan, develop, organise, maintain, transfer, apply and measure specific knowledge and to improve the organisational sustainability knowledge base.
	<b>Process</b>	Clear processes and roles are defined so that business activities are efficiently conducted and that every employee knows what the organisation expects from him or her (also concerning sustainability). Adaptation of process management on sustainability necessities to implement corporate sustainability systematically. Integration of sustainability into daily corporate operations.
	<b>Purchasing</b>	Consideration of sustainability issues in purchase. Awareness and consideration of sustainability related issues in the organization as well as alongside the supply chain. Relationship with suppliers focusing also on sustainability.
	<b>Sustainability Transparency</b>	Disclosure of sustainability issues in company reports (either in a separate sustainability report or integrated into the corporate one) or website.
<b>Environmental Dimension of CS</b>	<b>Use of Resources and Energy</b>	Use of renewable and non-renewable resources and energy through the company including recycled resources
	<b>Pollution Control</b>	Reduce emissions into the air, water and soil in corporate activities
	<b>Waste Management</b>	Reduce waste in corporate activities
	<b>Environmental Issues of Products</b>	Environmental aspects of the product over the whole life cycle
<b>Social Dimension of CS</b>	<b>Corporate Governance</b>	Transparency in all its activities in order to ameliorate relationship with stakeholders. Giving insight into all relevant data; following rules of markets on corporate governance and defining responsibilities and behaviour of the board.

	<b>Motivation and Incentives to Employees</b>	Active involvement and exemplary function of management on sustainability topics for employees. Awareness of needs, claims and motivation factors of employees in order to implement sustainability sufficiently into the organization due to support of management for acting in sustainable way (e.g. time, money, resources). Development of incentives and reward systems (monetary, non-monetary).
	<b>Human Capital Development</b>	Development of human capital for sustainability related issues through specific programmes such as permanent education, mentoring or training. Broad cross-working education (job enrichment, job enlargement) in order to become aware of the different challenges and issues of corporate sustainability.
	<b>Health and Safety</b>	Guarantee that no health and safety risks occur when working in/for the organization. No negative impact of employees' physical health at any time. Operation of programmes for employees to prevent dangers and to stay generally fit and healthy.
	<b>Ethical Behaviour and Human Rights</b>	Ethical behaviour towards sustainability consisting of well established, basic assumptions and principles relating the cooperation within an organization and the behaviour towards (external) stakeholders. A culture of respect, fair rules and behaviour within an organization and fair, as well as sincere consideration of stakeholders' ideals and needs. No harm of employees, either concerning their religious belief, gender, nationality or colour or concerning people who are handicapped or aged.
	<b>Corporate Citizenship</b>	Being a good corporate citizen on a national level. Support of stakeholders (and others) and their issues on regional level; participation or creation of sustainability related activities for the local community. Orientation on future generations without exploiting the present (or nature).

## 3.2.2 Supply Chain Management

### 3.2.2.1 Supply Chain

The term 'supply chain' encompasses all organisations, activities, and processes associated with all stages of the business involved in the planning, sourcing, processing, manufacturing, and delivery of products and services (Mentzer et al., 2001; Lummus and Vokurka, 1999).

From a focal firm perspective, a supply chain is typically comprised of a focal firm and its upstream and downstream trading partners (e.g. suppliers and customers) (Spekman et al., 1998). A focal firm typically governs over the supply chain (sometimes through ownership), provides direct contact to end customers, and has bargain power over other actors in the supply chain (Christiansen, 2015). A focal firm is the one that initiates business transactions, that is, a focal firm might select multiple suppliers that produce parts/sub-assemblies of a product and then sell them to multiple customers,

and all these suppliers and customers are part of the focal firm's supply chain. Since customers and stakeholders do not always differentiate between a company and its suppliers, focal firms may be held accountable for their suppliers' behaviours (Lippman, 2001). For example, customers increasingly hold focal firms responsible for the conditions in which the products they provide were manufactured (e.g. products associated with unsustainable supplier behaviours) (Hartmann and Moeller, 2014), and focal firms need to bear the undesired consequences caused by their suppliers. In developed countries, consumers have been pushing focal firms to monitor their suppliers' sustainability performance across supply chains (Klassen and Vereecke, 2012).

Following Figure 3.3 depicts a typical supply chain composition within a focal firm.

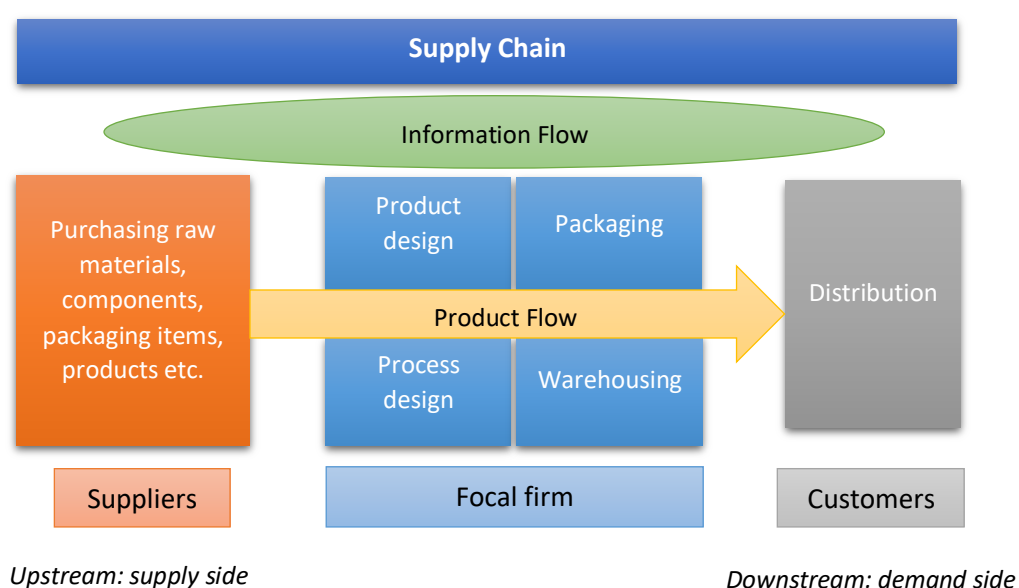


Figure 3.3 Generic Illustration of a Focal Firm's Supply Chain Composition (Adapted from Rushton et al. (2014))

### 3.2.2.2 Definitions of Supply Chain Management

Supply chain management (SCM) covers a broad scope of business areas from the sourcing of raw materials and inputs, the processing and manufacture of products/services to the delivery of completed products/services to end customers (Rushton et al., 2014). Typically, Christopher (2010) defines SCM as 'the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole' (p.5). Another common definition of SCM is provided by Tang (2006, p.453): 'the management of materials, information, and financial flows through a network of organisations (i.e., suppliers, manufacturers, logistics providers, wholesalers/distributors, retailers) that aims to produce and deliver products or services for the consumers.' According to this definition, SCM requires a focal firm to coordinate and collaborate on processes and activities across different corporate functions such as marketing, sales,

research development, forecasting, production, purchasing, logistics, information systems, finance and customer service (Croxtton et al., 2001; Mentzer et al., 2001).

Typically, there are eight key business processes that construct the core of SCM within a focal firm: customer relationship management, customer service management, demand management, order fulfilment, manufacturing management, procurement, product development and commercialisation and returns (Lambert et al., 1998; Croxtton et al., 2001). Based on the SCM description provided by Lambert et al. (1998), Figure 3.4 provides an illustration of a focal firm’s SCM model with its core components.

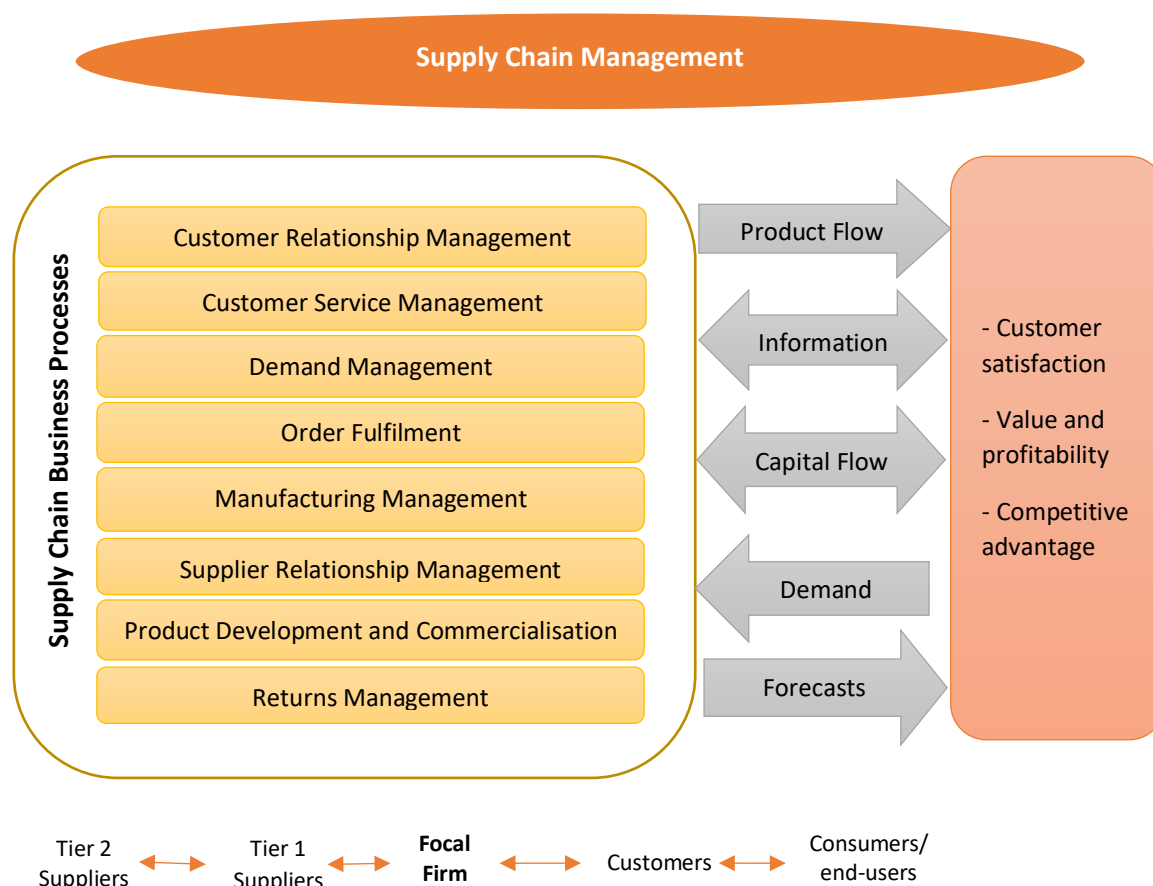


Figure 3.4 An Illustration of a Focal Firm’s Supply Chain Management Model (Adapted from Lambert et al. (1998))

### 3.2.3 Overview of Sustainable Supply Chain Management

Focal firms have initially responded to global pressures for sustainability through corporate social responsibility initiatives, addressing social and/or environmental challenges within their corporate operations. However, with industrial production being fragmented and dispersed worldwide, the social and environmental impact associated with production has increasingly been displaced to distant locations via global supply chains. A typical consumer company’s supply chain is responsible for more

than 80 percent of its environment impact (Bové and Swartz, 2016). Focal firms increasingly realise that supply chain risk sources can come from different parts of their supply chains, and a company cannot be considered more sustainable than its supply chain.

Globalisation has led to increased visibility of the environmental and social issues associated with all business processes of a company, from the sourcing and processing of raw materials to the delivery of finished products (Thorlakson et al., 2018). This has resulted in heightened public awareness and strengthened pressures motivating focal firms not only to ensure environmental and social sustainability within the firms, but also to increasingly extend sustainability initiatives to their supply chains (Ashby et al., 2012; Robert, 2012; Niesten et al., 2017), for example, by pushing through standards and certifications and ensuring compliance with codes of conduct among various tiers of suppliers.

By integrating the concept of sustainability into the traditional supply chain management, sustainable supply chain management (SSCM) has emerged as a proactive approach to improving business processes (Thorlakson et al., 2018; Chakravorti, 2017; Beske and Seuring, 2014). In recent years, SSCM has attracted considerable interest among academics and practitioners (Dubey et al., 2017; Tachizawa and Wong, 2014). Despite the popularity of this field, it is evident from the literature that there is a lack of theoretical and practical understanding of the concept of SSCM (Dubey et al., 2017). The SSCM literature has often included a mix of multiple areas such as green supply chain management (GSCM), environmental supply chain management, green supply chains, and ethical or socially responsible sourcing, which has greatly increased the difficulty in defining the concept of SSCM.

Many scholars have attempted to provide definitions for SSCM. Ahi and Searcy (2013) review and compare 22 definitions of GSCM and 12 definitions of SSCM and find that none of the them focuses on performance characteristics and that most of the definitions are yet to be critically reviewed to understand whether the mentioned characteristics are relevant to the SSCM concept. From an integration perspective, the authors further argue that SSCM is an extension of GSCM with the balanced integration of all three dimensions of the TBL (i.e. environmental perspective, social benefits, and economic benefits) into SCM. Dubey et al. (2017) conduct a critical and extensive review of 16 definitions of SSCM in the literature and they classify them as either a management philosophy or as a set of management processes.

Although there is so far no single, universally accepted definition of SSCM, comparing different definitions, one can find that scholars overwhelmingly agree that SSCM is to integrate the economic, environmental and social sustainability dimensions into the design and optimisation of traditional supply chains. Amongst the various viewpoints, there are two widely quoted definitions of SSCM in



the literature. The first one is by Carter and Rogers (2008, p.368), which points out that SSCM is ‘the strategic, transparent integration and achievement of an organisation’s social, environmental, and economic goals in the systemic coordination of key inter-organisational business processes’. Another highly cited definition of SSCM is provided by Seuring and Müller (2008b, p.1700), which considers SSCM as ‘the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements’.

Both definitions have built on the combination of the TBL concept of Elkington (1998b) and some prominent definitions of SCM in the literature (e.g. Mentzer et al. (2001) and Lambert (2008)). However, the two definitions have different focuses: Carter and Rogers (2008) adopt a focal firm’s perspective and the definition is focused on focal firms’ operations, whilst Seuring and Müller (2008b) highlight the importance of cooperation among supply chain partners in achieving sustainability goals and meeting customers’ needs. The definition provided by Carter and Rogers (2008) has been adopted in this thesis.

### 3.3 Literature Review on SSCM Practices

This section presents a comprehensive review on SSCM practices.

#### 3.3.1 Use of Terminology

SSCM can involve a range of different initiatives that are critical for achieving supply chain sustainability. A systematic exploration of the SSCM literature has led to the identification of various terms that are used interchangeably in the literature to refer to sustainability initiatives. These include: ‘practice’ (Vachon and Klassen, 2006; Green et al., 2012; Zhu et al., 2012c; Awaysheh and Klassen, 2010); ‘governance mechanism’ (Alvarez et al., 2010; Formentini and Taticchi, 2016; Gimenez and Sierra, 2013); ‘program’ (Tachizawa et al., 2012; Simpson and Power, 2005); ‘approach’ (Tachizawa et al., 2015; Lee and Klassen, 2008); and ‘tool’ (Vachon and Klassen, 2006; Russo and Tencati, 2009). So far, these terms are not uniquely defined in the literature and different authors might use different terms to refer to the same concept. For example, Gimenez and Tachizawa (2012) describe supplier assessment and collaboration as two types of governance mechanisms, while Sancha et al. (2016a) consider them as sustainable supply management practices. The most common and widely used term in SSCM literature is ‘practice’, which can be considered as a broad conceptualisation of all relevant actions, activities, operations or processes involved in the management of sustainability issues in

supply chains. Therefore, the term 'SSCM practices' is adopted in this research to refer to various sustainability initiatives within a focal company and its supply chain management.

### 3.3.2 Typology of SSCM Practices

Like the use of terminology, the coverage of SSCM practices in the literature can vary significantly. The composition of SSCM practices has been widely discussed in the literature.

Typically, based on particular sustainability issues faced by companies and their TBL orientation, a number of authors posit that SSCM practices can be generally categorised as either environmental or social supply chain practices (Marshall et al., 2015a; Pimenta and Ball, 2014; Galeazzo and Klassen, 2015; Baliga et al., 2019), with the former focusing on resource use and impacts on the physical environment and the latter focusing on health and well-being of people in the supply chain and impacts on society (Marshall et al., 2015a). This classical categorisation has been widely adopted in SSCM studies; however, it is rather simple and generic, and economic supply chain practices are not included. In addition to environmental and social SSCM practices, some recent studies have attempted to add more building blocks into the classification. For instance, Das (2018) classifies SSCM practices into environmental management practices, socially inclusive practices, operations practices and supply chain integration. Miemczyk and Luzzini (2019) propose a categorisation of SSCM practices which includes environmental practices, social practices and risk assessment practices.

From a focal firm's perspective, some scholars posit that SSCM encompasses both intra-organisational functions and operations as well as inter-organisational relationships. By distinguishing between actions limited to the boundaries of the corporation and actions extended to the supply chain, authors like Formentini and Taticchi (2016), Zhu et al. (2012a) and Liu et al. (2011) propose the classification of internal and external SSCM practices: internal practices are used by focal firms to manage functional operations and departments within the firm or general philanthropic initiatives that are not tied to the company's supply chain (Thorlakson et al., 2018); whilst external practices are adopted by focal firms to address sustainability challenges associated with upstream and down supply chain partners and stakeholders (Awaysheh and Klassen, 2010; Reuter et al., 2012; Zhu et al., 2012a). Such categorisation of internal versus external SSCM practices takes into account the boundary of a focal firm, however, it is worth to note that certain SSCM practices can be both internal and external.

Other than the classical classifications of environmental versus social, and internal versus external SSCM practices, the composition of SSCM practices has been further examined based on the functions and operations of supply chains. For instance, Esfahbodi et al. (2016) propose a categorisation of four types of SSCM practices, including sustainable procurement, sustainability production, sustainable

### Chapter 3: Literature Review

distribution and reverse logistics. Paulraj et al. (2017) identify a range of SSCM practices: sustainable product design, sustainable process design and demand-side sustainability collaboration. Hong et al. (2018) propose five categories of SSCM practices including supply chain coordination and trust, supply chain learning, supply chain strategic orientation, supply chain risk management, and supply chain continuity.

So far, there are no consistent definition and classification of SSCM practices in the literature. The above mentioned three ways of classifying SSCM practices have different focuses, but they do not fully capture the complex characteristics of SSCM when applied separately. Therefore, this research provides a classification of SSCM practices by considering all three dimensions based on the literature: the TBL focus, the boundary of a focal firm, and the targeted operations and supply chain functions (See Figure 3.5).

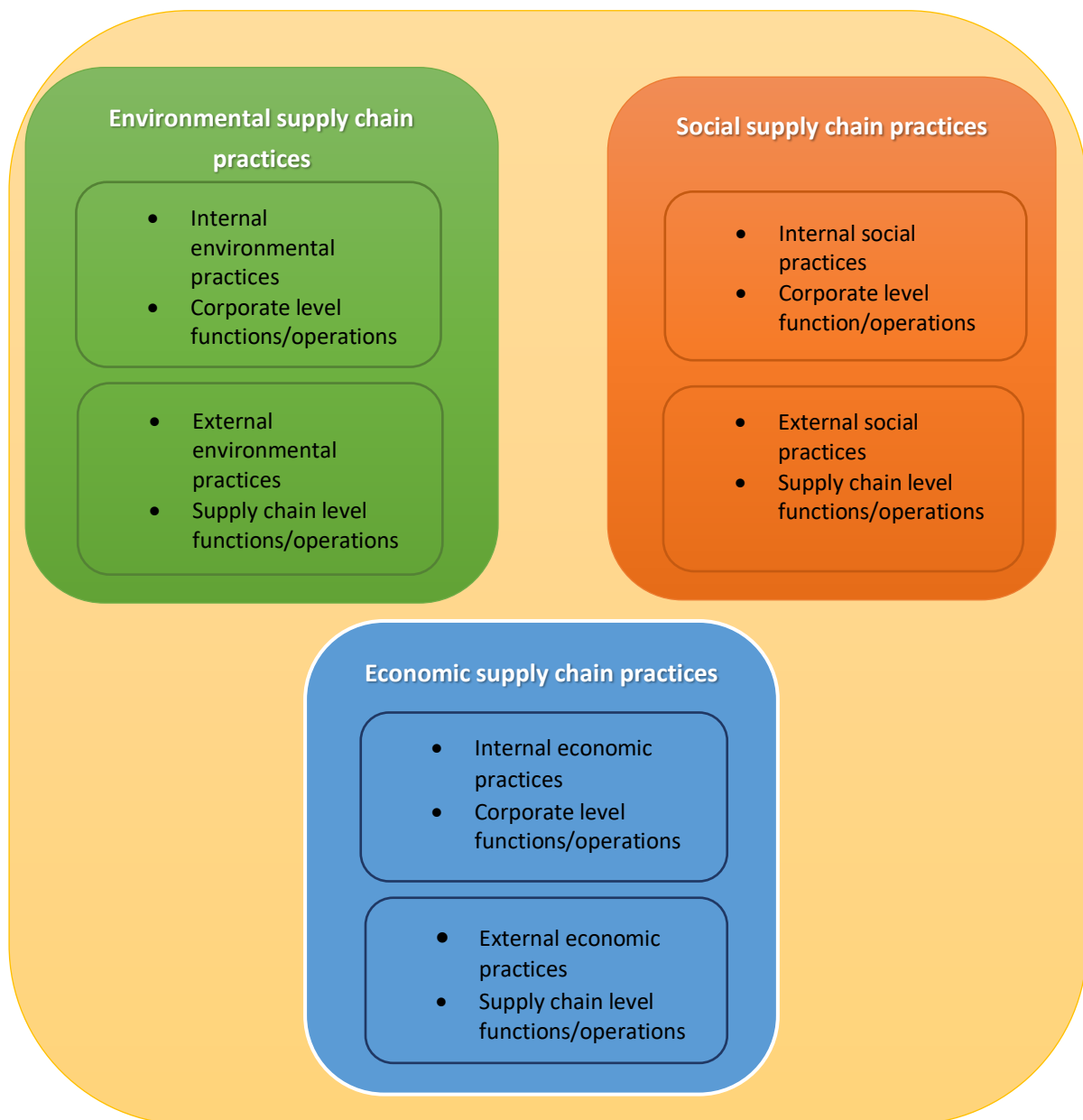


Figure 3.5 Typology of SSCM Practices (Source: Author)

The following subsections provide a discussion of key SSCM practices in the literature.

### 3.3.2.1 Economic Supply Chain Practices

Economic supply chain practices involve activities that aim to improve the operational performance of focal firms and their supply chains. A wide range of operations management practices and techniques can be implemented to reduce cost, improve quality and flexibility, enhance efficiency, reduce inventory and fulfil on-time delivery across the supply chain (Das, 2018; Li et al., 2019). For example, previous studies have examined some specific mechanisms relating to quality management, e.g. implementing quality management system to build quality into the product, selecting suppliers

based on quality rather than cost and facilitating suppliers implement total quality management system and Six sigma (Kannan and Tan, 2005; Chen and Paulraj, 2004). To reduce cost, Ibusuki and Kaminski (2007) suggest focal companies to help their suppliers implement value engineering. Kannan and Tan (2005) and Yang et al. (2011) propose that companies can adopt scientific inventory control technique and implement just-in-time in the supply chain to reduce inventory and enhance efficiency. Table 3.3 provides a summary of economic supply chain practices.

Table 3.3 A Summary of Economic Supply Chain Practices

Economic SSCM Practices		Description	Main Forms of Implementation Modes/Mechanisms	Sources
Internal/external	<b>Reducing cost</b>	Actions to reduce various costs in operations	<ul style="list-style-type: none"> <li>Establishing cost management system</li> <li>Adopting new technology and equipment</li> <li>Educing stoppage loss and scrap loss</li> <li>Helping suppliers implement value engineering to reduce the cost of components</li> <li>Implementing lean production system to minimise waste</li> </ul>	Li et al. (2019), Ibusuki and Kaminski (2007),
	<b>Improving quality</b>	Actions to improve product quality	<ul style="list-style-type: none"> <li>Complying with industry quality standards</li> <li>Implementing ISO quality management system</li> <li>Establishing quality traceability system</li> <li>Selecting suppliers based on quality rather than cost</li> <li>Facilitating suppliers implement total quality management or Six sigma</li> </ul>	Kannan and Tan (2005), Chen and Paulraj (2004)
	<b>Increasing supply flexibility</b>	Actions to improve the flexibility	<ul style="list-style-type: none"> <li>Increasing responsiveness capability of suppliers</li> <li>Constructing long-term relationship with suppliers and customers</li> <li>Communicating customers' needs to the suppliers</li> <li>Exhaustive supplier selection process</li> </ul>	Li et al. (2019)
	<b>Improving efficiency</b>	Actions to improve efficiency	<ul style="list-style-type: none"> <li>Adopting scientific inventory control technique</li> <li>Implementing Just-in-time (JIT) in the supply chain to reduce inventory</li> </ul>	Yang et al. (2011), Kannan and Tan (2005), Yang et al. (2011)
	<b>On time delivery</b>	Delivery of products to customers at the right time	<ul style="list-style-type: none"> <li>Accelerating the transformation of design to manufacturers</li> <li>Improving the stock turnover</li> <li>Optimising the production process</li> <li>Improving efficiency in transportation</li> </ul>	Wu et al. (2015), Sheu and Chen (2014)

### 3.3.2.2 Environmental Supply Chain Practices

Environmental supply chain practices encompass both internal and external activities, ranging from pollution prevention, resources and raw materials extraction, waste recycle and reuse, to the disposal of hazardous pollutants. Although many studies have examined various environmental or 'green' supply chain practices, it is still difficult to construct a clear and unified framework for these practices due to lack of consensus in the literature (Vachon and Klassen, 2006; Laosirihongthong et al., 2013).

At corporate level, some scholars have focused on different organisational functions, suggesting that internal environmental supply chain management consists of environmental activities within the organisational boundaries, such as implementing environmental management systems, product and process eco-design and environmental sustainability reporting (Sloan, 2010; Tachizawa et al., 2012; Zhu et al., 2005; Marshall et al., 2015a).

At supply chain level, environmental management requires not only actions by focal firms but also direct involvement of other players in the same supply chain (Vachon and Klassen, 2006). Some studies have focused exclusively on the upstream supply chain, considering green supply chain practices as buying firms' efforts to improve the environmental performance of purchased products and/or of their suppliers (Bowen et al., 2009; Tachizawa et al., 2012). As such, green supply practices include a wide variety of activities including environmental standards for suppliers, informal/formal evaluations of suppliers, environmental audits, supplier training and education, joint waste reduction with suppliers and joint process/product design with suppliers. Others have viewed environmental supply chain practices with a larger scope by capturing practices outside the purchasing or supply function, i.e. practices that involve downstream supply chain partners such as consumers (Zhu and Sarkis, 2004; Zhu et al., 2005; Zhu et al., 2012a).

Drawing upon prior literature, it is possible to identify a number of key internal and external environmental supply chain practices that are commonly applied in focal companies and their supply chains (See Table 3.4). Internal environmental supply chain practices typically include internal corporate environmental management and product/process eco-design for environmental sustainability. External environmental supply chain practices include green purchasing, supplier environmental assessment and collaboration with supply chain partners on environmental issues.

Table 3.4 A Summary of Environmental Supply Chain Practices

Environmental SSCM Practices		Description	Main Forms of Implementation Modes/Mechanisms	Sources
Internal	<b>Internal corporate environmental management</b>	Governance of environmental issues within the focal firm	<ul style="list-style-type: none"> <li>• Cross-functional cooperation for environmental improvements</li> <li>• Implementation of environmental management systems, e.g. ISO 14001, Total quality environmental management (TQEM)</li> <li>• Implementation of environmental programs and standards, e.g. Life Cycle Assessment (LCA), Ecological Footprinting, balanced scorecard, eco-label.</li> <li>• Internal environmental performance evaluation</li> <li>• Pollution prevention practices</li> <li>• Training for employees on environmental issues</li> </ul>	Zhu and Sarkis (2004), Marshall et al. (2015a), Zhu et al. (2012a)
	<b>Product/process design for environmental sustainability</b>	Design of products and processes to ensure environmental sustainability throughout the supply chain	<ul style="list-style-type: none"> <li>• Eco-design of products for reuse, recycle and recovery</li> <li>• Redesign products or processes to reduce impact on environment</li> <li>• Redesign the production system or supply chain processes to benefit environment (e.g. closed-loop supply chain)</li> </ul>	Zhu et al. (2008b), Marshall et al. (2015a), Pagell and Wu (2009)
External	<b>Green purchasing</b>	Incorporating environmental considerations into purchasing decisions	<ul style="list-style-type: none"> <li>• Selection of suppliers based on environmental criteria</li> <li>• Provision of design specifications to suppliers that include environmental requirements for purchased items</li> <li>• Requirement for suppliers to use environmental packaging (degradable and non-hazardous)</li> <li>• Provision of information regarding focal firm's environmental policies or changes that may affect suppliers</li> </ul>	Sancha et al. (2016b), Pimenta and Ball (2015), Zhu and Geng (2002), Green et al. (2012), Zhu et al. (2012a)
	<b>Supplier environmental assessment</b>	Activities related with monitoring suppliers' environmental performance and auditing suppliers' compliance with environmental regulations and standards	<ul style="list-style-type: none"> <li>• Evaluation of suppliers' environmental sustainability performance</li> <li>• Audits of suppliers' compliance with environmental regulation and policy</li> <li>• Ensuring suppliers' environmental certification (e.g. ISO 14001)</li> <li>• Provision of feedbacks to suppliers as a result of their evaluations</li> <li>• Visits to suppliers' premises</li> </ul>	Reuter et al. (2010), Vachon and Klassen (2006), Marshall et al. (2015a), Handfield et al. (2002)

	<p><b>Collaboration with supply chain partners on environmental issues</b></p>	<p>Direct work with suppliers that provides training, education, support or other activities</p>	<ul style="list-style-type: none"> <li>• Information sharing with suppliers to provide them with environmental sustainability knowledge</li> <li>• Allocation of personnel to help suppliers implement environmental practices</li> <li>• Training/education of suppliers in terms of environmental practices and required implementation skills</li> <li>• Development of joint efforts with suppliers and customers for environmental objectives</li> <li>• Cooperation with suppliers/customers for eco-design, green packaging, cleaner production, and development of green technologies etc.</li> </ul>	<p>Tate et al. (2010), Green et al. (2012), Vachon and Klassen (2008), Vachon and Klassen (2006), Zhu and Sarkis (2004), Busse et al. (2016)</p>
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### 3.3.2.3 Social Supply Chain Practices

Although there are several early studies that have investigated social responsibility in supply chains, for instance, how CSR initiatives are incorporated into the supply chain (Carter and Jennings, 2002), and how purchasing social responsibility initiatives impact firm performance (Carter, 2005), early SSCM studies have tended to focus on the environmental dimension of sustainability in supply chains (Seuring et al., 2008; Pullman et al., 2009; Pimenta and Ball, 2014). Following the high-profile social issues and rising global concern of social failures in supply chains, for example, the 2008 melamine-tainted milk incident in China (Chen et al., 2014), and the 2013 Rana Plaza collapse in Bangladesh factories that supplied apparel to Western buyers (Huq et al., 2014), in recent years, there has been an increasing number of studies focusing particularly on the social aspect of sustainability (Mzembe et al., 2016; Huq et al., 2016; Huq and Stevenson, 2018; Sancha et al., 2016a; Croom et al., 2018; New, 2015).

Social sustainability is concerned with a broad range of social issues related to human and societal capital (Carter and Jennings, 2002), such as human rights (Awaysheh and Klassen, 2010; Gold et al., 2015), health and safety (Carter, 2004; Lu et al., 2012), and community relationships (Tate et al., 2010; Ciliberti et al., 2008). Social supply chain management deals with social issues within a focal company as well as its supply chain, consisting of practices and processes pertaining to achieving fair management of labour, communities and regions in the entire supply chain (Sloan, 2010).

Pullman et al. (2009) admit that there is a lack of clear definition and conceptualisation of social sustainability and suggest that it encompasses practices that initiate and enrich social health and human wellbeing in the current and future world. Prior SSCM studies have identified various practices and mechanisms that can be implemented to achieve social sustainability in supply chains, including



a focal firm’s own socially responsible practices and supplier development programmes such as supplier codes of conduct and third-party audits (Zakaria et al., 2012; Huq et al., 2016).

At supply chain level, the investigation of socially responsible supply chain practices has been mainly associated with socially responsible supplier development in the upstream supply chain. Several studies reveal that this proves to be a powerful and effective way of addressing social issues in suppliers and improving suppliers’ capabilities in the implementation of corporate social responsibility (Busse et al., 2016; Lu et al., 2012; Sancha et al., 2016a). Lu et al. (2012) defines socially responsible supplier development as ‘buyer’s efforts in identifying improvement areas in suppliers’ CSR implementation and in taking necessary actions to rectify problems’ (p.162). A number of key practices that have been used to develop socially responsible suppliers include supplier assessment, collaboration, supplier codes of conduct and social sustainability management systems (e.g. SA 8000 and OHSAS 18001 certification) (Marshall et al., 2015a; Marshall et al., 2015b; Sancha et al., 2016a; Sancha et al., 2015a; Gimenez and Tachizawa, 2012; Lu et al., 2012). The main internal and external social supply chain practices are listed in Table 3.5 below.

Table 3.5 A Summary of Social Supply Chain Practices

Social SSCM Practices		Description	Forms of Implementation Modes/Mechanisms	Sources
<b>Internal</b>	<b>Social sustainability management systems</b>	Implementation of management systems that provide policies and procedures for workplace safety and labor rights	<ul style="list-style-type: none"> <li>• Implementation of health and safety management system (OSHAS 18001) in the focal firm and suppliers</li> <li>• Implementation of workplace management system (SA8000) in the focal firm and suppliers</li> <li>• Implementation of other employee health and well-being programs in the focal firm and suppliers</li> </ul>	Marshall et al. (2015a), Alwaysheh and Klassen (2010), Klassen and Vereecke (2012)
	<b>Product/process development for social sustainability</b>	Development of products and processes to ensure health and safety, fair margins and employee welfare throughout the supply chain	<ul style="list-style-type: none"> <li>• Development of products and processes to ensure health and safety of consumers as well as employees in focal firm and suppliers</li> <li>• Development of products and processes to promote welfare and well-being of employees in focal firm and suppliers</li> <li>• Redesign of products and processes that reduces health and safety risks for consumers and society</li> </ul>	Marshall et al. (2015a), Tate et al. (2010), Klassen and Vereecke (2012)

<b>External</b>	<b>Socially responsible sourcing</b>	Fair business practices that are in accordance with accepted principles of right or good conduct	<ul style="list-style-type: none"> <li>• Communication of ethical behavior requirements for suppliers</li> <li>• Provision of information regarding buyers' CSR policies or changes that may affect suppliers</li> <li>• Fair trade that ensures suppliers' living wage and safe conditions</li> </ul>	Alwaysheh and Klassen (2010), Huq et al. (2014), Lu et al. (2012), Zorzini et al. (2015)
	<b>Supplier codes of conduct</b>	CoCs states expected behaviors for suppliers in order to ensure their business ethics	<ul style="list-style-type: none"> <li>• Developing ethical CoCs with suppliers</li> <li>• Monitoring suppliers' compliance with CoCs</li> </ul>	Jiang (2009b), Yu (2008), Yu (2015), Mamic (2005)
	<b>Supplier social assessment</b>	Activities related with evaluating suppliers' social performance and auditing suppliers' compliance with social regulations and standards	<ul style="list-style-type: none"> <li>• Evaluation of suppliers' social sustainability performance</li> <li>• Audits of suppliers with respect to social compliance</li> <li>• Provision of feedbacks to suppliers as a result of their evaluations</li> <li>• Visits to suppliers' premises</li> </ul>	Gimenez and Tachizawa (2012), Sancha et al. (2015a), Foerstl et al. (2010), Pagell and Wu (2009), Mamic (2005)
	<b>Collaboration with supplier on social issues</b>	Direct work with suppliers that provides them with training, education, support or other activities	<ul style="list-style-type: none"> <li>• Allocation of personnel to help suppliers implement CSR</li> <li>• Training/education of suppliers in terms of social practices and required implementation skills</li> <li>• Development of joint efforts with suppliers with respect to social issues</li> </ul>	Gimenez and Tachizawa (2012), Sancha et al. (2015b), Lu et al. (2012)
	<b>Community development</b>	Social activities that go beyond organisation boundaries to actively engage with community groups	<ul style="list-style-type: none"> <li>• Establishing good relationships with communities</li> <li>• Conduction of charitable activities in communities</li> </ul>	Pagell and Wu (2009), Marshall et al. (2015a)

### 3.3.3 Effectiveness of SSCM Practices

The broad range of SSCM practices leads to the question of which practices should be implemented in enterprises and the effectiveness of these practices. SSCM practices are characterised by different levels of sophistication and commitment to sustainability. Some SSCM practices are 'basic' (Marshall et al., 2015b) as they are associated with already-established monitoring and coordinating processes, procedures and performance (e.g. codes of conduct and monitoring) (Klassen and Vereecke, 2012), whereas more 'advanced' practices (e.g. collaboration and product redesign) can enable product and

process innovation that can open up new markets (Klassen and Vereecke, 2012), redefine the supply chain (Pagell and Wu, 2009), and entail firms' willingness to proactively deviate from current operations (MacCarthy and Jayarathne, 2012). Previous studies have examined the effectiveness of different types of practices.

For example, Jiang (2009b) argues that CoCs might contribute to shaping suppliers' socially responsible behaviour, but they do not necessarily lead to better sustainability performance. Yu (2015) also points out that the effectiveness of CoCs on improving suppliers' sustainability is limited due to the selectiveness in the coverage of issues, the narrow scope of application and potential unintended negative impacts on suppliers. Companies can be generally selective in determining the scope of labour issues covered by codes (Yu, 2015), and codes might not be influential on emerging markets with weak regulations on labour standards and less ethical consumers (Yu, 2008; Jiang, 2009b).

Prior studies have shown that assessment has positive impacts on companies' sustainability performance (Foerstl et al., 2010), however it only identifies where suppliers need to be developed without providing proactive solutions to sustainability issues. Jiang (2009b) points out that most buying companies or third-party auditors do not provide suppliers with help or support regarding how to make required changes to solve the issues and improve their performance. In addition, monitoring of suppliers might in practice cause dishonesty and mock compliance of suppliers (Klassen and Vereecke, 2012; Huq et al., 2014). Sancha et al. (2016a) find that, while supplier assessment on social issues help to improve the buying firm's social performance, it does not lead to direct improvements in suppliers' performance.

Compared with traditional practices such as CoCs and monitoring of suppliers' compliance with requirements, some authors argue that market-oriented practices such as collaboration and product redesign are more strategic and long-term sustainability commitments. For example, Sancha et al. (2016a) find that collaboration with suppliers on social issues is a more effective approach to enhance the social performance of suppliers than traditional supplier monitoring. Authors like Lu et al. (2012) and Marshall et al. (2015b) also argue that collaboration is more effective in enhancing suppliers' capabilities for handling sustainability issues and promoting a responsible culture among suppliers, which can potentially lead to improved operational performance across the entire supply chain (Pagell and Wu, 2009; Awaysheh and Klassen, 2010; Marshall et al., 2015b; Croom et al., 2018).

In practice, companies may have different focuses and orientations towards sustainability and implement different SSCM practices according to their situations. Previous studies have found that companies' SSCM decision making and the effectiveness of SSCM practices is contingent on a number of factors, such as firm size (e.g. Zhu and Sarkis (2007); Liu et al. (2016); Zhu and Sarkis (2006)), industry

(e.g. Zhu and Sarkis (2007); Zhu and Sarkis (2004); Krueger (2008)) and ownership structure (e.g. Zhu and Sarkis (2004); Liu et al. (2011); Zhu and Sarkis (2006)). For example, drawing upon a systematic literature review, Tachizawa and Wong (2014) identify several contingency factors that can impact on companies' approaches to managing sustainability in multi-tier supply chains, including purchasing power, buyer-supplier dependency, buyer-supplier geographical distance, industry and sustainability knowledge resources. Busse et al. (2016) find that the outcomes of supplier development practices are influenced by various intra- and inter- organizational contextual factors that derive from complexities in the concept of sustainability, socio-economic differences, spatial and linguistic distance, and cultural differences between buyers and suppliers. The factors influencing the effectiveness of SSCM practices are discussed further in Section 3.4.

### 3.3.4 Discussion

While considerable research on SSCM has provided a useful foundation for theory and research, there are clear gaps in research relating to SSCM practices.

Firstly, so far, there are no consistent definition and classification of SSCM practices in the literature. Scholars tend to use different terms that refer to SSCM practices according to their interests and these terms are usually not clearly defined, which might cause misunderstanding and confusion. Therefore, this research offers a sound conceptualisation and categorisation of SSCM practices, covering different aspects of sustainable practices in supply chains. The classification introduced in this research (Figure 3.5) provides a framework which can be used to gain a more comprehensive understanding of SSCM practices.

Secondly, the TBL concept introduced by Elkington (1998b) has encouraged companies to include economic, environmental and social sustainability in their businesses. In the literature, SSCM has been considered as a single concept that incorporate all three aspects of sustainability (Pagell and Wu, 2009). However, previous SSCM studies have predominantly focused on environmental supply chain practices (e.g. Zhu et al. (2012b), Zhu et al. (2012c) and Zhu et al. (2005)). Only recently, literature has begun to investigate social supply chain practices (Sancha et al., 2015a; Croom et al., 2018). In addition, studies that have considered all three dimensions of sustainability in SSCM practices are scarce (Formentini and Taticchi, 2016). To address this gap, this research has adopted a holistic perspective to incorporate all three aspects of SSCM practices, i.e. economic, environmental and social supply chain practices.

Finally, evidence is growing that SSCM practices have varied effectiveness (Croom et al., 2018), as each has its own strengths and weaknesses. The effectiveness of different SSCM practices has been

examined separately in the previous literature. However, further studies are needed to investigate the effectiveness of SSCM practices against different contextual factors.

### 3.4 Literature Review on Factors Influencing SSCM Implementation

As mentioned in previous Section 3.3.3, a number of factors can influence companies' adoption and implementation of different SSCM practices and the effectiveness of these practices. For example, Vachon and Klassen (2006) find that an organisation's approaches to green supply chain practices (e.g. assessment and collaboration) are dependent on the organisational size and other sector-specific factors such as reinvestment rate and age of machinery. Wu (2013) investigates the moderating effects of environmental uncertainty (e.g. demand uncertainty and technical uncertainty) on companies' green supply chain integration and green innovation initiatives and reveals that firms tend to adopt more proactive environmental strategies and green innovations during periods of environmental uncertainty. Pimenta and Ball (2015) examine the implementation of focal companies' upstream environmental supply chain practices and find that they are affected by internal functions and the maturity level of environmental and culture of organisation. Marshall et al. (2015b) investigate the role of an organisation's sustainability culture and entrepreneurial orientation in motivating the adoption of social supply chain practices and find that they have different effects on the adoption of basic and advanced social practices. Tachizawa et al. (2015) posit that contingency factors such as stakeholder pressures, supply chain positions and buyer's purchasing power can influence buying companies' selection of different green supply chain strategies.

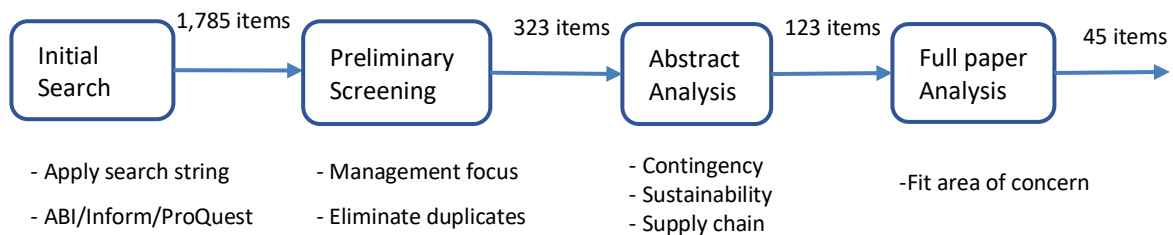
So far, there is no systematic review and classification of factors that influence companies' adoption and implementation of SSCM practices in the literature. Therefore, this research conducts a systematic literature review in order to gain a deep understanding of contextual factors that affect SSCM implementation. The selection process of this review was accomplished with a database search followed by assessment to ensure both fit and quality. The initial search of the ABI/INFORM/ProQuest database identified articles, doing so by using a preliminary set of keywords in the abstract field. The combination of keywords encompassed simultaneously the following three categories:

1. Keywords related to 'Green/ Sustainability/ Environmental/ Social/ Responsible/ Ethical';
2. Keywords related to 'Supply Chain Management/ Purchasing/ Procurement/ Sourcing'; and
3. Keywords related to 'Contingency/ Context factors'.

### Chapter 3: Literature Review

Therefore, the search string used was: ab(sustainab\* OR green OR environment\* OR ethic\* OR csr OR social OR responsib\*) AND ab(suppl\* OR purchasing OR procurement OR sourcing) AND ab(contingen\* OR context\*).

Peer reviewed articles from scholarly journals published between 2000 till June 2016 were selected, generating a total of 1,785 relevant articles. After eliminating duplicated results and dropping articles that did not have a managerial focus, the total number of articles was reduced to 323. Then, an abstract analysis was performed and only the articles that had, simultaneously, a supply chain and a sustainability focus were kept, resulting 123 items. Finally, according to a set of pre-specified relevance and quality selection criteria (Denyer and Tranfield, 2009), a full paper analysis was conducted in order to evaluate fit – 45 papers were systematically analysed to verify if empirical results have identified contingency factors associated to the management sustainability issues in supply chain, with a particular focus on the influence of these contingencies. The review included articles in SSCM field that have explicitly used contingency perspective as a theoretical lens, but also papers that implicitly refer to contingency perspective and have explored contingency factors. A schematic view of the selection process is depicted in Figure 3.6.



*Figure 3.6 The Selection Process (Literature Review of SSCM Studies Adopting Contingency Perspective)*

The literature review has identified and classified a plethora of contingency factors within the SSCM literature. These factors are categorised based on their representation of the internal and external environment of an organisation (Donaldson, 2001). Here, internal factors are defined as factors that represent the essential characteristics of an organisation, while external factors are exogenous to an organisation and specific to the context in which the organisation operates. The definition of external contingency factors is similar to what Haavisto and Kovács (2014) call the 'organisational context' and the 'situational factors' named by Kunz and Reiner (2012). The key internal and external contingency factors are listed in Table 3.6 and discussed in the following subsections.

Table 3.6 A Summary of Contingency Factors in SSCM Research

Internal Environment of an Organisation		
Themes	Contingency Factors	Sample Papers
Corporate Characteristics	Firm size	Tachizawa et al. (2012), Zhu and Sarkis (2004), Schneider et al. (2014), Pagell and Wu (2009), Holt and Ghobadian (2009)
	Firm age/history	Andersen and Skjoett-Larsen (2009), Schneider et al. (2014)
	Ownership type	Li and Zhang (2010), Galeazzo and Klassen (2015), Schneider et al. (2014)
	Industrial Sector	Holt and Ghobadian (2009), Sancha et al. (2016b), Wu (2013), Wiengarten et al. (2012)
	Competitive priorities (e.g. quality, delivery)	Galeazzo and Klassen (2015)
	Knowledge resources	Simpson et al. (2012)
	Corporate culture and values	Marshall et al. (2015b), Schneider et al. (2014), Sarkis (2012), Mont and Leire (2009)
	Entrepreneurial orientation	Marshall et al. (2015b)
	Position in the supply chain	Kuei et al. (2015), Tachizawa et al. (2012)
External Environment of an Organisation		
Themes	Contingency Factors	Selected Sources
Institutional Environment (including socio-economic environment)	Stakeholder pressures	Worthington et al. (2008), Foerstl et al. (2015), Mont and Leire (2009), Wan Ahmad et al. (2016)
	Political environment (e.g. regulation and policy)	Sarkis (2012), Locke et al. (2013), Wan Ahmad et al. (2016)
	Nationality	Holt and Ghobadian (2009), Zhu and Sarkis (2006), Yu (2008)
	National and local culture/religion/tradition	Patsy (2012), Grimm et al. (2014)
	Social values/norms	Timlon (2011)
	Type of market economy	Kunz and Gold (2015), Jean et al. (2016)
	Education of the population	Patsy (2012)
Supply Chain Characteristics	Power/dependency	Tachizawa et al. (2012)
	Buyer-supplier geographical distance	Hoejmose et al. (2013), Sarkis (2012), Grimm et al. (2014)
	Buyer-supplier relationship duration	Tachizawa et al. (2012); Grimm et al. (2014)
	Supply chain transparency (i.e. product visibility and end-use knowledge of supply chain)	Awaysheh and Klassen (2010)
	Supply chain strategy	Wu et al. (2014a)

### 3.4.1 Corporate Characteristics

#### 3.4.1.1 Firm Size

Firm size can directly influence organisations' sustainability decision making. Previous studies reveal that large companies face more sustainability issues than small companies and therefore they tend to experience higher pressure from stakeholders to improve their sustainability performance (Zhu and Sarkis, 2007; Tate et al., 2010).

Russo and Tencati (2009) suggest that firm size offers an explanation to the differences in firms' willingness to define and implement informal or formal sustainability strategies. This argument is supported by the study of Holt and Ghobadian (2009) which shows that in response to stakeholders' sustainability requirements, firms with different sizes adopt different strategies through which they engage with these stakeholders - with large enterprises adopting more formal and structured management systems (e.g., ISO 14001, EMAS, SA8000) and tools (e.g. codes, reports, and standards), and small-medium sized enterprises preferring informal ways based on trust and networking. This might be explained by the fact that formal sustainability governance mechanisms require companies' investment of time, financial resources and competences to implement which small enterprises often are not able to afford. Pagell and Wu (2009) and Tachizawa et al. (2012) also find that large firms are more proactive in their sustainability strategies, and therefore, are more likely to adopt and implement SSCM practices.

#### 3.4.1.2 Ownership Type

Companies with different ownership types are subject to differing institutional pressures and therefore, they might adopt different types of governance mechanisms and sustainable practices in the supply chain. Christmann and Taylor (2001) suggest that Chinese firms with foreign owners have higher environmental standards compared to other firms. Likewise, Galeazzo and Klassen (2015) also find that plants characterized by international ownership place a higher emphasis on sustainability as a competitive priority in their operations strategy, and were more likely to adopt proactive sustainable practices. One of the possible explanations might be that plants with international owners are more likely associated with a greater exposure to institutional pressures compared to domestically owned plants (Shah, 2011). The influence of ownership structure as a contingent factor might vary in emerging economies like China where state ownership is still in a dominant position (Li and Zhang, 2010). For example, Chinese central-governed state-owned companies are more proactive in the implementation of sustainable practices than domestic private companies as they are subject to stronger coercive pressures from the government (Zhu and Zhang, 2015; Zhu and Geng, 2006).



### 3.4.1.3 Industrial Sector

Companies from different industrial sectors face different requirements for the implementation of SSCM practices due to the influence of industry-specific factors such as the level of sustainability risk, environmental uncertainty, and labour intensity. A number of the reviewed papers have examined the impact of industrial characteristics on the effectiveness of SSCM implementation by drawing comparison between different industries (Zhu and Sarkis, 2006; Zhu et al., 2008b; Pagell and Wu, 2009; Schneider et al., 2014; Formentini and Taticchi, 2016). For example, Wiengarten et al. (2012) demonstrate that firms competing in static industries have more investments in environmental practices compared to firms in dynamic ones such as apparel, and the operational performance return on investment is also higher in static industries than dynamic ones.

The sustainability initiatives of firms, to some extent, are determined by the level of potential environmental or social risks perceived by the companies. Companies in industries with higher environmental risks (e.g. chemistry and metal) are expected to meet more strengthened environmental legislative requirements (Wolf, 2013), and therefore they tend to implement more active environmental practices to satisfy their coercive stakeholders (Holt and Ghobadian, 2009; Simpson et al., 2012). In contrast, less 'environmentally damaging' industries such as apparel tend to adopt a social profile as they are more labour-intensive and have high-profile social issues within the upstream supply chain (Huq and Stevenson, 2018; Huq et al., 2014).

Other industry characteristics such as product complexity can also influence the effectiveness of different sustainability approaches. Sancha et al. (2016b) find that transactional mechanisms (i.e. explicit contract) are more effective in situations of high product complexity, while relational mechanisms (i.e. implicit control) are more effective in the context of low product complexity.

### 3.4.1.4 Corporate Culture

Yin and Zhang (2012) find that corporate cultural ethic has enormous impact on companies' sustainability approach, especially in the emerging economies like China. Schneider et al. (2014) posit that corporate culture is a significant factor to the implementation of sustainable practices as it can greatly foster the owner's and employees' broad understanding of sustainability and enhance the company's sustainability-orientation.

## 3.4.2 Institutional Environment

In SSCM literature, institutional pressures have been commonly seen as a primary category of contingency factors representing the external environment of an organisation (Zhu and Sarkis, 2007;

Tsireme et al., 2012; Locke et al., 2013). Much SSCM research has investigated the facilitative role of institutional pressures in SSCM, that is, how organisations seek to adopt legitimate practices in the view of their stakeholders in order to fit with the rules and norms in the institutional environment (Walker and Jones, 2012; Zhu et al., 2007; Foerstl et al., 2015).

By adopting an institutional perspective, previous research has identified a variety of factors embedded in the institutional context which can influence organisations in the adoption and implementation of SSCM practices, including stakeholder pressures, political environment and regulations, type of market economy, national and local culture, and the level of regional social-economic development. These factors can not only motivate the adoption of sustainable practices within individual organisations, but also influence the extent to which these practices are integrated into supply chains, e.g. the intensity, quantity and diversity of sustainability initiatives taken to improve the sustainable supply chain performance (Font et al., 2008; Foerstl et al., 2010).

### 3.4.2.1 Stakeholder Pressures

Stakeholder pressures are considered to be the principal external drivers of sustainability efforts in supply chains (Seuring and Müller, 2008b; Foerstl et al., 2015; Wan Ahmad et al., 2016). The impact of stakeholders upon organisations' adoption and implementation of SSCM practices is well documented in the literature (Sarkis et al., 2010; Reuter et al., 2012; Wolf, 2013; Rebs et al., 2018). From suppliers, regulators, media, NGOs, competitors, consumers to shareholders, stakeholders can directly place requirements on focal firms' supply chain activities, e.g. through government legislation, or may indirectly influence them, e.g. through consumer boycotts against forced labour in the production of products (Mont and Leire, 2009).

Zhu and Sarkis (2007) conduct an empirical study of Chinese manufacturing industries and the findings reveal that stakeholders including customers, competitors and governments can exert strong pressures on organisations which lead to the development of innovative SSCM practices. In addition, Sarkis et al. (2010) find that stakeholder pressures can directly and positively influence organisations' adoption of environmental supply chain practices and such influence can be moderated by employee training.

In a systematic literature review on empirical studies dealing with stakeholder pressures, Meixell and Luoma (2015) summarise and analyse the ways in which such pressures can influence SSCM: stakeholder pressures on SSCM may lead to organisations' sustainability awareness, adoption of sustainability goals, and implementation of sustainability practices; however, different stakeholders

have different influence in organisations' SSCM decision areas, and the degree of stakeholder impact depends on whether it is an environmental or social sustainability issue.

### 3.4.2.2 Political Environment

Government and other regulatory bodies (e.g., professional or trade associations) embedded in the political environment exert regulatory pressures by enforcing formal legislation and informal requirements that directly or indirectly influence organisations to undertake sustainability initiatives (Saeed and Kersten, 2019). Organisations must ensure the compliance to regulations or they face legal penalties and fines (Zhu and Sarkis, 2007; Harms et al., 2013). For example, Worthington et al. (2008) find that government legislation is a major driving force to U.S. companies' socially responsible purchasing initiatives like supplier diversity. In addition to regulations, political interventions also come in the form of government policies and directives that create sustainability awareness and encourage voluntary sustainability initiatives. For example, in the European Union (EU), governments have issued directives (e.g. EU Directive COM (2001) 566) to promote socially responsible purchasing in the public sector (Mont and Leire, 2009).

By examining the relationships between politics and the supply chain sustainability in the energy industry, Wan Ahmad et al. (2016) find that political stability can significantly influence SSCM in the industry, for example, government tax and fiscal policies can affect companies' decision regarding their sustainability initiatives, whilst political instability can lead to conflicts and uncertain business environment which can put supply chain at disruption risks. Zhu et al. (2007) find that China's open-door policy and entry into the world trade organisation (WTO) have greatly facilitated the implementation of green supply chain practices among Chinese manufacturing enterprises. Patsy (2012) argues that the presence of governmental support reduces the likelihood of corporate sustainability transgressions by exerting an extra level of accountability for suppliers. On the other hand, Yu (2008) and Yu (2015) identify the Chinese government's weak enforcement of labour law and the insufficient state protection of labour rights as main constraints to the implementation of CoCs among suppliers in Chinese footwear industry.

### 3.4.2.3 National and Local Culture

CoCs and standards have been commonly used to ensure suppliers' ethical behaviour, however, it is worth noting that most of the codes and standards are initiated by Western buying firms and often represent a Western perspective. Zakaria et al. (2012) find that country-level cultural differences are often perceived by managers as barriers to the implementation of CoCs in different countries. Locke et al. (2013) also find that while multinational corporations' CoCs and the rules regarding its

implementation might be uniform across all countries, differences in national context can shape the processes by which labour and environmental standards are enforced among suppliers located in different countries. In earlier studies, Jiang (2009a) and Jiang (2009b) suggest that when implementing Western-based CoCs among suppliers in the Far East developing countries, there is a need to consider the vastly different social and cultural context and political structures. Patsy (2012) also argue for the necessity of harnessing the local culture context as moral underpinning to support and progress sustainability implementation among local suppliers.

In a more recent study of Li et al. (2016), the authors posit that Chinese traditional culture such as the notion of social harmony based on the Confucian principle of 'harmony' provides a unique sustainability perspective with institutional implications for the current sustainability policies and governance in China.

### 3.4.3 Supply Chain Characteristics

A company's supply chain relationship is often characterised by the geographical distance between buyer and supplier, power, dependency, and relationship duration. A number of studies such as Delmas and Montiel (2009), Grimm et al. (2014), and Sancha et al. (2016b) have shown that the level of suppliers' compliance with buyers' sustainability codes and standards varies according to the characteristics of the relationships between suppliers and buyers.

Power or dependency refers to the ability to influence the activities of other members of the network (Pilbeam et al., 2012), which is a significant characteristic of buyer-supplier relationship as power distribution influences the depth of collaboration between buyers and suppliers in networks (Kähkönen, 2014). For example, implementing CoCs and standards requires the enforcement by a powerful supply chain partner in order to achieve the compliance of suppliers (Ciliberti et al., 2009). Hoejmose et al. (2013) posit that supplier power (or buyer dependency) negatively influences the implementation process of CoCs, while a jointly dependent (i.e. symmetric) buyer-supplier relationship plays a positive role in the development of socially responsible supply chain.

### 3.4.4 Discussion

The literature review has identified a large variety of factors that can influence the implementation of SSCM. These factors might interact with each other to exert influence on the effective implementation of SSCM practices. Donaldson (2001) argues that the ultimate influence of external environmental contingency factors on organisational structure can be moderated by the more immediate and direct influence caused by intervening intra-organisational factors. For example, institutional pressures can

be caused or mitigated by other internal or external contextual factors, that is, organisations are subject to institutional pressures but the perceived strength of the pressures and particularly the ways in which organisations perceive and act upon these pressures are likely to be shaped by the specific circumstances in which they find themselves. This argument has been evidenced in several SSCM studies.

Tate et al. (2010) posit that although institutional pressure is the primary driving force behind sustainability strategy development for all of the investigated industries, the way in which it is interpreted and translated into sustainable practices in supply chains varies according to the industry, firm size and geographic location. Similarly, Galeazzo and Klassen (2015) argue that the extent to which companies are exposed to stakeholder pressures are affected by other organisational contextual factors such as firm size, ownership and labour intensity.

In an empirical study, Simpson et al. (2012) find that although firms are under the regulatory pressure to conduct recycling activities, the environmental performance outcomes of such pressure are constrained by firms' internal capabilities such as sustainability experience and expertise. The results also show that the influence of institutional pressures becomes more intense with the increase of focal companies' visibility to the public and social media (Simpson et al., 2012). In the investigation of the rationale for upstream suppliers' compliance with customers' sustainability requirements, Delmas and Montiel (2009) find that the effectiveness of buyers' mandatory requirements for suppliers to adopt environmental practices varies according to buyer-supplier relationship, suppliers' age/history, and the business culture of the country where suppliers are located, for example, suppliers located in Japan, with highly specialised assets and shorter history are more likely to respond to customers' pressures to adopt the certified management standard ISO 14001. Adopting a contingency perspective, Wu et al. (2014b) examine the role of government in driving Chinese suppliers' engagement in energy efficiency initiatives and find that companies' responses to government pressures are contingent upon their ownership and value alignment with the government.

Given the above, some scholars have argued for the consideration of the moderating role of contingency factors in SSCM studies. For example, Mont and Leire (2009) call for the need to deepen the understanding of how contextual factors such as nationality influence the implementation of socially responsible purchasing practices of focal firms and shape responses of suppliers situated in different regions. Saeed and Kersten (2019) also suggest future research to examine how factors such as geographical location and industrial sector moderate the relative importance of different drivers of SSCM. Therefore, this research not only examines how institutional pressures (particularly

government regulation and policy interventions) drive the implementation of SSCM practices but also further investigates how contingency factors moderate the influence of these institutional pressures.

### 3.5 Literature Review on Challenges to SSCM Implementation

Many scholars indicate that sustainability issues are complex in nature and managing multi-tier supply chains is also inherently complex (Mena et al., 2013; Tachizawa and Wong, 2014; Jia et al., 2019). Therefore, integrating sustainability in SCM can be particularly challenging for focal firms due to factors such as the scale and scope of the environmental and social impacts, various stakeholder expectations and focal firms' lack of control and the challenges of overseeing multi-tier global supply chains (e.g. lack of information on low tier suppliers, geographical distance, power symmetries and lack of direct contracts with lower tier suppliers) (Awaysheh and Klassen, 2010; Tachizawa and Wong, 2014; Wilhelm et al., 2016; Hartmann and Moeller, 2014; Koberg and Longoni, 2019).

Previous studies have explored the challenges to the implementation of SSCM. These are commonly listed as lack of understanding of TBL, capital investment, risk management and supplier monitoring, measurement of sustainability performance, transparency of information and knowledge in supply chains, alignment of corporate strategy with SSCM and corporate culture (Carter and Rogers, 2008; Seuring and Müller, 2008a; Morali and Searcy, 2013).

Recently one of the emerging concerns by operations management scholars is that companies' good intentions of including environmental and social sustainability dimensions into managerial decision making might lead to unanticipated consequences such as trade-offs and tensions in supply chains (Gold et al., 2019; Carter et al., 2020). For example, a few studies have investigated sustainability trade-offs experienced in a complex supply chain, such as economic and environmental performance trade-offs (Cousins et al., 2019; Fahimnia et al., 2015) and the economic and social performance trade-offs (Pagell et al., 2020). Other unintended outcomes in implementing SSCM initiatives have also been documented in the literature. For instance, Arya and Mittendorf (2015) find that while government CSR incentives such as subsidies can affect suppliers' behaviours towards CSR adoption, they can also result in unintended consequences for supply chains such as inflated prices in markets. Ugarte et al. (2016) find that the implementation of lean manufacturing practices has resulted in improvements in operations performance such as cost, quality and demand responsiveness, however certain lean logistics practices may have unintentionally increased negative impacts on the environment. Other studies allude to unintended consequences as the increased net pollution effect across the supply chain when a focal firm tries to reduce its own discharge by outsourcing its production to suppliers that generate more emissions (Carter et al., 2020).

Previous research has affirmed that SSCM implementation can experience the problem of unintended outcomes. This calls for much more attention of scholars, managers and policy makers, however, such issues are underexplored in the SSCM literature (Gold et al., 2019).

### 3.6 Literature Review on SSCM Research in the Context of China

Although the implementation of SSCM practices has been widely discussed in the literature, the research on SSCM in the context of China is still underdeveloped with inadequate empirical studies. Due to the influence of the national strategic plans and the sustainability stimulation policies (see Chapter 2), SSCM has gained momentum in recent decades in China. Consequently, SSCM research in the context of China has been gradually obtaining more attention in the recent literature. As previously mentioned in Chapter 2, China has its unique institutional and policy environment, and therefore, the knowledge and experience gained in respect of SSCM implementation in Western countries and other developing countries may not be fully applicable to explain the implementation of SSCM practices in the context of China due to the significant contextual differences. This section aims to critically review the existing SSCM literature in the context of China to identify its unique characteristics.

The review of SSCM literature in the context of China adopts a systematic approach, as prescribed in Tranfield et al. (2003) and Rousseau et al. (2008), which enables 'integrating a number of different works on the same topic, summarising the common elements, contrasting the differences, and extending the work in some fashion' Meredith (1993, p.8). By locating articles, selecting and evaluating studies, analysing and synthesising the data, findings are reported in order to draw reasonable conclusions about what is known and unknown in the existing literature (Denyer and Tranfield, 2009).

The selection of papers was accomplished with an initial search of the ABI/INFORM/ProQuest database by using a preliminary set of keywords in the abstract field followed by assessment to ensure both fit and quality. The combination of keywords encompassed simultaneously the following three categories:

1. Keywords related to 'Green/ Sustainability/ Sustainable/ Environmental/ Social/ Responsible/ Ethical';
2. Keywords related to 'Supply Chain/ Purchasing/ Procurement/ Sourcing'; and
3. Keywords related to 'China/ Chinese'.

Only peer reviewed articles from scholarly journals published between 2000 till August 2017 were selected. After eliminating duplicated results, an abstract analysis was performed and only the articles

that had, simultaneously, a supply chain and a sustainability focus were kept, resulting 34 articles for the review. The following Figure 3.7 depicts the selection process.

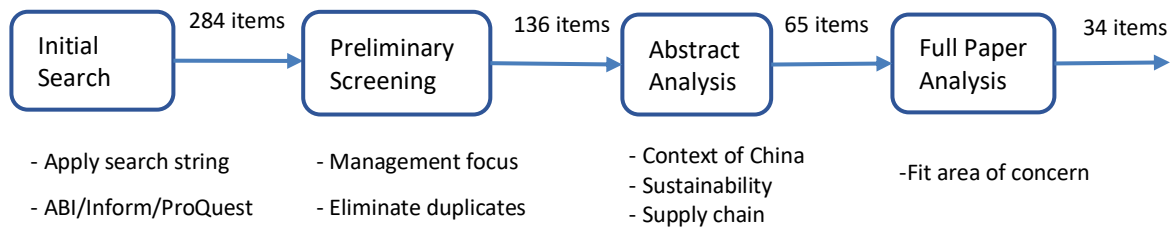


Figure 3.7 The Selection Process (Literature Review of SSCM Studies in the Context of China)

Table 3.7 presents an overview of the selected papers regarding the research method, use of theory, triple bottom line focus and sample characteristics. In terms of research method, it indicates that the number of purely theoretical contributions is limited to 4 papers. Of the papers using an empirical research method, most are based on survey approach; only 3 of the empirical papers used case study method and 1 used a mix of survey and case study. The explicit use of theory is very limited and has been detected in only 14 of the reviewed papers. Of the theories used in the reviewed papers, institutional theory seems to be the most popular, with 9 papers employing this theory. However, there is a scope and potential of the application of other theories to help the understanding of institutional environment, for example, contingency theory which suggests adopting a contextual perspective to address organisational sustainability issues (Song et al., 2017). In terms of the sustainability dimensions, most of the papers have explicitly focused on the environmental aspect of sustainability, i.e. green sustainable supply chain management (GSCM), only 3 papers have examined social issues, and 2 papers focused on corporate social responsibility (CSR) more broadly.



Table 3.7 Classification of Reviewed SSCM Papers in the Context of China

		No. Papers	% Total No. papers	Sample Papers	
<b>Research Method</b>	Theoretical	4	12%	Zhu et al. (2012c), Qi and Miller (2011),	
	Empirical	Case study	3	9%	Zhu and Cote (2004), Liu et al. (2011), Yu (2008)
		Survey	26	76%	Zhu (2016), Zhu and Zhang (2015), Zhu and Sarkis (2007)
		Mixed	1	3%	Zhu et al. (2007)
<b>Use of Theory</b>	Institutional theory	9	26%	Zhu et al. (2008a), Zhu and Geng (2013), Zhu and Sarkis (2007)	
	Resource based view	1	3%	Liu et al. (2016)	
	Transaction cost theory	1	3%	Luo et al. (2014)	
	Contingency theory	1	3%	Song et al. (2017)	
	Coordination theory	1	3%	Zhu et al. (2012a)	
	Innovation diffusion theory	1	3%	Zhu et al. (2012c)	
<b>Sustainability Dimension</b>	Environmental	29	85%	Liu et al. (2016), Song et al. (2017), Zhu et al. (2013b)	
	Social	3	9%	Yu (2008), Krueger (2008), Qi and Miller (2011)	
	CSR	2	6%	Zhu and Zhang (2015), Cheung et al. (2015)	
<b>Samples' Ownership Structure (Empirical studies only)</b>	Private	0	0	n/a	
	SOEs	3	9%	Zhu and Zhang (2015), Zhu and Geng (2002)	
	A mix of different types of ownership (with a majority being SOEs)	4	12%	Zhu and Sarkis (2006), Zhu et al. (2007)	
	A mix of different types of ownership (other)	12	35%	Zhu et al. (2008a), Zhu and Geng (2013), Liu et al. (2011), Zhu et al. (2013a)	
	Foreign direct investments (FDIs)	1	3%	Yu (2008)	
	Multi-national corporations (MNCs)	1	3%	Lai-Ling Lam (2011)	
	Unknown	8	24%	Kuei et al. (2015), Luo et al. (2014)	
	N/A	1	3%	Zhu et al. (2013a)	
<b>Samples' Industries Classification</b>	Manufacturing	34	100%	Zhu et al. (2013b), Zhu and Zhang (2015), Huang et al. (2012)	

### 3.6.1 Research Streams

The analysis of the reviewed literature has focused on three main research streams that are most relevant to this study, including drivers of SSCM, factors influencing SSCM implementation and SSCM practices. These three research topics are discussed below.

#### 3.6.1.1 Drivers of SSCM in China

The SSCM literature in the China context has identified a number of potential groups of pressures and drivers for the adoption and implementation of SSCM practices. For example, Zhu et al. (2005) suggest that supply chain pressure, cost, marketing and regulation are four major drivers for Chinese companies to implement SSCM practices. Similarly, Zhu and Sarkis (2006) and Zhu et al. (2007) summarise four key factors (regulation, marketing, supplier drivers and internal incentives) that motivate Chinese manufacturers to implement green practices in supply chains. Zhu et al. (2008a) take a special look into two firm-level factors including organisational learning mechanisms derived from operational programs (e.g. total quality management and environmental management systems) and top and middle-level management support, and find that these two type of factors can significantly arouse organisational environmental awareness, and as a result, promote the adoption and implementation of proactive GSCM practices. Kuei et al. (2015) identify four categories of factors (i.e. customer pressures, regulatory pressures, government supports, and environmental uncertainty) as the most important external drivers to the adoption of GSCM practices among Chinese firms.

Although companies face different sources of pressures, authors like Zhu and Sarkis (2006) and Zhu et al. (2011) argue that government environmental regulation is the most prevalent pressure in the advanced adoption of environmental supply chain practices among Chinese manufacturing companies. Similarly, Kuei et al. (2015) find that Chinese companies in upstream and downstream supply chains are more proactive in the adoption of environmental practices when facing strengthened regulation and being provided with governmental support. More recently, Jean et al. (2016) compare drivers to supply chain sustainability initiatives in different institutional contexts. The authors find that supply chain sustainability initiatives are driven by regulatory and efficiency forces in the transition economy of China, which is in contrast with the market economy of Taiwan where sustainability practices in supply chains are driven by the competitive advantage force. This is in line with the broader SSCM literature which suggests that drivers of SSCM are country-specific as the socio-economic and political environment in developing countries are significantly different from those of developed countries (Saeed and Kersten, 2019).

While the literature has identified that government regulation plays a central role in driving SSCM implementation in China, the mechanisms how it happens remains unclear. In addition, the way in which the Chinese government drives SSCM is not only limited to the traditional common-and-control regulatory approach. Due to the changing institutional environment in China, some ‘new’ mechanisms such as market-based policies that encourage voluntary SSCM practices have been increasingly employed by the Chinese government (See Chapter 2). However, little research has been conducted to examine the specific ways in which regulations and various types of policies are applied by the Chinese government as well as the effectiveness of these mechanisms.

### 3.6.1.2 Other SSCM Influencing Factors

In the reviewed Chinese SSCM papers, firm size, industry classification and ownership structure are identified as three main factors that influence SSCM implementation. In addition, company’s position in the supply chain and the level of internationalisation are also considered to have effect on the adoption and implementation of SSCM practices in Chinese companies. These factors are summarised in the following Table 3.8.

*Table 3.8 Common Factors Influencing SSCM in China*

<b>Factors</b>	<b>Sample papers</b>
Ownership structure	Zhu and Sarkis (2004), Liu et al. (2011), Zhu and Sarkis (2006)
Industry	Zhu and Sarkis (2007), Zhu and Sarkis (2004), Krueger (2008), Zhu and Sarkis (2006)
Company size	Zhu and Sarkis (2007), Liu et al. (2016), Zhu and Sarkis (2006)
Position in the supply chain	Kuei et al. (2015)
Level of internationalisation	Cheung et al. (2015)

Zhu and Sarkis (2004) argue that the relationships between GSCM practices and a company’s environmental and economic performance are influenced by company’s types of ownership and its industry sector. Huang et al. (2012) posit that the implementation of GSCM practices in Chinese enterprises differs according to the firm size and industrial sector.

In terms of ownership, Liu et al. (2011) conduct case studies to examine the adoption of GSCM practices in three companies with different ownerships and find that the multinational and foreign-funded companies are more active in the implementation of GSCM practices than the Chinese domestic one. In terms of industrial sector, Zhu and Sarkis (2006) investigate Chinese companies in three typical industries (automobile, thermal power plants and electronic industry) and the results show that companies’ motivations and adoption of GSCM practices vary in different industrial sectors. Particularly, Zhu et al. (2007) reveal that environmentally aware and technologically-advanced sectors

such as automobile industry faces stronger market-based pressures and they tend to implement more advanced GSCM practices than other industries.

Some authors have examined the influence of firm size on the implementation of GSCM practices. For example, Zhu et al. (2008c) find that medium and large-sized organisations are more advanced than their smaller-sized counterparts on most aspects of GSCM practices. The authors also argue that firm size may contribute to different kinds of pressures faced by companies to implement GSCM practices, for example, larger companies may face more regulatory and market pressures while smaller companies may be more influenced by competitive pressures. These findings are similar to results obtained in a later study by Liu et al. (2016) which states that the implementation of GSCM practices (green design, green purchasing and green manufacturing) is contingent on firm size, that is, larger firms have better implementation of GSCM practices due to their more attention to the development of specific supply chain flexibility and supplier appraisal capabilities.

By comparing the adoption of GSCM practices among focal firms as well as upstream and downstream firms, Kuei et al. (2015) find the critical factors influencing the adoption of GSCM practices vary according to companies' position in the supply chain: focal firms are positively influenced by human resources and customers pressure, downstream firms are driven by organisational and governmental supports, and the upstream firms are influenced by compatibility, customer and regulatory pressures.

Cheung et al. (2015) investigate the relationship between the level of internationalisation and companies' adoption of sustainable practices in supply chains and the result shows that they are positively related and such a positive association is more pronounced for private companies than state owned companies.

The above Chinese SSCM studies suggest that SSCM implementation in China shares some common characteristics with the rest of the world, for example, the ways in which certain contingency factors influence the adoption of SSCM practices (See Section 3.4). However, SSCM implementation in China also has its uniqueness due to the specific institutional setting, for instance, the differences in SSCM implementation between private and state-owned enterprises, which requires researchers' attention when conducting research in different institutional contexts. In addition, SSCM influencing factors have been examined individually in the reviewed papers. Further studies are needed to investigate the ways in which these factors interact with each other to affect SSCM implementation.

### 3.6.1.3 SSCM Practices in the Context of China

Most of the reviewed papers have explicitly focused on environmental supply chain practices. Similar to the broad SSCM literature, environmental supply chain practices in the SSCM literature in the China

context are commonly listed as internal environmental management, investment recovery, eco-design, green purchasing and cooperation with supply chain partners on environmental issues (Zhu et al., 2005; Zhu et al., 2007; Zhu et al., 2012c; Zhu and Sarkis, 2004). For example, Zhu and Sarkis (2004) examine four types of GSCM practices (internal environmental management, external green practices, investment recovery and eco-design) and their influence on environmental and economic performance among Chinese manufacturing enterprises. Similarly, Zhu and Sarkis (2006) and Zhu and Sarkis (2007) investigate the adoption and implementation of five categories of GSCM practices (internal environmental management, green purchasing, cooperation with customers on environmental issues, investment recovery and eco-design) in different industrial sectors. Zhu et al. (2012a) classify GSCM practices into internal practices (internal environmental management and eco-design) and external practices (cooperation with supply chain partners) and find that there has been an imbalance between the adoption of these two types of GSCM practices in Chinese companies. They further suggest that focal companies should coordinate internal and external environmental supply chain practices in order to achieve more satisfying performance in the overall supply chain. Zhu et al. (2012c) examine the adoption of two specific GSCM practices (ISO 14001 certification and eco-labelling) among Chinese enterprises and find that imitation plays an important role in the diffusion of these practices.

In contrast to the large amount of studies on environmental supply chain practices, very few studies have examined the social issues in the supply chain management. Only three in the review studies have explicitly focused on the social dimension of sustainable supply chain, and of these three studies, there is only one empirical study. The focus of social supply chain practices has been on a narrow range of concerns, particularly concentrating on labour-related issues such as labour rights and workplace safety. For example, in an empirical study, Yu (2008) investigates the implementation of Reebok's labour-related Codes of Conduct at one of its major Chinese suppliers. The results show that the main barriers to implementing social sustainable practices among Chinese suppliers include: the buyer's intentions to reduce costs and maximise profitability, competition amongst suppliers (e.g. to reduce costs), and a lack of government enforcement of labour laws. Krueger (2008) addresses ethical issues in global supply chains by examining the development and implementation of industry-wide ethical standards and codes of conduct in multinational corporations in China. The author argues that the application of social supply chain practices such as ethical norms and compliance components in multinational corporations' supply chains in China is a positive attempt that represents the convergences of the East and West. Qi and Miller (2011) examine the engagement of Chinese private companies in the implementation of sustainable supply chain practices and suggest that human-

centred Codes of Conduct can facilitate the transition into a sustainable supply chain for Chinese private companies.

### 3.6.2 Research Gaps

A few key gaps in the SSCM literature in the context of China can be summarised as follows:

First, although a supply chain approach to sustainability has increasingly drawn attention from the Chinese government, industry and academia in recent years, in comparison with the amount of SSCM research in Western countries, SSCM research in the context of China is still very limited due to the fact that the development of SSCM in China is still in its infancy (Liu and Chang, 2017).

Second, like the mainstream SSCM literature, much of the current literature on SSCM in the context of China pays particular attention to environmental aspect of sustainability, while very few studies have examined social practices in supply chains. Only three in the review studies have explicitly focused on the social dimension of sustainable supply chain, and of these three studies, there is only one empirical study. Given that the concept of sustainability is the intersection of all three dimensions including social, environmental and economic sustainability (Carter and Rogers, 2008), SSCM should simultaneously consider all the three components rather than just focus on one dimension. Therefore, there is a need for a holistic approach that embraces multiple dimensions of sustainability in the SSCM research.

Third, the literature analysis indicates that much understanding has been gained into the drivers to the implementation of SSCM practices among Chinese companies – with a particular focus on GSCM practices. Prior studies have shown that regulatory pressure has been the essential and key incentive for addressing environmental issues across the supply chain (e.g. Zhu and Sarkis (2006) and Zhu et al. (2011)). Whilst the important role of government as a driver has been recognised in the literature, it is still not clear how government influences SSCM implementation, e.g. what regulations and policies are in place and the mechanisms in which they are implemented. This calls for the need of a better understanding of the complex and changing regulatory and policy context of China and further research into the contingency factors (e.g. firm size, ownership and industrial sector) that can interact with regulatory factors and potentially shape organisations' responses to government interventions.

Fourth, methodologically, most of the reviewed papers have used surveys and questionnaires to test theories (Zhu et al., 2008b; Huang et al., 2015; Zhu et al., 2012a). Given that SSCM in China is at the development stage, an exploratory research through the case study method is more appropriate at this stage to build theory and provide a thorough examination of complex, real-life issues and in-depth insights (Voss et al., 2002).

Fifth, in terms of the research context, extant literature tends to focus on SOEs. No empirical study was found to focus exclusively on the private sector. Only one theoretical study (i.e. Qi and Miller (2011)) has exclusively examined Chinese private enterprises and the authors propose that human-centred codes of conduct and decision-making with a stakeholder orientation can facilitate the engagement of Chinese private enterprises in SSCM development. The important role of Chinese private enterprises in the development of SSCM and the need to examine private enterprises' implementation of SSCM practices are further discussed in the next subsection.

### 3.6.3 Private Sector Engagement in SSCM

In China, the conventional idea is that SOEs play a dominant role in the country's economy. However, the situation of state capitalism in China has been changing in past decades. According to recent studies, the SOEs' share of China's gross industrial output dropped from more than 75 percentage in 1978 to about 25 percentage in 2014 (Lardy, 2014). On the other hand, since China's transition from a planned economy to a Chinese characterised socialist market economy, private enterprises have shown substantial and rapid increases in employment and output shares in the national total (Garnaut et al., 2014). As a result of such rapid development, Chinese private enterprises – existing and newly created - have been the main driver of the economic growth in China, the sole source of China's job creation, and the major contributor to China's exports in global trading (Lardy, 2014).

Given that social, political, economic and environmental imperatives are always related to each other (Breslin, 1996), it is quite natural that the Chinese private sector, as a whole, not only contributes to the economic growth, but also has increasingly considerable impact on the sustainable development in China, particularly, at the Chinese grassroots level. In China, private enterprises are increasingly seeing their long-term sustainability as tied not only to the economic outcomes of their business, but also to social and environmental outcomes. As such, more and more Chinese private companies are seeking to engage in sustainable development in terms of their core businesses and operations and through responsible practices like environmental protection practices and philanthropic commitments to social causes (Tsui et al., 2017).

While the contribution of private enterprises to sustainable development has progressed step-by-step, the cumulative change has been significant. For example, there has been a noticeable increase in charitable giving and philanthropy by private entrepreneurs since the 1990s (Tsui et al., 2017). With the permission and support from the Chinese government, some private foundations have been initiated and established to address the environmental and social issues. For example, the Alxa Society of Entrepreneurs and Ecology (SEE) is one of most noticeable foundations established by Chinese

private entrepreneurs with the aim of improving and recovering the ecological environment in northern China. As one of the leading environmental platforms in China, SEE encourages Chinese private companies to take ecological and social responsibility by developing a sustainable model for other private entrepreneurs to follow (SEE, 2017).

Private sector engagement in sustainable development is a relatively new endeavour in China, and the way in which the changing institutional environment influences the private companies' engagement in the implementation of sustainable practices in China remains unknown. Previous empirical studies on SSCM implementation (30 papers) have focused mainly on SOEs. For example, Zhu and Geng (2006) examine the implementation of green purchasing in Chinese large and medium sized SOEs and highlighted the important role of SOEs in China's economy and environmental development. Zhu and Zhang (2015) investigate the implementation of corporate socially responsible practices among SOEs through the ISO26000 framework. The common finding from previous research is that Chinese SOEs play an important role in sustainability implementation in China. This is not surprising given that SOEs were dominant in the China's economy and the government initially encouraged SOEs to implement sustainable practices (Zhu and Zhang, 2015). However, one surprising finding from Chun (2009) is that Chinese SOEs had poorer performance than private companies in terms of corporate citizenship, employee values and attitudes toward environment in the energy industry.

The relative under-researching of private enterprises in China, and hence SSCM research, is central to this thesis and constitutes an important research gap. The reasons for this limited research are complex. They include the historic privileged position of state enterprises (Sun and Wong, 2002), which in turn influences the legitimacy and destination of research funding. However, it also includes the reality that accessing private enterprises for academic research purposes is simply more difficult. There is no patronage from the government, or its agencies, and there are issues of trust. This was the experience of the author but is also true for China researchers generally.

### 3.7 Chapter Summary

This chapter has critically reviewed the extant literature on SSCM in order to, not only elaborate the state of research in this area, but also identify the key research gaps to build a research foundation for the arguments in later chapters.

The review of the broad SSCM literature has incorporated three main research streams, including SSCM practices, factors that influence SSCM, and challenges to SSCM implementation. A systematic literature review on the SSCM studies in the context of China has been conducted, which shows that



the SSCM research in China is extremely limited and unrepresentative. What research there is – a total of 30 empirical papers – is directed mainly at SOEs. No empirical study has exclusively examined SSCM in the private sector. Survey-based research and environmental supply chain practices-centred discussions are two distinct traits recognised within the extant studies. The combination of these two has significantly restrained the development of SSCM research from seeking for further understanding of the influence of contextual factors on the implementation of SSCM practices. Although some studies have identified motivations to the adoption and implementation of SSCM practices in Chinese private enterprises, the findings only provided limited explanations as there is a lack of critical concerns regarding the institutional policy and regulatory context within which Chinese private enterprises are operating. Significantly, the government has been identified in Chapter 2 as a critical influential factor for SSCM implementation, but our understanding of the interaction between government interventions and private enterprises, and the corresponding outcomes, remains underdeveloped.

# Chapter 4

## Theoretical Framework

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### 4.1 Introduction

SSCM has become an expansive research area that employs a diverse range of multi-disciplinary theories (Ashby et al., 2012; Quarshie et al., 2016; Touboulic and Walker, 2015), including institutional theory, contingency theory, the resource-based view (RBV), resource dependence theory (RDT), transaction cost economics (TCE), and stakeholder theory (Carter and Easton, 2011; Morali and Searcy, 2013).

It is acknowledged that each theory has its implications for SSCM research (Morali and Searcy, 2013), however, a single theory has intrinsic limitations given the complex nature of supply chain (Chicksand et al., 2012) and the sustainability issues associated with it (Lozano et al., 2015). Viewing SSCM through multiple theoretical lenses, or conceptual frameworks, offers the potential for valuable insights into complicated phenomena (Walker et al., 2015; Chicksand et al., 2012). The use of multiple theoretical lenses in SSCM research can support in-depth analysis (Carter and Easton, 2011), help to capture and understand the complexity of SSCM (Amini and Bienstock, 2014), and illustrate links between different dimensions (Formentini and Taticchi, 2016).

Informed by the above, this paper employs two theoretical lenses, i.e. institutional perspective and contingency perspective, to construct the theoretical framework and engage with the in-depth case analysis. This chapter first provides a general review of the two theoretical perspectives and evaluates their individual contributions to SSCM research. Then the use of the combination of the two perspectives in this thesis is justified and the theoretical framework is presented. Following Figure 4.1 describes the structure of this chapter.

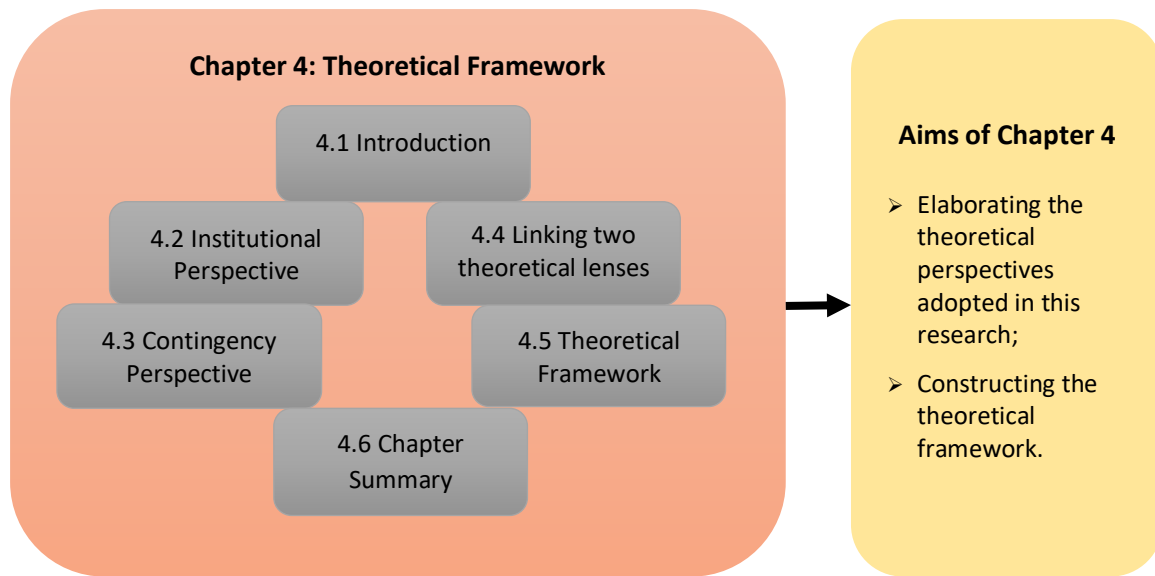


Figure 4.1 Structure of Chapter 4

## 4.2 Institutional Perspective

Institutional perspective has risen to prominence as a popular and powerful conceptual lens through which researchers have conducted organisational analysis (e.g. the structures, actions, transformations and strategies of organisations) (Dacin et al., 2002). Particularly, in recently years, many scholars have explored aspects of the institutional perspective in the context of operations management and supply chain management (Kauppi, 2013; Walker et al., 2015). The institutional perspective and its relevance to theory building and research in SSCM are discussed below.

### 4.2.1 Overview of Institutional Theory

Institutional theory was first developed to explain how external environment affects the implementation of certain organisational actions (Hirsch, 1975). The systematic consideration of the social environment of organisations and the explicit conceptualisation of such environment and its impact on organisations are the core of institutional theory (Rottig, 2016). Philip Selznick is one of the earliest and most influential pioneers of institutional theory, whose early views of organisations as fixed forms of ‘technical instruments’ or institutionalised natural communities – with the former being ‘engineered’ and the latter being ‘products of interaction and adaptation’ (Selznick, 1957, pp.21-22), has led to contemporary sociological views of organisations as instantiations of institutional arrangements whose actions are shaped in response to constraints in the external environment like rules, values and norms (Scott, 1987). Since it emerged in the 1970s, institutional theory has received

much attention in the field of organisational studies and it continues to gain more popularity (Meyer, 2008). An institutional approach has proved to be a valuable mean of understanding the socially constructed evolving logics that offer meaning to the social behaviour of organisations (Friedland and Alford, 1991). This includes the propensity of organisations to resemble organisational structures and behaviours of each other in reaction to the institutional environment (Meyer and Rowan, 1977). Pioneered by this early institutional view, the concept of institutional isomorphism was further developed by DiMaggio and Powell (1983), who have made seminal contributions by embracing notions of coercive, mimetic and normative isomorphism to understand this convergence of organisational behaviours.

According to DiMaggio and Powell (1983), each of these three institutional isomorphisms has its own antecedents. *Coercive isomorphism* derives from 'both formal and informal pressures exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organizations function' (DiMaggio and Powell, 1983, p.150), such as government agencies and regulatory standards. *Mimetic isomorphism* arises when organisations imitate each other – usually in the uncertain environment, i.e. copying the best practices of other successful competitors in the industry. *Normative isomorphism* stems primarily from professionalisation which assumes that professionals will abide by specific guidelines that are aligned with the conventions of formal education and the professional community (DiMaggio and Powell, 1983). In general cases, normative pressure is exerted by external stakeholders who have interests in the organisation, for example, demand from customers or consumers is a key normative driver (Zhu and Sarkis, 2007; Zhu and Geng, 2013).

### 4.2.2 King's Institutional Framework

In a complementary strand of thinking to DiMaggio and Powell (1991), from an institutional perspective, King et al. (1994) develop a framework to analyse the influence of institutional factors on the adoption of information technology (IT) innovation in a certain policy context. The authors argue that there is a lack of a coherent framework for establishing government policy, which signals a lack of understanding of the role of government institutions in IT innovation. Their institutional framework consists of six types of actions that institutions can perform as regulatory or influential interventions: knowledge building, knowledge deployment, subsidy, mobilisation, standard setting and innovation directives. Regulatory intervention is where the institutions use their powers to directly force those governed to conform with the rules and standards. Additionally, institutions' influential interventions can indirectly affect the attitudes and behaviours of those governed without forcing them (Henriksen and Andersen, 2004; Brown and Thompson, 2011).

King et al.'s (1994) policy specific institutional framework provides a valuable lens to examine the significant role of coercive isomorphism that stems from policy influence and legitimacy exerted by governments. Although this model was originally devised and employed in the specific context of policy formulation for IT innovation (e.g. Montealegre (1999) and Brown and Thompson (2011)), it might also illuminate the role of institutions in other contexts, for example, in the context of supply chain innovation (Bello et al., 2004).

King et al.'s (1994) institutional framework can be employed to assist the analysis of government institutional influence on the implementation of SSCM practices in a certain institutional environment. The reasons are twofold. Firstly, SSCM as a comprehensive management approach essentially can be considered as a significant strategic management innovation (Kronborg Jensen et al., 2013; Zhu et al., 2012b). Zhu et al. (2012c) posit that green supply chain practices are environmental innovations in nature. Nowadays, many SSCM practices have been adopted and implemented through technology innovations such as renewable energy technology, cost-efficient transportation and operations technology (Jabbour et al., 2015). Secondly, similar to the IT adoption and implementation in China (Chen et al., 2006; Xu et al., 2016), the understanding of the concept of sustainability and the implementation of sustainable practices are mainly determined by the institutional environment and socio-economic situations of China (Yin and Zhang, 2012). Different from the rest of the world, China is characterised by a unique state-governed institutional environment which provides a fertile research setting to apply King et al.'s (1994) institutional model to examine the influence of institutions, e.g. political ideology and hegemonic approaches, on the implementation of SSCM practices in China.

### 4.2.3 Institutional Perspective and SSCM Studies

Institutional perspective has been widely used in organisation literature and specifically in sustainability research (e.g. Brammer et al. (2012) and Yin and Zhang (2012)). In recent years, such a perspective has gained popularity on the cross-roads of sustainability and supply chain management (e.g., Zhu et al. (2013c), Glover et al. (2014) and Chu et al. (2017)). Rottig (2016) argues that institutional environment within which organisations operate can, to a large extent, influence the way how these organisations interact with stakeholders in the society such as government regulatory authorities, suppliers, customers, competitors, the media, communities and the general public. Many scholars have found that institutional factors including coercive, mimetic and normative pressures can drive organisations to adopt sustainable practices that enable them to operate in a legal and socially responsible manner, i.e. to gain social approval and legitimacy (Glover et al., 2014; Campbell, 2007; Maignan et al., 2002; Morali and Searcy, 2013).

In the specific context of SSCM, institutional perspective offers a lens to explain the motives and circumstances of organisations' implementation of sustainability initiatives in supply chains (Chu et al., 2017; Glover et al., 2014; Wang et al., 2016; Touboullic and Walker, 2015). Typically, institutional theory is used to explain how institutional factors drive decision making in SSCM in order to secure social fit and legitimacy (Saeed and Kersten, 2019). For example, in response to regulatory pressures, organisations ensure the alignment of their SSCM practices (e.g. eco-design and green purchasing) with coercive stakeholders' sustainability expectations (Zhu and Sarkis, 2007; Zhu et al., 2013a; Foerstl et al., 2015). Mimetic isomorphism helps to understand pressures driving Chinese manufacturers in the movement towards adopting more sustainable practices by emulating competitors' best practices such as sustainable purchasing and customer cooperation (Zhu and Geng, 2013).

Particularly, some authors have argued that an institutional perspective is very useful when dealing with SSCM issues in developing countries which are usually characterised by unique and considerably different institutional environment compared to developed countries (Ervin et al., 2010; Rottig, 2016). Organisations operating in emerging markets often lack the knowledge about legitimacy and policies in local communities and are confronted with turbulent business environment and institutional voids (Silvestre, 2015). Therefore, it is important for these organisations to gain a better understanding of the institutions and develop corresponding context-specific organisational strategies and actions (Rottig, 2016). This research is conducted in the context of China – the world's biggest emerging economy that has undergone dramatic institutional transitional process (Peng, 2003). The Chinese and Western roots of sustainability are conceptually, ideologically, and historically different (Li et al., 2016), and such difference is associated with variations in country-specific economic development, culture, and institutions (Campbell, 2011). Therefore, China provides an appropriate and rich context to demonstrate the value of institutional approach to implementing SSCM (e.g. Zhu and Sarkis (2007), Zhu et al. (2013a) and Zhu et al. (2013c)).

### 4.2.4 Assessment of Institutional Theory

There are two main limitations of institutional theory.

Firstly, institutional theory has been scrutinised by scholars for its explanatory limitations of treating institutional isomorphism as an 'outcome' rather than as a 'process' (Barley, 2008). Early institutional theorists like DiMaggio (1988) and Zucker (1988) therefore have encouraged scholars to re-consider institutional perspective and explain institutionalisation processes. This suggestion has been welcomed by recent scholars such as Edwards (2016) and Hallett (2019). For example, Hallett (2019) proposes that scholars can engage with institutional theory but should not be bound by it and the

author invites scholars to conduct ‘institutional analysis without institutional theory as a means to develop fresh insights that will enliven organisational studies and institutional research alike’ (p.43). In the field of SSCM, institutional theory by DiMaggio and Powell (1991) has provided an explanation to the outcome – corporate sustainability-related behaviour. Previous SSCM studies have applied this theory to understand ‘why’ companies adopt and implement compulsory and voluntary sustainable initiatives in supply chains (Touboulic and Walker, 2015; Glover et al., 2014). However, the theory itself does not explain the institutionalisation process, i.e. ‘how’ institutional pressures motivate corporate behaviour, and particularly, ‘how’ different companies respond to these institutional pressures. Therefore, this research conducts an institutional analysis by drawing upon the institutional framework developed by King et al. (1994). As discussed above in Section 4.2.2, this framework is highly appropriate for the research task as it unpacks the coercive isomorphisms that stems from policy influence and legitimacy exerted by governments, in order to understand the institutional intervention mechanisms.

The second limitation of institutional theory lies in its focus on the external environment of an organisation, whereas internal characteristics of the organisation are not considered in the explanation of corporate behaviour. Hallett (2019) points out that organisations are ‘becoming less explicit and more implicit in institutional theory’ (p.17) and suggests that organisations should be brought back into the theory in institutional studies. Drawing upon this, by embracing an organisation (i.e. a focal firm and its supply chain) as an object of study, this research considers not only the external institutional environment but also the organisational characteristics which interact with each other to shape corporate behaviour.

### 4.2.5 Summary

Institutional theory primarily explores the influence of non-economic factors on organisational behaviour, such as social environment, legitimacy, isomorphism, culture and all other forms of social forces. Institutional theory helps to understand how consensus is built around the notion of sustainability and how sustainable practices are developed and diffused among organisations in a certain institutional context (Jennings and Zandbergen, 1995). An institutional approach is applicable to SSCM research, particularly in emerging economies where institutional factors such as social values, culture, government regulations and policies, have been proved to play a significant role in shaping organisations’ socially responsible behaviour (Cai et al., 2013; Campbell, 2007) and sustainability performance (Ioannou and Serafeim, 2012).

DiMaggio and Powell (1991) and King et al. (1994) are two of the most influential sources investigating institutional influence and intervention, which provide theoretical underpinnings to construct the analytical framework in this research. DiMaggio and Powell (1991) focus on the social environment and propose three types of institutional isomorphisms - coercive, mimetic and normative - representing the compulsory hierarchical pressures, power of uncertainty and influence of professionalisation (ibid). Compared with the broad concept of institutional isomorphism, King et al. (1994) focus on the policy dimension – the coercive policy and regulatory instruments that act directly and indirectly on organisations. Since this research has a clear focus on the policy and regulatory context, King et al.'s (1994) framework is employed as the main mechanism to investigate SSCM related policies and regulations and interpret organisational behaviours in this research. The two other types of institutional isomorphisms, namely mimetic and normative, are clearly important but were considered outside the scope of this research study given the research's focus on government institutional influence.

### 4.3 Contingency Perspective

Early contingency roots date back to the late 1960s when researchers such as Woodward (1965), Thompson (1967), Lawrence and Lorsch (1967) and Galbraith (1973) find that there is a close relationship between organisational differentiation, integration, and the environment. Schoonhoven (1981) posits that contingency should be regarded as 'an orienting strategy or meta-theory, suggesting ways in which a phenomenon ought to be conceptualised or an approach to the phenomenon ought to be explained' rather than an actual theory (p.350). From a contingency perspective, Boyd et al. (2012) argue that most relationships between two variables are influenced by other variables. That is, there is no single best set of practices that is optimal for all organisations, rather the optimal practices (i.e. the effectiveness of practices) are subject to a certain set of contextual factors - contingencies such as the environment, technology, knowledge, culture, organisational structure, organisational size (Woodward, 1965; Donaldson, 2001).

Contingency perspective is a broad general organisational theoretical perspective that examines the interaction between an organisation and the environment (Donaldson, 2001). The essence of the contingency perspective is based on the assumption that there is no best way to organise and that the optimal course of action is contingent upon internal and external contextual factors (Galbraith, 1973; Donaldson, 2001). Such perspective has inspired decades of organisation theory-based studies exploring how contexts influence organisational effectiveness (Woodward, 1965; Lawrence, 1969; Lawrence and Lorsch, 1967).



Contingency perspective is employed in this research: (1) to understand how contingency factors such as firm size and industry influence organisations' decision-making of SSCM practices and (2) to examine the effectiveness of government interventions in SSCM implementation in different contexts. The following subsections introduce the main concepts of contingency perspective and explains why and how such perspective can inform the research.

### 4.3.1 Overview of Contingency-based Research

Since its conceptual landmark in the 1960s, contingency perspective has become an influential theoretical perspective to gain understanding of organisational management issues such as organisational structure (Donaldson, 1999; Donaldson, 2001; Pennings, 1987), leadership (Fiedler and Chemers, 1967) and strategy (Fredrickson, 1984). These various contingency theory paradigms share many common features (Donaldson, 1999). The following subsections provide brief overviews of the application of contingency perspective in these three areas.

#### 4.3.1.1 Contingency Perspective on Organisational Structure

A large portion of contingency-based research has particularly focused on the study of organisational structure, and this has been termed as '*structural contingency theory*'. The structural contingency perspective has provided a coherent paradigm for the research of organisational design, by stating that there is no single best organisational structure that is perfectly effective for all organisations, rather the design and structure of organisations are contingent upon the environment (Donaldson, 1999; Donaldson, 2001). As such, this theory encourages organisations to consider the impact of contingency factors that reflect the business environment of the organisation when design the organisational structure (Donaldson, 2006; Donaldson, 2001). Greenberg and Baron (2003) suggest that in order to determine the optimal structure to achieve organisational effectiveness, it is important to gain a better understanding of the environment in which the organisation operates and accommodate the organisational design to it.

The core paradigm of contingency-based research on organisational structure includes three major elements: the organisational structure, the environment/context (contingencies), and organisational performance (Drazin and Van de Ven, 1985; Donaldson, 2001). There is association between the three theoretical constructs, that is, the fit between organisational structure and the environment leads to desired high organisational performance whereas mist fit causes low performance (Donaldson, 2001). This is same to what Van de Ven and Drazin (1984) suggest — the better the organisational structure fits the environment, the higher the organisational performance will be. For this reason, in order to attain desired performance, organisations are motivated to pursue the fit between organisational

structure and contingency factors by adopting new structures that fit the new levels of contingency factors (Donaldson, 2001).

### 4.3.1.2 Contingency Perspective on Leadership

The contingency theory of leadership was proposed by Fiedler (1964), which suggests that the effectiveness of leadership is contingent on a number of contextual or situational factors (Furu, 2012). Contingency-based research of leadership focuses on the investigation of how different contextual factors affect a leader's leadership effectiveness (Lorsch, 2010) and how an individual adapts his or her leadership style to be an effective leader in a specific situation due to contingency influences (Hughes et al., 1998).

Lorsch (2010) has summarised four types of contingency factors that should be considered while choosing the style of leadership, including organisational complexity, task uncertainty, congruence between the leader and followers' characteristics, and international differences: (1) high organisational complexity can make it complicate for leaders to use various levers of powers and to communicate and understand followers; (2) the choice of directive style versus participative style of leadership depends on task uncertainty level, i.e. whether it is routine and repetitive task or unpredictable task; (3) the fit between leader's goals and followers' expectations determines the effectiveness of the leadership; and (4) the levers of powers and influence available to leaders vary in different institutional environments and therefore leaders should employ different methods of exercising power according to different institutional systems and cultures.

### 4.3.1.3 Contingency Perspective on Organisational Strategy

Since 1980s, contingency perspective has gained popularity in strategy research and it has been employed to examine the relationship between organisational strategy and a variety of moderating variables (Ginsberg and Venkatraman, 1985). Contingency-based organisational behavioural theories suggest that the effectiveness of a firm's strategy is contingent on various factors such as market structure, product life cycle, managerial characteristics, technology, economic conditions and level of internationalisation (Hoffer, 1975; Ginsberg and Venkatraman, 1985). For example, whether a firm should produce or purchase new products is influenced by the availability and cost of capita; technology affects various aspects of management strategies such as communication patterns in the organisation and market reach; the level of internationalisation requires an organisation to change its strategies to adapt to different culture, expectations and institutional laws and regulations (Hoffer, 1975). Due to the influence of these contingencies, firms are encouraged to choose different strategies according to their situations in order to attain effectiveness of the strategies.

### 4.3.2 Contingency-based SSCM Studies

This section provides a brief overview of the application of contingency perspective in SSCM research.

Sousa and Voss (2008) suggest that when the value of a 'best' practice is supported by empirical evidence, research should shift from the justification of its value to the understanding of the contextual conditions under which it is effective, that is contingency-based research on practices in operations management. Recently, the focus of arguments in SSCM has also been shifting from 'whether/why sustainability should be incorporated into supply chain' to more important practical questions, such as 'how the concept of sustainability should be put into practice' (Alexander et al., 2014) and 'how sustainable practices can be effectively implemented along the supply chain' (Silvestre, 2015; Regaldo, 2012), as it has been found that there is often a gap between the actual implementation of sustainable practices and the desirability of supply chain sustainability in theory (Bowen et al., 2006). This can be partly attributed to the fact that SSCM involves a number of issues and decisions that are, to a large extent, determined by a broad range of context-dependent factors (Andersen and Skjoett-Larsen, 2009; Morali and Searcy, 2013; Formentini and Taticchi, 2016; Regaldo, 2012). Understanding the influence of these contingency factors on SSCM implementation can help organisations attain a better fit between the proposed form of 'best' practices and the organisational context.

A contingency perspective provides a valuable approach that can be utilised by organisations to effectively implement sustainable supply chain practices within specific contexts. Contingency perspective suggests that an organisation constantly adapts itself to attain the fit between the managerial design and the internal and external environmental contingencies so that it can maintain high performance (Sousa and Voss, 2008; Voss, 2005). When it comes to sustainability, organisations are driven to pursue sustainable practices that match the context – the sustainability expectations from beneficiary and societal perspective (Haavisto and Kovács, 2014). This implies that an organisation's sustainability strategic decision-making lies dependent upon its unique contextual conditions (Schneider et al., 2014; Silvestre, 2015; Kunz et al., 2013; Christ and Burritt, 2013). Therefore, contingency perspective provides an alternative explanation to organisations' adoption and implementation of sustainable practices in supply chain (Morali and Searcy, 2013; Silvestre, 2015; Walker and Jones, 2012).

In recently years, the burgeoning SSCM research area has also received a number of contingency-based studies (Walker et al., 2015; Touboullic and Walker, 2015), as a number of researchers have found that a contingency approach is a useful and powerful way to deal with sustainability issues in

supply chains. For example, Walker and Jones (2012) argue that there is no one best way to approach SSCM, as the best course of action is contingent upon the internal and external context within which the firm operates. Kunz and Gold (2015) build a framework based on contingency perspective to examine the influence of contingency factors on sustainable humanitarian SCM. Formentini and Taticchi (2016) employ a contingency perspective to understand the relationships between contingency factors and the development of specific sustainability practices in supply chains. From a contingency perspective, Song et al. (2017) examine the influence of three patterns of environmental supply chain integration (internal, customer and supplier integration) on firms’ operational and financial performance and suggest that the three types of integration should be aligned in order to improve the performance.

## 4.4 Linking Two Theoretical Lenses

Table 4.1 provides a summary of the two theoretical perspectives applied in this research.

*Table 4.1 Summary of Institutional and Contingency Perspectives*

<b>Theoretical Lenses</b>	<b>Origination</b>	<b>Summary Description</b>	<b>Source</b>
<b>Institutional Perspective</b>	Organisational theory, sociology, psychology	Institutional theory examines how social structures, including social values, norms, rules, and laws act as external pressures that influence organisational actions	DiMaggio and Powell (1983), Scott (1987), North (1990)
<b>Contingency Perspective</b>	Organisational theory, psychology, strategy	The optimal design and leadership style of an organisation is contingent upon various internal and external constraints. An effective organisational design should fit with the environment within which it operates.	Fiedler and Chemers (1967), Lawrence and Lorsch (1967), Donaldson (2001)

Institutional and contingency perspectives are both concerned with organisation-environment relationships (Volberda et al., 2012). Paloviita and Luoma-aho (2010) posit that there is a link between institutional and contingency theoretical perspectives, that is, these two perspectives to some extent akin to each other – both promote some forms of ‘fit’ and suggest that the fit between the organisation and the environment will generate beneficial consequences for organisations, although in different ways. Contingency perspective considers the influence of both internal and external environmental contingencies, while institutional perspective is primarily concerned external institutional factors. Therefore, contingency fit generates internal effectiveness, whereas institutional fit leads to external legitimacy and support (Donaldson, 2001). As discussed in Chapter 3 (Section 3.4),

in SSCM literature, institutional factors are often treated as a type of contingency factors. Thai (2015) also argues that to some extent institutional theory can be considered as a contingency-based theory.

Although institutional and contingency perspectives share some common characteristics, early contingency theorists such as Donaldson (2001) argue that contingency theory and institutional theory tend to conflict by prescribing different organisational structures as their fits. According to institutional theory, the adapting process of organisations does not necessarily include the adoption of characteristics that generate better operational performance (DiMaggio and Powell, 1991), however, a contingency approach highlights the adoption of features that will produce highest organisational effectiveness (Donaldson, 2001; Child, 1977; Van de Ven and Drazin, 1984). Companies might adopt relatively formalised practices for symbolic purposes due to institutional pressures while actually implement practices via more idiosyncratic and social means (Meyer and Rowan, 1977). Therefore, institutional theory is different from contingency theory in emphasising the symbolic more than the real, and in adaption as being to institutional norms rather than organisational task environment (Donaldson, 2001).

When applied to the area of SSCM, both institutional and contingency perspectives can illustrate reasons for organisations' implementation of SSCM initiatives (Moralì and Searcy, 2013), and a combination of the two can help researchers gain a deeper understanding of the influence exerted on organisations as a result of the complex interplay between the external institutional environment and internal organisational characteristics. Formal and informal institutions represent the external environment within which the companies are operating, and therefore determine the standardised or formalised sustainable practices adopted by organisations. However, the actual design and implementation of SSCM practices and responses to the institutional environment may vary within different organisations as they can choose to adopt and implement the type of practices that work best for them in particular situations.

In this thesis, institutional perspective is distinguished from contingency perspective and both perspectives are employed to form the theoretical framework. This is because contingency and institutional theory explanations, when applied separately, are limited in addressing the complex organisational management issues and offer only an incomplete understanding of organisational behaviour and organisations' relationship with the environment (Volberda et al., 2012), but by integrating both perspective they could complement each other and be used to understand better the symbolic and instrumental roles fulfilled by the practices implemented by organisations (Scott, 1987). For the purpose of the research, institutional factors (particularly government institutional pressures) are examined separately from other types of contingency factors (e.g. firm size and industry). The

interaction between the external conditions caused by institutions and the organisational context shaped by 'other' contingency factors is investigated in the research. The use of these two theories and the theoretical framework of the research are explained further in the next subsection.

### 4.5 Constructing Theoretical Framework

The theoretical framework serves as the foundation of this research by establishing connections between the employed theories and research questions as well as assisting the interpretation and discussion of the empirical evidence. As shown in Figure 4.2, the theoretical model presents a conceptualisation of the institutional and contingency perspectives and demonstrates how these two perspectives combined to explain firms' behaviour in SSCM implementation. The primary goal of this research is to investigate how government interventions influence the implementation of SSCM practices among Chinese private enterprises and the effectiveness of such influence. From an institutional perspective, government interventions in the implementation of SSCM practices can be interpreted through the policy-specific institutional framework developed by King et al. (1994). Contingency perspective is employed to explore how contingency factors directly influence the implementation of SSCM practices, and how these factors shape companies' responses to government interventions, i.e. the influence of contingency factors on the effectiveness of government institutional interventions.

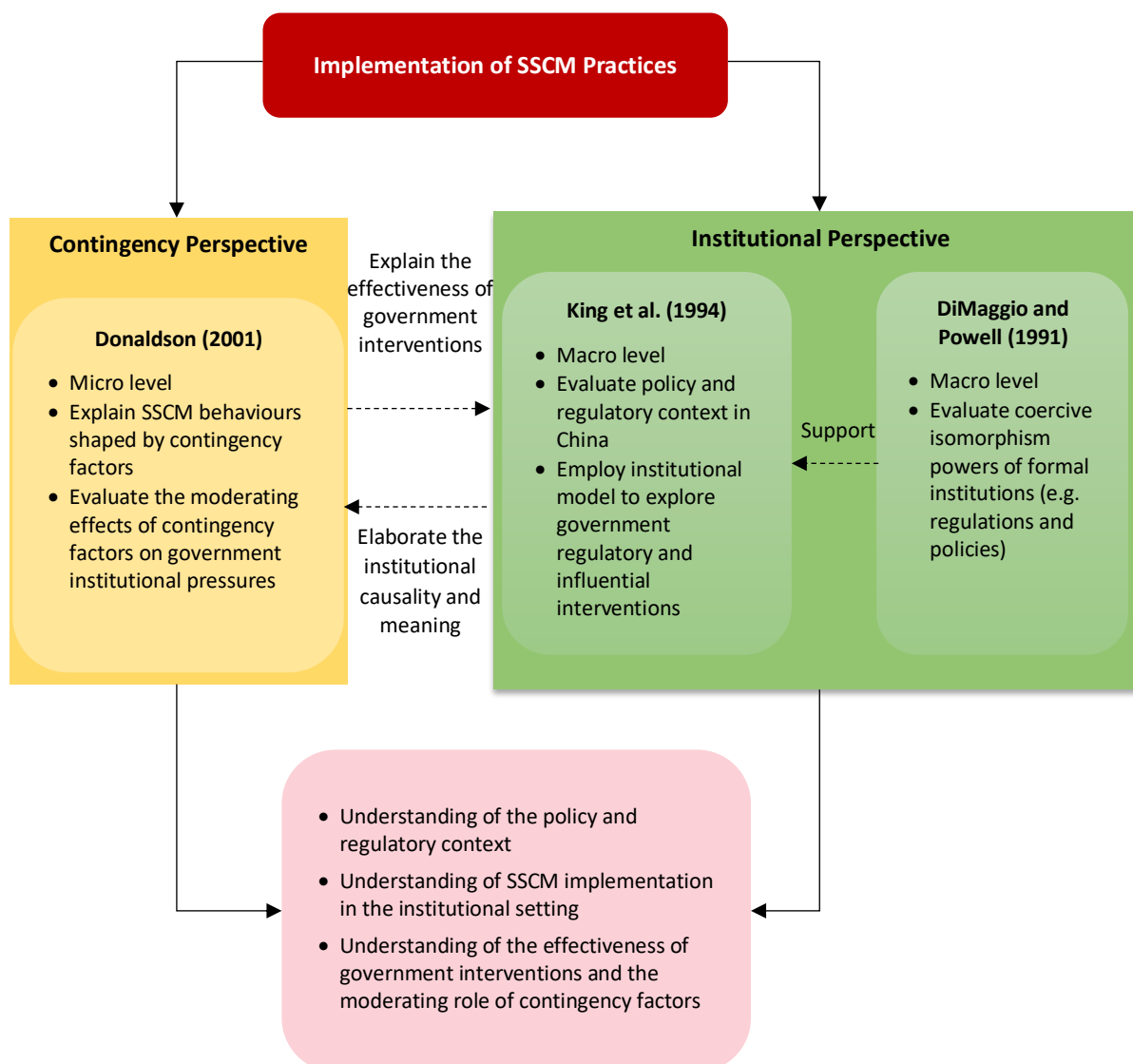


Figure 4.2 Theoretical Framework of This Research

Originally, the framework incorporated the institutional context as one type of contingency factors along with contingency factors such as firm size, industry, ownership and supplier-buyer relationships. The pilot study revealed the dominant role of institutional factors including government regulations compared to the ‘other’ contingency factors. This in turn led to the re-conceptualisation of the ‘other’ contingency factors as moderating factors acting on the institutional pressures. The framework depicts two contexts – institutional perspective and contingency perspective and how they are work together to offer explanations to the studied phenomena. This framework guided the empirical design and analysis, but it also provided the basis for a distinctive theoretical contribution which will be discussed later in Chapter 8.

### 4.5.1 Employment of Institutional Perspective

From an institutional perspective, institutional power implied by institutional theory (DiMaggio and Powell, 1991) is employed to interpret the influence of institutional environment. Particularly, the policy-specific institutional model of King et al. (1994) (See Table 4.2) is employed in this research to explore different types of institutional intervention actions and how they influence the implementation of SSCM practices in a certain institutional environment of China. The rationale for employing this model has been justified in Section 4.2.2.

*Table 4.2 The Six Types of Institutional Intervention Actions (Adapted from King et al. (1994))*

<b>Institutional Interventions: Regulatory and Influential Actions</b>	<b>Definition</b>	<b>Exemplary Forms of Activities That Derive from Regulation and Policy</b>
<b>Standard Setting</b>	Standard setting is a form of regulation that constrains options of decentralised actors and organisations in line with larger social or institutional objectives. (Standards refer to socially constructed agreements or ‘treaties’ among interested parties to describe the ‘preferable’ ways of doing things.)	<ul style="list-style-type: none"> <li>• Mandatory standards set by laws and regulations</li> <li>• Voluntary standards promulgated by professional and trade associations (e.g. ISO 14001)</li> </ul>
<b>Knowledge Building</b>	Knowledge building provides the base of scientific and technical knowledge required to produce and exploit innovations.	<ul style="list-style-type: none"> <li>• Support on innovative programmes</li> <li>• Initiation of R&amp;D projects</li> </ul>
<b>Knowledge Deployment</b>	Knowledge deployment aims to stimulate the dissemination of knowledge among the population.	<ul style="list-style-type: none"> <li>• Provision of education and training</li> <li>• Introduction of knowledgeable personnel</li> <li>• Encouragement of inter-institutional cooperation</li> </ul>
<b>Subsidy</b>	A subsidy is provided by an institution through its resources or authority to defray the otherwise unavoidable costs or risks.	<ul style="list-style-type: none"> <li>• Government funding support</li> <li>• Special grants</li> <li>• Favourable tax policies</li> </ul>
<b>Innovation Directive</b>	Innovation directive requires organisations to create or utilise innovative products or processes, or to engage in activities that will specifically facilitate the production and/or use.	<ul style="list-style-type: none"> <li>• National directive plans or programmes that require government agency or industry to develop or use particular innovative technologies</li> <li>• Constructing R&amp;D institutions, industrial parks etc.</li> <li>• Requirements for organisations to invest resources in R&amp;D activities, to use products or processes, to alter organisational structures or operations in ways that lead to innovation and diffusion</li> </ul>



<p><b>Mobilisation</b></p>	<p>Mobilisation refers to the encouragement of decentralised actors and organisations to think in a particular way with respect to an innovation.</p>	<ul style="list-style-type: none"> <li>• Promotional campaign</li> <li>• Scientific publication</li> <li>• Establishment of educational institutions or national programmes</li> </ul>
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## 4.5.2 Employment of Contingency Perspective

As discussed in Section 4.3, according to contingency perspective, the effectiveness of practices is contingent on a number of contextual or situational factors. For this reason, in order to attain desired effectiveness, organisations are driven by a certain set of factors to pursue practices that ‘best’ fit the environment within which these practices are implemented (Sousa and Voss, 2008; Voss, 2005).

Contingency perspective is employed in this thesis in two way: first, it provides a way to explain focal companies’ adoption and implementation of SSCM practices, and second, it helps examine the influence of contingency factors on the effectiveness of government interventions. Contingency factors that represent the key characteristics of an organisation are identified. These factors can directly influence companies’ sustainability decision-making and SSCM initiatives, but also shape organisations’ attitudes and response to institutional pressures caused by government intervention actions. Therefore, contingency perspective is conceptualised in two different contexts in this study – the context of SSCM implementation in the case companies studied and the context of government intervention implementation. Contingency perspective on the one hand illustrates companies’ rationales to adopt certain SSCM profiles that are characterised by different sets of SSCM practices, and one the other hand, helps to evaluate the effectiveness of different types of government institutional interventions in SSCM implementation. These are illustrated in the following two subsections.

### 4.5.2.1 Contingency Perspective in SSCM

Contingency perspective implies that an organisation’s sustainability decision-making is contingent upon its contextual conditions (Schneider et al., 2014; Walker and Jones, 2012). In the context of SSCM implementation, contingency perspective provides possible explanations to organisations’ adoption of certain SSCM strategies and practices as a good fit to the organisation’s situation (Morali and Searcy, 2013). In this model, organisational context (i.e. contingency factors) influences focal firms’ actions to respond to the context (i.e. firms’ adoption and implementation of SSCM practices).

As discussed in Chapter 3, Section 3.4, there are both internal and external contextual factors. Internal environment is inclusive of contingency factors such as organisational characteristics, capabilities and

stakeholders within the organisation (e.g. employees and top management). External environment consists of contingencies such as institutional regulations, national context, industry characteristics, and external stakeholders (e.g. buyers, government, media, NGOs etc.). Two key internal contextual factors of interest in this study include firm size and industry.

### 4.5.2.2 Contingency Perspective in Government Interventions

By applying the contingency perspective in the context of government interventions, one can assume that the effectiveness of different types of intervention actions employed by the government lies dependent upon the situation, i.e. enterprises might adopt different attitudes and manners in response to government policy and regulatory interventions depending on specific circumstances in which they find themselves. Effectiveness within this context could be linked to the ability of government to attain sustainability goals set by itself. In order to attain desired effectiveness, it is suggested that governments should implement different types interventions according to organisations' contexts such as firm size and industry.

## 4.6 Chapter Summary

Institutional and contingency perspectives are employed to construct the theoretical framework. This chapter investigates these two perspectives individually and their theoretical foundations are traced. Furthermore, the connection between the two theoretical lenses are examined in order to understand how they can be applied together to assist the research.

The use of different theoretical lenses allows the research to capture the complexity and the richness of the issues investigated, as well as to facilitate the development of a clear discussion and the identification of practical implications (Formentini and Taticchi, 2016). While prior scholarly studies have examined both institutional and contingency theories and compared their impacts on organisational behaviours, this study adopts a combination of these two perspectives.

Coercive institutional factors (particularly government regulatory pressure) can explain why organisations takes reactive actions to deal with sustainability issues like environmental protection, however, it is not sufficient to clearly explain why organisations also has to strive for more proactive action beyond the mandatory requirements established by relevant institutional agencies. Companies might also face the organisational conflicts between the need for response to institutional pressures of maintaining legitimacy and the constraints caused by contingency factors with the implications of forfeiting organisational efficiency. Therefore, this study investigates how institutional fit and contingency fit interact to shape firms' SSCM-related behaviour.

Finally, whilst the chapter provides a rationale for the theoretical framework applied in the research, the research domain is large and beyond the scope of a single study. In the following Figure 4.3 the boundary of the research is expressed in terms of the relationship between the two theory frames. As shown in Figure 4.3, the focus of this research is government institutional interventions, whilst mimetic and normative pressures (dotted line arrows) are considered outside the scope of this research. The dotted line delineates the research scope.

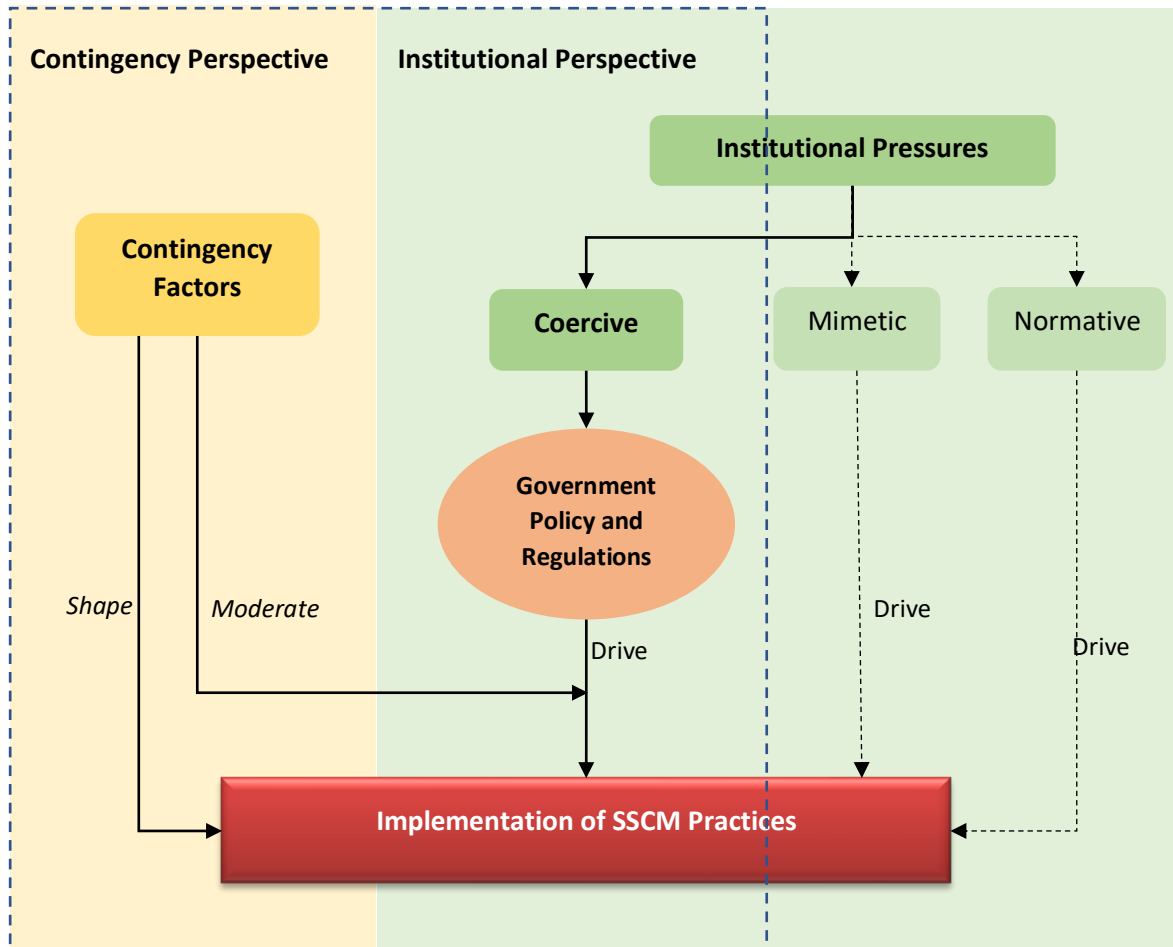


Figure 4.3 Scope of the Research

# Chapter 5

## Research Methodology

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### 5.1 Introduction

A research design involves considerations of the connections between research philosophy, research methodology and research techniques which researchers need to address in order to effectively answer their research questions. The FMA framework (Checkland and Holwell, 1998) presented in Chapter 1 has laid the essential foundation concerning the research phenomenon, where area of concern (A) and framework of ideas (F) were depicted in Chapter 2, Chapter 3 and Chapter 4 respectively. This chapter explores the application of methodology (M) on the area of concern. By doing so, this chapter presents the overarching design of the research, explains its philosophical underpinnings and addresses the justification of the research approach applicable to the area of concern.

Chapter 5 comprises two main sections: the first entails various philosophical and methodological considerations of this study, including the research philosophy, research methodology and approach, research design, data collection techniques and data analysis approach along with the justification for the choices made; while the latter part deals with other practical sub-attributes of the study's methodological issues such as the development of interview protocols, data type, ethical considerations, pilot study and fieldwork.

More specifically, as depicted in Figure 5.1, Section 5.2 provides an overview of research philosophy and addresses the philosophical stance of this study; the research approach and research strategy are then discussed in Section 5.3. Section 5.4 introduces the qualitative research strategy adopted in this study and justifies the selected research method (multiple case study) and data collection techniques (semi-structured interviews). The research design strategy is then summarised in Section 5.5, while the empirical design and fieldwork are elaborated upon in Section 5.6, followed by a summary in Section 5.7.

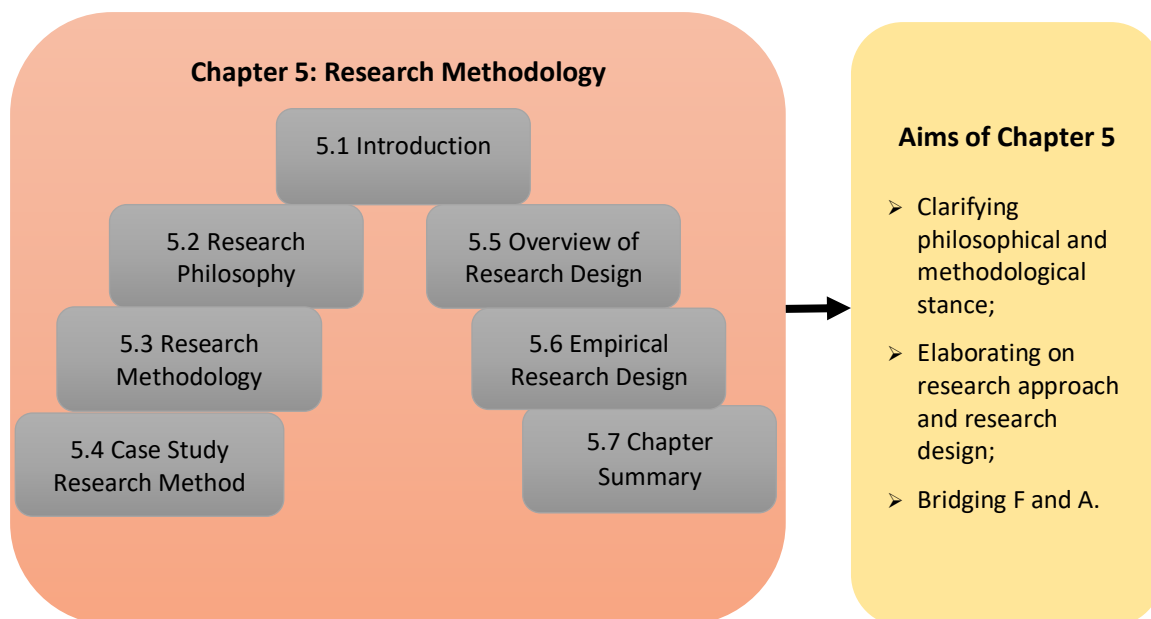


Figure 5.1 Structure of Chapter 5

## 5.2 Research Philosophy

According to Saunders et al. (2009), research philosophy is an overarching term relating to the nature of reality and the development of knowledge. Ontology and epistemology are the most prevalent branches of research philosophy generally studied in social science. Ontology is the ‘*philosophical assumptions about the nature of reality*’ and epistemology is ‘*a general set of assumptions about the best ways of inquiring into the nature of the world*’ (Easterby-Smith et al., 2012, p.18). Ontology logically takes priority over epistemology and epistemology precedes methodology, that is, the truth of the world determines the principles and procedures through which we come to explain it (Danermark et al., 2005). A particular philosophical stance is often associated with a certain methodology and leads to the adoption of certain research methods representing the researchers’ philosophical assumptions (Morgan, 2007; Easterby-Smith et al., 2012). The definitions and interrelationship between ontology, epistemology, methodology and methods and techniques are provided and further clarified in the following Table 5.1 and Figure 5.2.

Table 5.1 Ontology, Epistemology, Methodology and Method (Easterby-Smith et al., 2012)

<b>Ontology</b>	The researcher’s beliefs about the nature of reality ( <i>What is reality?</i> )
<b>Epistemology</b>	A general set of assumptions about ways of inquiring into the nature of reality ( <i>How can I know reality?</i> )
<b>Methodology</b>	A combination of techniques that can be employed to carry out the research ( <i>How do you go about finding out?</i> )
<b>Methods and Techniques</b>	Individual techniques for data collection, analysis etc. ( <i>What techniques do you use to find out?</i> )

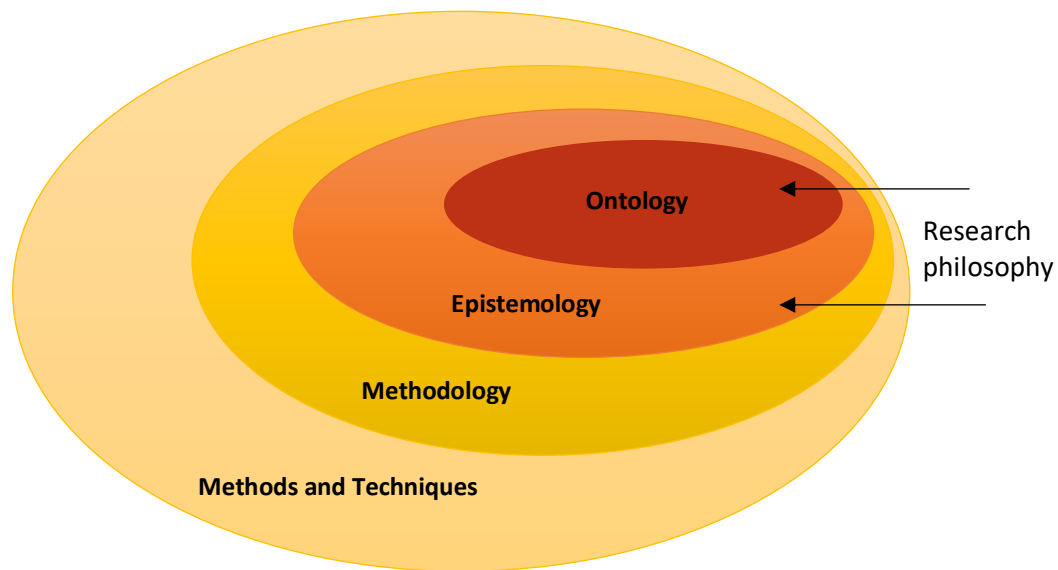


Figure 5.2 Research Philosophy, Methodology and Method (Easterby-Smith et al., 2012)

Scholars like Guba and Lincoln (1994) and Easterby-Smith et al. (2002) have highlighted the importance of considering philosophical stances before developing research methods to undertake management research. According to Holden and Lynch (2004), research should not be guided by methodologies; on the contrary, methodological choices should be led by the researcher's philosophical stance and the social science phenomena that are investigated. This argument is based on the fact that research method articulates, and is constituted by, philosophical commitments which impact upon how the researcher methodologically engages in management research, for example, using specific techniques and collecting particular types of data (Easterby-Smith et al., 2012). By demonstrating the characteristics of the key philosophical stances, this section assists the research in clarifying the philosophical position.

### 5.2.1 Philosophical Views

Easterby-Smith et al. (2012) believe that, before undertaking management research, it is extremely crucial to think through two dimensions that can affect the research design: the philosophical stance and the role of researcher.

Researchers can have different philosophical stances according to their assumptions about the nature of truth, human knowledge and social reality (Morgan, 2007; Johnson and Onwuegbuzie, 2004). From positivism to social constructionism, a continuum of philosophical commitments has been developed in social sciences. At one end of the spectrum, researchers follow a '*positivism*' philosophical stance which considers reality as a concrete structure. In contrast, at the other end of the spectrum,

researchers adopt a '*social constructionism*' philosophy which considers reality as a projection of human imagination (Creswell, 1998; Easterby-Smith et al., 2012).

The role of researcher depends on the philosophical view adopted by the researcher. With positivism, researchers tend to be detached and independent from the research; however, in social constructionism, researchers are more likely to be involved and be part of the research (Easterby-Smith et al., 2002).

The linkage between philosophical stance and researcher's role is manifested in the matrix shown in Figure 5.3. The matrix of research designs helps the researcher position the study and subsequently decide on suitable methods to effectively answer the research questions.

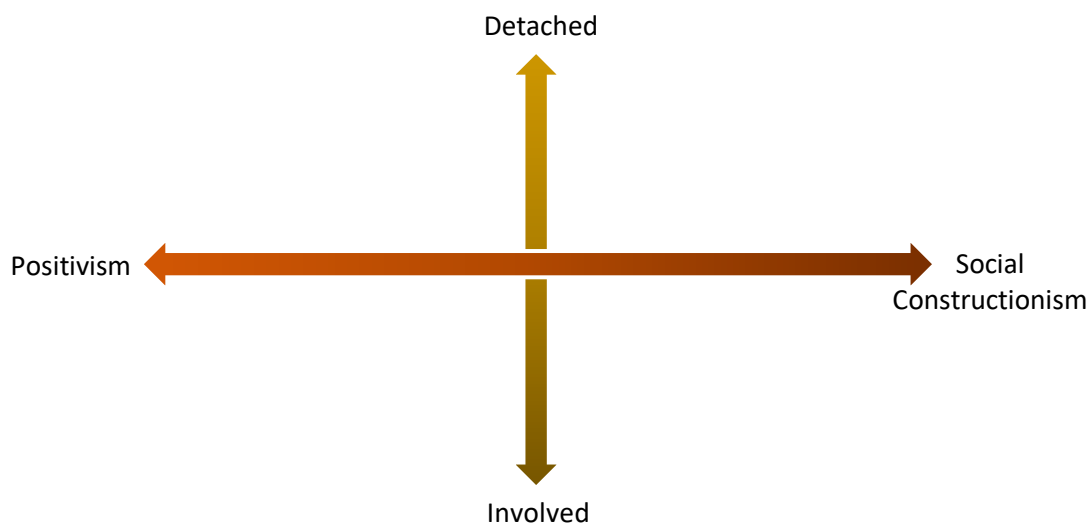


Figure 5.3 Matrix of Research Designs (Easterby-Smith et al., 2002)

In presenting the continuum of philosophical stances, the researcher acknowledges the complexity of philosophical issues. Therefore, 'projecting' *positivism versus social constructionism* or *detached versus involved* role into two-dimensional continuum is a hyper-simplification, as each of them can have multiple dimensions. The intention here is to highlight the most popular examples of philosophical positions in social science.

In social sciences, positivism and social constructionism are the two main philosophical views that have been widely adopted by researchers to make enquires about the world (Easterby-Smith et al., 2012). In the field of supply chain and operations management research, these two research philosophies have also played a major role in shaping research approaches adopted by researchers due to the multi-disciplinary nature of this research field (Mangan et al., 2004).

**Positivism** is closely related to objectivism which assumes that the social world exists externally and there are true answers in it (Easterby-Smith et al., 2012). Hence, researchers on a positivism

philosophical position adopt a deductive process and tend to employ objective measurement to investigate their area of concern, i.e. beginning with developing a hypothesis about the nature of the world, and then collecting data to confirm or disconfirm it (Rudestam and Newton, 2014). In this process, researchers are independent of and should not be affected by the subject of the research (Saunders et al., 2009). The properties of the social world are measured through quantitative methods that can facilitate replication and quantifiable analysis for the generalization of results (Easterby-Smith et al., 2012).

**Social constructionism** is related to subjectivism which adopts the philosophical stance that reality is determined by people and their reflections or sensations rather than by objective external factors (Easterby-Smith et al., 2012). Social constructionism assumes that people seek understanding of the situation they encounter by developing subjective meanings of their experiences (Easterby-Smith et al., 2012; Creswell, 1998). Proponents of this position argue that different individuals have different beliefs and values, which lead to different understandings of the world in which they live and work. Therefore, researchers 'should not be to gather facts and measure how often certain patterns occur, but to appreciate the different constructions and meanings that people place upon their experience' (Easterby-Smith et al., 2012, pp.23-24). As social constructionism is one type of interpretive approaches, qualitative methods are usually adopted by social constructionists to explore their research (Easterby-Smith et al., 2012).

Easterby-Smith et al. (2012) make a comparison between these two fundamental research philosophies in management research, as shown in Table 5.2. This comprehensive summary of the two major philosophical stances in management research is used to guide this study to adopt the appropriate research philosophy to explore the research questions. The next subsection discusses the philosophical stance of this research.



Table 5.2 Contrasting Implications of Positivism and Social Constructionism (Source: Easterby-Smith et al. (2012))

	<b>Positivism</b>	<b>Social Constructionism</b>
<b>The Observer</b>	Must be independent	Is part of what is being observed
<b>Human Interests</b>	Should be irrelevant	Are the main drivers of science
<b>Explanations</b>	Must demonstrate causality	Aim to increase general understanding of the situation
<b>Research Progress Through</b>	Hypotheses and deductions	Gathering rich data from which ideas are induced
<b>Concepts</b>	Need to be defined so that they can be measured	Should incorporate stakeholder perspectives
<b>Units of Analysis</b>	Should be reduced to simplest terms	May include the complexity of 'whole' situations
<b>Generalisation Through</b>	Statistical probability	Theoretical abstraction
<b>Sampling Requires</b>	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

### 5.2.2 Philosophical Stance of This Research

The philosophical stance of this research falls within social constructionism. While conducting this study, it is believed that the research should contribute to theory and generalise understanding to the real world and practices. Apart from the researcher's belief, there are three key practical factors shaping the philosophical position of this research.

First, at the beginning of this research, it was not clear that what kind of problems the studied companies are confronted with and how they deal with them. The research questions are initially derived from the observations during the pilot empirical study which indicates the significant influence of the Chinese institutional regulatory and policy context on SSCM implementation in China. The research therefore aims to understand and to explain the studied phenomena in its contextual setting, that is, to inquire how the Chinese private enterprises implement SSCM practices in the institutional policy and regulatory context in China. Two main research questions are then raised 'How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?' and 'How do government interventions influence the implementation of SSCM practices amongst Chinese private enterprises?' The two research questions are interpretive in nature. The answers to these questions could contribute to theory development as they raise theoretical considerations that the study addresses (See Chapter 4), but also, they could make contributions to government policies and Chinese private enterprises' SSCM practices.

Second, the implementation of SSCM practices in China is still at its infancy stage and the topic has received very limited attention in the literature. The emerging nature of SSCM research in China calls for a holistic and interpretative approach to better understand the topic (Saunders et al., 2009), especially through social constructionism philosophical view as it allows the researcher to view social phenomena holistically, get close to participants, and capture the actual meanings and interpretations as appropriate (Johnson et al., 2006).

Third, given the dynamicity and complexity of the institutional environment in China, the area of concern of this research necessitates rich and in-depth data which is expected to be gathered from multiple perspectives to construct meanings of social behaviours, and the researcher is required to be involved in the process for sense making. An interpretivist approach is ideally suited as it embraces the complex and dynamic quality of the social world (Bogdan et al., 1975) and therefore allows the researcher to gain deep understanding of what the companies think and do in response to government institutional interventions through close observations and interpretations of the meaning individuals subjectively attach to a given situation.

In summary, social constructionism seems appropriate for this research in terms of developing understanding of the research topic and explaining the ways in which meanings are constructed in a natural setting (Easterby-Smith et al., 2002). Following the philosophy, the next section discusses the reasoning behind the research methodology, which is influenced by the philosophical stance of the researcher.

### 5.3 Research Methodology

The chosen research methodology and techniques directly reflect the philosophical underpinnings of the research (Grix, 2010). From various research methodologies, two of them are discussed here to provide a continuation to the discussion of philosophy in the previous section. Within the positivist school of thoughts, the goal of research is scientific explanation; that is, to seek for causalities to verify or falsify hypotheses and propositions. Therefore, quantitative data is usually utilised for analysis or theory testing, and surveys and experiments are mostly adopted as data collection methods. On the other hand, for social constructionists, who largely engage in social science research, aim to develop understanding of the social world and discover how people construct knowledge and meaningful reality. Thus, qualitative data is commonly used for sense making and enhancement of understanding, and methods like observations and interviews are generally employed to provide insights into the research phenomenon or generate new theories (Easterby-Smith et al., 2012). These two distinct and

contrasting ways of conducting research are further discussed in terms of research approaches and strategies in the following subsections.

### 5.3.1 Deductive vs. Inductive Research Approaches

In social science, deductive and inductive are two general approaches to research that are influenced by the two philosophical worldviews discussed before (Saunders et al., 2009). A deductive approach initiates the arguments from general phenomena or a theory, then works towards more concrete empirical evidence by trying to validate or refute the theory, and consequently focuses on particular instances; however, an inductive approach starts with concerns or questions regarding particular instances and tries to develop or generate a theory by interpreting and making sense of a social phenomenon (Bryman, 2016; Neuman, 2013). According to Saunders et al. (2009), as a general rule, positivist studies usually adopt deductive approach, whereas inductive approach is commonly associated with phenomenology, interpretivism or social constructionism. The main characteristics of deductive and inductive approaches to research and the key differences between the two are presented in the following Table 5.3.

*Table 5.3 Deductive and Inductive Approaches to Research (Saunders et al., 2009; Neuman, 2013)*

<b>Deduction Approach</b>	<b>Induction Approach</b>
Scientific principles	Gaining an understanding of the meanings attached to events
From general to specific	From specific to general
Moving from theory to observations/findings	Moving from observations/findings to theory
The need to explain causal relationships between variables	A close understanding of the research context
A highly structured approach to control validity of data	A more flexible structure to permit changes of research emphasis as the research progresses
A researcher is independent of what is being observed	A researcher is part of the research progress
Collection of numerical (quantitative) data	Collection of non-numerical (qualitative) data
The necessity to have enough sample size in order to generalise conclusions	Less concern with the need to generalise

### 5.3.2 Quantitative vs. Qualitative Research Strategies

The discussion of deduction versus induction approaches to research can be related to quantitative versus qualitative research strategies. A deductive approach is aligned with quantitative research, and an inductive one is part of qualitative research (Neuman, 2013). Quantitative research is commonly

employed by positivists to reflect the objective ontological stance as social reality is considered to be governed by strict rules and procedures. Thus, quantitative research is largely interconnected with close-ended questions, and large sets of numerical data are collected through methods like surveys and experiments in order to quantify causality or interconnections. On the contrary, qualitative research is built upon constructionism which considers social system as subjective perceptions of human beings. Therefore, qualitative research is often associated with open-ended questions, and smaller samples of non-numeric data are gathered through methods like qualitative interviews and observations to interpret the meanings of reality from human perspective (Creswell, 1998). Qualitative research is particularly suitable for investigating ‘why’ and ‘how’ questions as it provides a rich understanding to the studied area of concern (Bryman and Bell, 2015). The following Table 5.4 summarises the major differences between quantitative and qualitative strategies.

*Table 5.4 Major Differences between Quantitative and Qualitative Research Strategies (Creswell, 2014; Bryman and Bell, 2015; Sarantakos, 2012)*

<b>Feature</b>	<b>Quantitative Research</b>	<b>Qualitative Research</b>
<b>Nature of Reality</b>	Objective reality; simple; single; tangible sense impressions	Subjective reality; problematic; holistic; a social construct
<b>Role of Researcher</b>	Passive; detached from the subject of research	Active; involved in the subject of the research
<b>Emphasis of Research</b>	Statistical measurement and quantification	Context exploration and sense-making
<b>Structure of Research</b>	Employs strictly structured approach to obtain validity	Employs less structured approach to obtain in-depth understandings
<b>Cause and Effects</b>	Nomological thinking; cause-effect oriented	Non-deterministic, no cause-effect linkages
<b>Principal Orientation to The Role of Theory in Relation to Research</b>	Deductive; testing of theory	Inductive; generation of theory
<b>Inquiry Strategies</b>	Surveys and experiments	Phenomenology, grounded theory, ethnography, case study, and narrative
<b>Methods Employed</b>	Closed-ended questions, predetermined approaches, numeric data	Open-ended questions, emerging approaches, text or image data

### 5.3.3 Methodological Position of This Research

In choosing a research approach, it is important to consider the reasoning of the research, namely, what the research aims to achieve. A deductive research conventionally commences by developing a strict conceptual and theoretical structure, which is then followed by the formulation of hypothesis and testing of the hypothesis through empirical observation. Research findings are closely linked to

the existing body of knowledge identified in the early phases of the research (e.g. literature analysis), and therefore, are typically limited by the scope of pre-determined premises. However, an inductive approach allows the researcher to understand the investigated phenomena by applying a 'less-structured' methodology to gain richer and deeper information. Instead of formulating a hypothesis, the researcher tries to keep an open mind for any possible results without being constrained by any pre-supposition. Patterns or themes are then formulated from the results to assist the development of more general conclusions. Considering the implementation of SSCM in China is still at the pilot stage, this research intends to perform an exploratory study in the area which still lacks sufficient understanding and theoretical support. Thus, an inductive reasoning approach is more appropriate as compared to deduction for exploring the research questions of 'how' and understanding the nature of the phenomena.

On a strategic level, qualitative research is adopted as the research questions are open-ended questions which entail the research to investigate the context or setting of actants and make sense of the social phenomenon. Qualitative researchers consider subjective perspectives in the understanding of reality and the observed reality is associated with researchers' interaction with the studied phenomenon. Considering the complexity of the area of concern of this research, it is not possible to be simulated by numerical methods and mathematics derived from quantitative research. Qualitative research on the other hand focuses on the qualities of phenomena being investigated rather than their numeric measurement. Therefore, qualitative methodology is more suitable for this research due to its potential to yield unanticipated results based on the rich but complex data gathered along with the explanations of its dynamics (Sutrisna, 2009).

To summarise, the research adopts inductive qualitative research methodology. It is worth to note that qualitative research is an umbrella methodological concept that embraces different genres of methods like phenomenology, grounded theory, narrative analysis, action research and case studies (Huberman and Miles, 2002; Merriam, 2002). Considering the studied phenomena is at the developmental stage and its variables not yet being clearly identified, multiple case study method is selected to conduct this exploratory research. The rationale for doing so are further discussed in the following subsection, along with the clarification of data collection methods.

## 5.4 Case Study Method

### 5.4.1 Overview of Case Study Research

Case study has been a widely adopted research method in social science disciplines to conduct in-depth investigation of complex social phenomena, especially when there are obscure boundaries between the studied phenomenon and the context (Yin, 2014). The essence of a case study is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented and with what results (Schramm, 1971, as cited in Yin (2014)). Therefore, case study method is particularly suitable when 'how' and 'why' research questions are posed (Yin, 2014).

Case study methodology is not exclusively qualitative but it is a common method to conduct qualitative inquiry (Stake, 2008). A case study focuses on optimising the understanding and experiential knowledge of the case and pays close attention to the influence of its social, political, and other contexts (Denzin and Lincoln, 2011). By triangulating the descriptions and interpretations of the complex reality, case study can enhance the credibility of the research results (Stake, 2008). Anchored in real-life contexts, a case study provides a rich and holistic account of a phenomenon and enriches the existing knowledge and experience; hence, case study can assist in structuring future research to advance a field's knowledge base.

Like any other research methods, case study has its weakness as well. For instance, a qualitative case study has been criticised for its lack of reliability, generalisability and validity. However, Bryman and Bell (2015) argue that the main goal of a case study is to gain deep understanding of the unique features of a certain phenomenon, and therefore, case studies do not need to be generalisable from samples to populations, but rather they are generalisable to theoretical propositions (Yin, 2014). Another common concern is that conducting case studies tends to be time consuming and a researcher might not have the time or money to devote to such an undertaking. However, this issue can be properly addressed, for example, a case study research can be time efficient if it is well planned and executed. It is up to the researcher to decide the depth and amount of description, analysis, or summary material (Stake, 2008).

Overall, the strengths of a case study outweigh its limitations and it is deemed a suitable method to address the phenomenon and answer the questions proposed in this research. Yin (2014) summarises three types of case studies: exploratory, descriptive and explanatory studies. This research subscribes to explorative case study where the implementation of SSCM practices in seven Chinese private enterprises are investigated in the institutional context of China.

### 5.4.2 Rationale of Case Study Method

The case study method was found to be suitable for this research for the following reasons. First, the implementation of SSCM practices in China is a contemporary and complex phenomenon on which little prior empirical evidence is available. Qualitative case study method is extremely effective when the investigated phenomenon is at the developmental stage where its variables have not been properly clarified (Voss et al., 2002). Case study allows the researcher to thoroughly examine the complex issues and provides deep insights into the phenomenon (Eisenhardt, 1989; Yin, 2014). Second, the research questions are open-ended questions which require a rich and in-depth understanding of the institutional context and experiences of actors. The overarching research questions are either 'what' or 'how' questions and are exploratory in nature. According to Saunders et al. (2009), case study method is most suited for conducting exploratory and explanatory types of research. Third, case study allows for the elicitation of rich data through a variety of data collection methods like interviews and document analysis, which aids in the cross-validation (Yin, 2014).

### 5.4.3 Multiple Case Studies

When it comes to the use of case study method, there is a choice of conducting a single versus multiple cases. Both formats of case study come with their own advantages and difficulties. For example, single case study is commonly criticised for observer bias and lack of generalization (Yin, 2014). As the researcher is attached to the study, personal bias and preferences may be inevitably introduced in the process of data collection and analysis. Further, the limited amount of sample might not provide sufficient evidence to gain an in-depth understanding of certain phenomena.

The use of multiple case studies or units of analysis, on the other hand, can enhance the external validity and help reduce possible bias of researchers (Voss et al., 2002; Barratt et al., 2011). Multiple case studies can generate stronger and more reliable data which can be analysed both within each situation and across situations, and therefore allows the researcher to study the differences and similarities between the cases (Yin, 2014). Compared with a single case, multiple cases are likely to create more rigorous and valid generalizable theory when the suggestions are more intensely grounded in several empirical evidence (Eisenhardt, 1989; Yin, 2014). Therefore, multiple cases allow for a wider exploration of the research questions and theoretical evolution (Eisenhardt and Graebner, 2007).

One of the main challenges involved in conducting multiple case studies is that it can be enormously expensive and time consuming. This research employs a multiple-case design as it is more appropriate

over single-case design when exploring new or emerging topics and the researcher has available resources to do so (Yin, 2014).

#### 5.4.4 Data Collection Methods

The use of multiple sources of evidence, each with its strengths and weaknesses, is a key feature of case study research (Gillham, 2000). In a case study, a range of different kinds of evidence can be collected through methods like focus group, interview, observation and document analysis (Denzin and Lincoln, 2011). The selection of certain data collection methods involves multi-dimensional considerations, such as the topic, research questions, context, and available resources (Silverman, 2013).

Based on open-ended group discussions, a focus group method aims to investigate a certain set of social issues and provide insights into complex phenomena through face-to-face group debates and interactions (Ritchie et al., 2013). However, it is not easy for the researcher to manage focus groups and they tend to generate consensus rather than diversity (Morgan, 1997). Observations enable the researcher to gather rich and valid qualitative data in natural settings, but it can involve heavy researcher bias and cannot provide in-depth explanations due to the limited capabilities to disclose sensitive subjects (Kawulich, 2005).

This research adopts multiple data collection methods for the purpose of ‘triangulation’ of data from different sources (Eisenhardt, 1989): in-depth semi-structured interviews being the primary source and document analysis as secondary data collection. Using multiple data sources provides increased reliability of data and stronger substantiation of constructs and propositions (Eisenhardt, 1989; Voss et al., 2002; Barratt et al., 2011). Details of these two data collection methods are discussed below.

##### 5.4.4.1 Interview

Interview is a commonly adopted method in qualitative research to understand social or organisational phenomena (Easterby-Smith et al., 2012). Participants’ understandings and interpretations of the phenomenon are gathered through conversations in the interview process. An interview can be structured, semi-structured and unstructured (Sarantakos, 2012). The primary difference between them is the objective of the interview and the degree of control the researcher has over the participant.

Structured interviews are used by researchers to quantify participant’s behaviours, attitudes and values (Ruane, 2005). In a structured interview, the researcher asks predetermined close-ended



questions which require restricted responses from the participants. The structure of the interview (e.g. questions, style, and sequence) is replicated in all interviews to assure consistency.

Semi-structured interviews are conducted with less structured questions and the aim is to elucidate and illuminate the key themes, focus and relevant topics of the particular subject. The strengths of semi-structured interviews are that they allow the researcher to prompt and probe deeper into the given situation by asking more detailed questions without adhering to a strict interview guide. In addition, the researcher can have control of the process and any unclear questions can be clarified through further explanations (Patton, 2001).

Unstructured interviews are suitable for exploratory research when little or no knowledge exists about a topic. Open-ended questions are asked to probe detailed personal knowledge and experience on the topic. Participants may take the predominant role in guiding the development of the topics. Unstructured interviews are not appropriate for inexperienced interviewers who might be biased and ask inappropriate questions. The researcher might not be able to obtain that is relevant to the researcher questions (Kajornboon, 2005).

Compared with other methods (e.g. observation and focus group), interview is a more appropriate method for this research as the research objective calls for a thorough examination of participants' understandings and interpretations of SSCM implementation in a specific context. Semi-structured interviews are employed as they allow the researcher to have better control over the discussed topics and facilitate the participants' articulation of interpretations and the correction of possible misunderstandings (Sarantakos, 2012).

### 5.4.4.2 Document Analysis

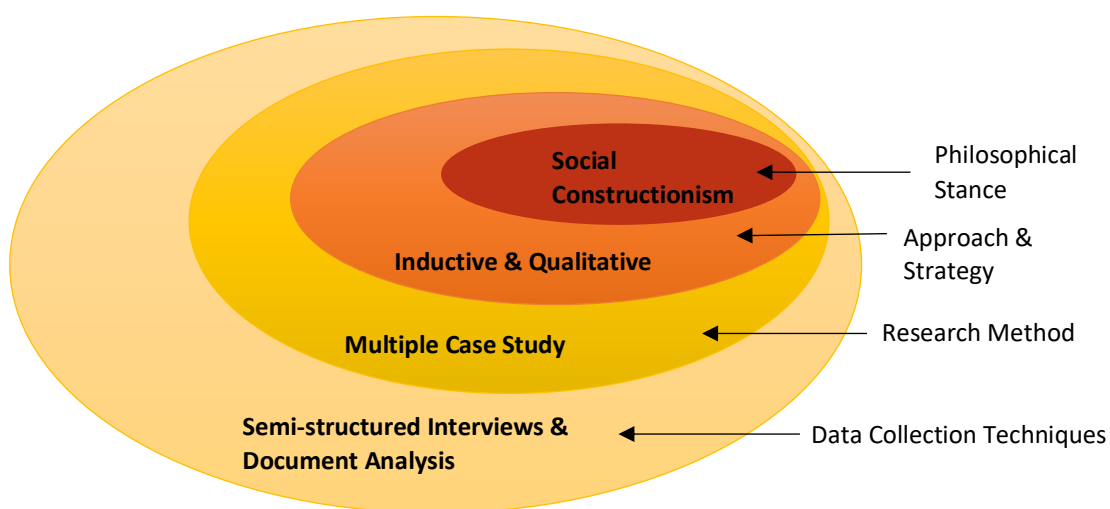
Document analysis involves the examination of archival sources such as government documents, historical records, journals, news and organisational charts (Merriam, 2002). Despite the challenges of accessibility and generalisability, document analysis provides a way of gathering neutral and independent evidence without affecting the ongoing research (Merriam, 2009; Eisenhardt, 1989). The compatibility of document analysis allows it to be used as a complementary source to other methods like interview (Easterby-Smith et al., 2012). Therefore, this research employs document analysis as a secondary data source for triangulation and cross-validation of research findings (Yin, 2014).

Document analysis is used in this research mainly for examining the government institutional context in China. Due to the rigid governmental hierarchy in China, difficulties of accessing governmental officials were anticipated before the empirical work. Although informal discussions were conducted with anonymous government officials, the information collected was not sufficient on its own to

provide a thorough understanding of the institutional policy and regulatory context. Document analysis was proven to be a necessary complement and it offers an effective and efficient way of analysing the published policies at both national and local levels.

## 5.5 Overview of Research Design

The design of this research follows the logic presented earlier in the layers of research design (Figure 5.4). The research position is illustrated in terms of the philosophical stance, the research approach and strategy, research method and data collection techniques.



*Figure 5.4 Overview of the Research Methodology of This Research*

To summarise, the research takes the philosophical stance of social constructionism to develop general understanding of the phenomenon and gather rich data through subjective interpretations. Influenced by the philosophical underpinning, an inductive approach together with a qualitative research strategy are employed as the open-ended research questions entail the researcher to examine the context of the phenomenon and make interpretations of the data. Specifically, multiple case study method is chosen due to the contemporary and phenomenological nature of the research topic. The research employs semi-structured interview as the primary data collection method and secondary evidence is collected through document analysis.

## 5.6 Empirical Research Design

The empirical design of this research is guided by the research methodology discussed in previous section, and most importantly, influenced by the research questions. Research design provides a conceptual framework and an action plan that link the empirical evidence and conclusions to the initial

research questions (Yin, 2011). Since the research adopts a multiple case study method, the unit of analysis, the design of the case studies, the data collection process and data analysis techniques are introduced respectively in the following subsections.

### 5.6.1 Unit of Analysis

Unit of analysis in social science typically refers to the major entity (object or event) that is being analysed in a study, for example, individuals, groups and organisations (Yin, 2014). A unit of analysis is fundamental to a case study design as it defines what a case is and why it is selected (Yin, 2014; Yin, 2011). The holistic case of this research is about how government interventions influence the implementation of SSCM practices in Chinese private enterprises.

A focal firm represents the point of entry for the research, and together with its upstream and downstream partners, comprise the supply chain (see Figure 5.5). That is, a focal company plays the role as both ‘buyer’ and ‘seller’. As previous literature shows that the determinants of SSCM vary in different segments of the supply chain (i.e. upstream or downstream) (Kuei et al., 2015), it is very likely that focal companies engage in SSCM differently according to the role as buyer and supplier. Therefore, this research extends traditional empirical studies that either consider firms as only buyers or sellers by investigating how the approach by enterprises to SSCM is manifested in their roles as both buyers and suppliers. This focal company perspective provides rich and holistic insights into the phenomenon as it allows for the analysis of institutional influence on both internal SSCM practices at the corporate level and the external SSCM practices at the supply chain level.

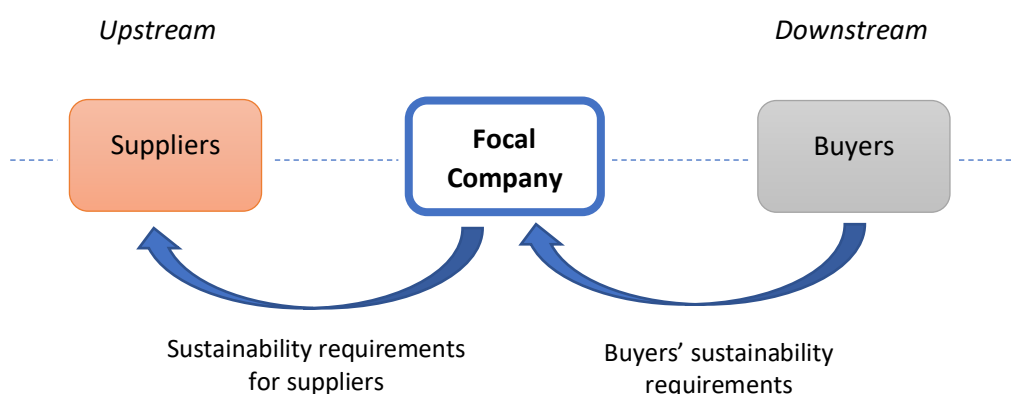


Figure 5.5 An illustration of a Focal Company's Perspective

Since the research aims to explore the implementation of SSCM practices in Chinese private enterprises with considerations of institutional influence exerted by the Chinese government, the unit of analysis is the implementation of SSCM practices within the institutional context of China.

However, it can be very challenging to study the holistic case of the implementation of SSCM practices (macro level) directly. Yin (2014) suggests that there might be different levels in terms of the unit of analysis, for example, main unit of analysis (i.e. the main case) and sub-unit of analysis (i.e. embedded subcases). Encouraged by this multi-level case design, this research examines the lower level unit of analysis (meso level), including the SSCM practices implemented by the focal company and the government policy and regulatory context. These are then broken down further to examine the involved personnel (micro level). The levels of unit of analysis for a single case are illustrated in Figure 5.6 below.

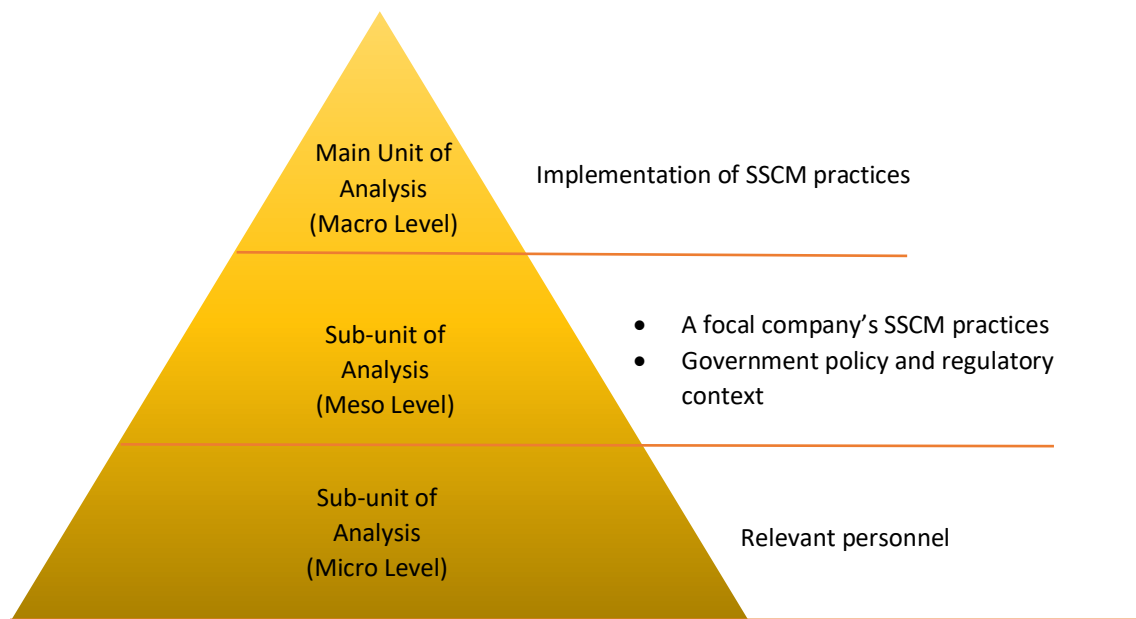


Figure 5.6 Unit of Analysis for a Single Case

### 5.6.2 Case Study Design

The research adopts a holistic case design where each case is considered and analysed as a single unit (Yin, 2011). For a multiple case design, considerations need to be given not only to the design of a single case but also the comparative relationships between multiple cases.

According to Yin (2011), *'the selection of the multiple cases should be considered akin to the way that a set of multiple experiments – each case (or experiment) aiming to examine a complementary facet of the main research questions'* (p.9). That is, a multiple-case design is encouraged to follow a 'replication' design – either to predict similar results (literal replications) or to generate contrasting results but for anticipatable purposes (theoretical replications).

The selection of cases in this research follows the theoretical replication logic underlying multiple case study method (Yin, 2014). The literature review in Chapter 3 signified that SSCM implementation is influenced by a number of contingency factors, that is, companies with different characteristics might adopt very different approaches to SSCM depending on their situations. Therefore, the seven cases in this multiple-case study include deliberately contrasting cases, e.g. companies are characterised by varied sizes and different industrial sectors, which are expected to generate different results. This is because although all selected seven cases operate within the similar institutional policy environment, their behaviours are significantly influenced by other contingency factors like firm size and industrial sector, which can lead to very different sets of data. For example, it might be difficult for small firms to comply with some governmental regulations and policies that were initially developed with large firms in mind. In addition, industry-specific environmental regulations might force companies in heavy polluting industries (e.g. chemical and mining) to adopt more proactive environmental SSCM practices due to the increased stringency of the regulations in these industries.

Following the replication logic, the multiple case studies were based on a selection of seven Chinese private manufacturing enterprises, where each is a case. Further details on the firms were identified and provided in Section 5.6.3. below. This core set of cases was supplemented by evidence from the informal discussions with three local government officials, which provided insights into the local governmental policies and priorities. Experts from the Chinese government are helpful in providing insight on the policies and regulations and offering suggestions for approaches on the research project.

Considering the available resources, time and feasibility, a total of seven companies with varied sizes are selected from different industries. As mentioned above, this set of contrasting cases aims to provide theoretical replication to the research. All companies are located in Q city of Guangdong province in China. As the biggest manufacturing industrial cluster in China, Guangdong province has been at the forefront of economic transition and industrial reforms in China in recent decades (Yeh and Chen, 2019). To some extent, Guangdong province presents a microcosm for the whole country, particularly the impacts of government policy and regulatory context on local industrial sustainability development. The choice of a single province was deliberate – focusing on a single province provides a consistent policy and regulatory context which will reduce the influence of external variables caused by regional diversity, for example, local governments of different provinces have different regulations and policies in place. An overview of the final set of case organisations, including their key features (e.g. industry, size and history) and the complete list of interviewees according to the three data collection phases, is presented in Table 5.5. Details of the data collection phases and data analysis methods are provided in the following sections.

Table 5.5 Overview of Case Organisations and Interviewees

Organisation	Industrial Sector	Approx. No. of Employees	Size *	Found in	Interviewee(s)	Phase I – Preliminary Fieldwork (Mar 2016)	Phase II – First Fieldwork (Oct 2016 – Dec 2016)	Phase III – Second Fieldwork (Sep 2017 – Feb 2018)
Company 1	Electronics (tablets, phone accessories)	1,700	Large	1999	1) General Manager	✓	✓	✓
					2) Sales Manager			✓
					3) Production Manager			✓
Company 2	Metal (rare metal)	1,600	Large	2003	4) Production Manager			✓
Company 3	Textile (cotton yarns)	1,500	Large	2001	5) Financial Manager		✓	✓
					6) Human Resource Manager			✓
					7) Purchasing Manager			✓
Company 4	Chemical (modified plastics and additives)	400	Medium	2007	8) Planning Manager	✓	✓	✓
					9) Production Manager			✓
					10) Sustainability Director			✓
Company 5	Paper (pulp and paper products)	300	Medium	1992	11) Chief of Administration			✓
Company 6	Homeware (kitchenware and homeware products)	50	Small	2009	12) Owner		✓	✓
					13) Manager			✓
					14) Sales Manager			✓
Company 7	Plastics (PVC cooling tower fills)	15	Micro	2008	15) Owner (Manager)			✓
					16) Vice Manager			✓
					17) Worker1			✓
					18) Worker2			✓
Municipal government authorities	Environment Protection Bureau (EPB)				19) Official			✓
	Tax Bureau (TB)				20) Official			✓
	Economy and Information Bureau (EIB)				21) Official			✓

\*Size is defined based on the Chinese Ministry of Industry and Information Technology definition (National Bureau of Statistics, 2011)

### 5.6.3 Data Collection

Semi-structured interviews were employed for the primary qualitative data collection, which provided rich and original data and facilitated the discussion of sensitive issues (the interview protocols are provided in Appendix I and II). The researcher conducted site visits to all case companies during which notes, audio and pictures (where possible) were taken in order to provide supplementary evidence. The selection of interviewees was based on their knowledge of sustainability and their proximity to sustainability decision-making process. Thus, senior management members of the case companies were identified as primary key informants. In order to ensure the quality of the data, multiple interviews (formal and informal) were conducted with participants so that the researcher could clarify any misunderstandings and validate interviewees' opinions and comments. In each case company, where possible, two or more participants were selected to obtain balanced views. Additionally, informal interviews with three local governmental officials were conducted in order to complement and reinforce the primary empirical evidence.

Interviewees were identified primarily through personal contacts and referrals from previous interviewee contacts. The researcher's sister is a senior manager of a local state-owned bank and she has close relationships with local government officials and businesses. She serves as *zhongjianren* – the intermediary – through which the researcher could use her relationships to build contacts with the local government officials and the case companies and keep an excellent rapport with the participants. This is particularly essential and helpful for conducting empirical research in China where '*guanxi*' – a Chinese concept referring to the tight social networks that shape Chinese society – is the key for the research to have a more of an inside approach which can enrich interview data and 'particularize and capture the uniqueness of investigated phenomena through indigenous and engaged scholarship interacting with local scholars, collaborators and managers' (Plakoyiannaki et al., 2019, p.218). As Hubbard et al. (2008, p.42) point out, 'in China, trust must be transmitted via *guanxi*, a trusted business associate, must pass you along to his trusted business associates. This is crucial when it comes to conducting empirical research in China.'

Building a trusting relationship with interview participants through the local contact has helped the researcher gain access to these participants and benefited trust and confidence building, which was important for the collection of rich and candid data - given the sensitive nature of the topic. Furthermore, as a talented Chinese go-between, the researcher's sister accompanied the researcher on the site visits and assisted in the arrangement of the initial meetings. This again helped the data collection since 'respondents are more likely to be trusting and divulge more information when in an interview when someone from the local area is involved' (Hubbard et al., 2008, p.45). With a trusting

relationship, the interviews were more like conversations and discussions that happened naturally in an open and frank way. The earlier steps taken in the preliminary and first fieldwork was crucial for this.

After the interviews, follow-up emails or calls were sent to participants thanking them for their participation and informing them that they might be contacted if further clarifications are needed. All transcripts are validated by the interviewees.

In addition to primary data gathered from the interviews, multiple sources of secondary data including published official government documents, firms' profiles, audit reports, news articles and press release were used to triangulate and support evidence obtained from the respondents.

The data collection process involved three stages of fieldwork over the period of three years. It was a long and complicated process, but it maximised the researcher's understandings of the research through the continuous engagement. A detailed graphical representation of the data collection process with an overview of the key tasks in each phase is provided in Figure 5.7 below.

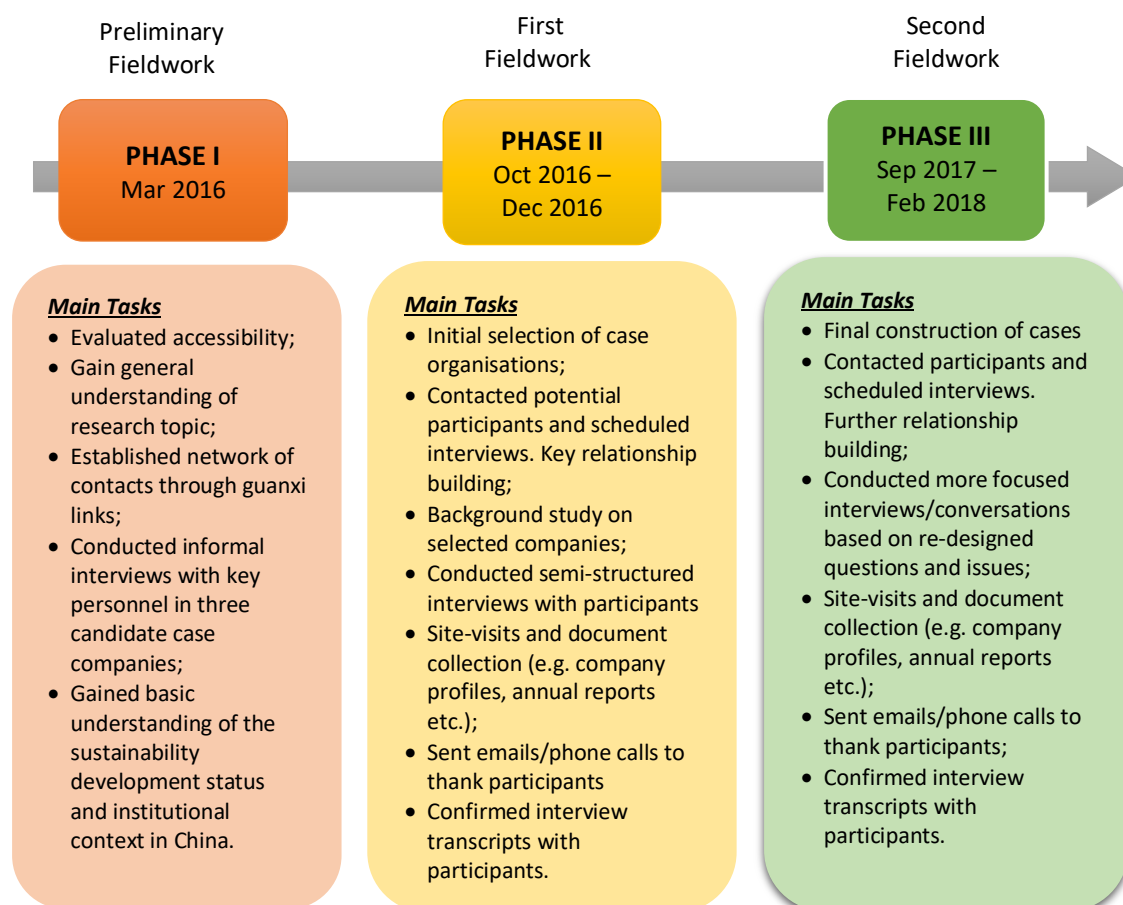


Figure 5.7 Data Collection Process



At different stages of the fieldwork, the researcher gained differing insights into the phenomenon based on the observations, which led to changing opportunities as well as challenges. The fieldwork is a process of revising the empirical research design as the researcher’s understandings evolve along the process. As a result, the research objectives, theoretical framework and research questions went through multiple times of adjustments and modifications due to the changes of circumstances. For example, in the early pilot fieldwork, both state-owned and private enterprises were considered as potential candidate case companies given that one of the objectives of the early research was to explore the influence of contingency factors such as ownership. With an increased understanding of the significant role of the private sector in sustainable development in China and the lack of relevant studies in this area, a new focus of this research on the private sector has emerged, and therefore, only private enterprises were selected in the primary fieldwork.

A detailed description of the data collection process consisting of three main stages is provided in the following subsections.

### 5.6.3.1 Phase I – Preliminary Fieldwork (March 2016)

A preparatory field trip to China was arranged in March 2016. The primary goal of the preparatory field trip was to evaluate the accessibility and feasibility for future field work and gain understandings of the research setting, for example, cutting-edge sustainability-related issues, institutional context and the status of sustainability development in China.

Based on personal contacts, three companies in Guangdong province were visited. Key contacts were established within these companies and the aim of the study was explained to them. As the theoretical framework and research methodology were still under development at that stage, informal interviews were conducted to gather information to assist in basic understandings of the sustainability development status within the companies and the organisational context. Although the results of the preliminary study only provided limited empirical evidence, it helped the planning of the following phases of fieldwork and the preparation of the interview protocols. Table 5.6 provides a brief summary of the profiles of the three candidate organisations.

*Table 5.6 Overview of Candidate Case Organisations in Phase I*

<b>Organisation</b>	<b>Industrial Sector</b>	<b>Approx. No. of Employees</b>	<b>Ownership</b>	<b>Role of Interviewee(s)</b>
Company A	Electronics	1700	Private	General Manager
Company B	Chemical	400	Private	Planning Manager
Company C	Telecommunication	200	State-owned	Senior Manager

### 5.6.3.2 Phase II – First Fieldwork (October 2016 – December 2016)

Guided by the theoretical framework and the empirical design, formalised interview questions were designed in preparation for the first fieldwork. Case organisations were selected based on the accessibility and their potential of generating rich information regarding the implementation of SSCM practices. As indicated by the literature review, factors like firm size, ownership and industry have particularly significant influence on firms' SSCM implementation (see Chapter 3, Section 3.4). Therefore, the researcher was encouraged to construct multiple cases with different organisational sizes, ownership types and industrial backgrounds, which subsequently contributed to the data analysis enabling the identification and examination of contingency factors. It is worth to mention that the selection strategy was modified in later stage of the fieldwork due to the changes in research focus and empirical concerns. This is further explained in Section 5.6.3.3.

Since the preparatory field trip, good relationships have been established and maintained with the three case organisations, which ensured the participation of these three companies in the following fieldwork. With the help of personal connections, seven candidate case companies from Guangdong province were eventually selected. However, getting access to buyers of the case companies was extremely difficult as Chinese companies are generally very conservative and information of customers is considered as business confidentiality. Only Company A and Company F agreed to share their customer base and helped the researcher gain access to one of their buyers. Eventually, seven candidate case companies from Guangdong province along with two overseas buyers were obtained. Formal interviews were arranged with the key personnel from each case company. Informal discussions with the two buyers were conducted, which provided supplementary information to the cases. Profiles of studied case companies and interview participants are present in Table 5.7.

Table 5.7 Overview of Case Organisations Studied in Phase II

Organisation	Industry	Approx. No. of Employees	Buyer/Supplier Relations	Founded in	Ownership Type	Role of Interviewee(s)
Company A	Electronics	1700	Buyer 2	1999	Private	General Manager
Company B	Chemical	400	n/a	2007	Private	Planning Manager
Company C	Telecommunication	200	n/a	1997	State-owned	Senior Manager
Company D	Textile	1500	n/a	2001	Private	Financial Manager
Company E	Metal	1600	n/a	2003	Private	Production Manager
Company F	Homeware	50	Buyer 1	2009	Private	Owner
Company G	Financial Services	100	n/a	2007	State-owned	Senior Manager
Buyer 1 (South America)	Cosmetics	400	n/a	n/a	Private	Senior Purchasing Manager
Buyer 2 (Europe)	Retail	1,100	n/a	n/a	Private	Purchasing Manager

Empirical data obtained from the fieldwork was analysed and some initial findings emerged, which enabled the researcher to develop deeper understandings of the topic. However, some issues were exposed during and after the fieldwork, and the most significant one was the incomplete data set, particularly, the data obtained from the buyers' perspective was not sufficient to examine the interactions between buyers and suppliers in terms of SSCM implementation.

This phase of fieldwork generated three main findings: the identification of government regulatory pressures as the most important driver to the implementation of SSCM practices in China; the identification of the most relevant and significant contingency factors, including firm size, ownership structure and industry sector; and the examination of the influence of these contingency factors on the implementation of SSCM practices amongst the case companies.

The results of the preliminary fieldwork validated some of findings from the literature review, for example, the relevance of the contingency factors in sustainability implementation. However, there were also some unexpected findings. The most significant one is that buyers' role is less significant than previously highlighted in the literature in terms of driving the implementation of sustainable practices among Chinese supplier companies; instead, government interventions play a dominant role in driving Chinese companies' engagement in sustainability initiatives – although such influence is exerted in different ways for private companies than is the case for state-owned companies.

After evaluating these findings, urgent needs emerged to revisit the research framework. The employed theory was re-examined to deepen the understanding of the research topic. The second fieldwork was arranged to collect empirical data for the research, with a particular focus on the exploration of the potential candidates to determine the final selection of case companies.

### 5.6.3.3 Phase III – Second Fieldwork (September 2017 – December 2017)

Following the first fieldwork, the research framework and the research questions were revised to better reflect the changed research focus. Originally, the framework incorporated the institutional context as one of the contingency factors along with firm size, industry and ownership. Previous field study revealed the dominant role of institutional factors including government regulation compared to the 'other' contingency factors. This in turn led to the re-conceptualising the 'other' contingency factors as moderating factors acting on the institutional pressures. The revised theoretical framework in Chapter 4 guided the empirical design of the second fieldwork and further analysis of the empirical data. Interview questions were redesigned according to the revised theoretical framework.

Building on the findings from the first phase of the fieldwork, the research made a case to examine SSCM implementation with a focus on private enterprises in China, given the prominent role of the private sector in sustainable development in China (see Chapter 3, Section 3.6.3). Seven candidate case organisations were re-evaluated in terms of the accessibility and richness of the cases. Eventually, five private enterprises (i.e. company A, B, D, E, F) were selected, together with two more private companies obtained, to construct the final set of cases (see Table 5.5). In total, 18 face-to-face semi-structured interviews were conducted across multiple cases. Although it was very challenging to approach the relevant government personnel, the researcher gained access to three officials and informal interviews were conducted to gather information on the policy and regulatory context.

A huge amount of time and effort was spent building trust and rapport with the participants to enable candid discussions and obtaining the complete data set, which would otherwise have been difficult given the sensitive nature of the topic.

### 5.6.4 Data Analysis

Data analysis in qualitative research refers to the categorisation and ordering of information in such a way as to make sense of the data and to generate findings that are true and accurate. Efforts were made to coordinate methodological and analytical materials. Since Chinese is the mother tongue of both the interviewer and participants, all interviews were conducted in Chinese. After the interviews, the audio recordings of the data were meticulously transcribed for future scrutiny and all

transcriptions were examined in depth and signed by the interviewees to ensure that participants' opinions and experiences are understood. The interview transcripts were then translated into English by the researcher and back translated to Chinese and examined by another translator to ensure the validity of the data.

While there are other software options that can assist with the analysis process itself (e.g. NVivo by QSR International), considering the complexity, cost and functions available, Microsoft Word and Excel were employed as the main tools for data analysis, which was proven to be a relatively easy and cost-effective way (Miles et al., 2014; Bree and Gallagher, 2016). Interview data were organised through well-crafted tables and spread sheets and efforts were exhausted to illuminate themes as they emerge (e.g. SSCM practices, policies and regulations).

The research used combined within-case data analysis and a variety of cross-case sorting and analysis techniques to produce contextually grounded and generalisable findings. Individual case analysis examines the internal and external context for the implementation of SSCM practices and cross case analysis highlights the moderating effects of contingency factors by comparing the similarities and differences of SSCM implementation in case companies.

### 5.6.5 Research Rigour

A key criticism of case based qualitative research is its lack of rigour, due mainly to issues around validity and reliability (Yin, 2011; Stuart et al., 2002). In quantitative terms, reliability means that the research results are consistent over time and they can be reproduced by other researchers in a similar setting, while validity relates to whether the means of measurement are accurate and whether the research actually measures what it is intended to measure (Golafshani, 2003). The concepts of reliability and validity are viewed differently by qualitative researchers who reject the framework for judging the rigour of quantitative research by internal validity, external validity, reliability and objectivity (Bryman and Bell, 2015). Instead, the rigour of qualitative research is evaluated through the lenses of credibility, dependability, confirmability and transferability (Lincoln and Guba, 1985; Korstjens and Moser, 2018; Miles et al., 2013). In order to ensure the rigour of this research, special care was given to the collection, identification, and analysis of all data pertinent to the study. Multiple approaches have been employed to remove doubt surrounding the reliability and validity issues of research findings.

- 1) *Credibility* refers to the authenticity of the research findings. This concept is analogous to 'internal validity' in quantitative research. Credibility was achieved in this study through persistent engagement with the participants to understand the context of the phenomenon in which it is

embedded and to minimise distortions that might creep into the data. As mentioned previously in Section 5.6.3, time was spent to build trust and rapport with the participants. Managing the relationship with participants was a key throughout the research. Every opportunity was taken to ensure the trusting relationship during the three stages of the research, as shown in Figure 5.7. Data triangulation was achieved by site visits and the use of multiple sources of data (e.g. document analysis and multiple interviews), with the underlying idea that multiple viewpoints will generate greater accuracy, i.e. through cross validation of the data (Yin, 2011).

- 2) *Dependability* corresponds to the notion of 'reliability' in quantitative research. The underlying issue for which is whether the process followed is consistent (Miles et al., 2013; Lincoln and Guba, 1985). Dependability was achieved by documenting the data collection and analysis process in detail and having two senior academic experts supervise the data collection and review the transcribed materials to validate the findings.
- 3) *Confirmability* evaluates whether or not the data have been interpreted in a prejudiced manner (Miles et al., 2013; Lincoln and Guba, 1985). Confirmability was met by maintaining a reflexive journal during the research process to keep notes and document introspections that would be beneficial and pertinent during the study. An audit trail was left to examine the data collection and analysis processes in the form of documentation (the actual interview notes taken) and a running account of the process (fieldwork journal).
- 4) *Transferability* refers to whether or not particular findings can be generalised to other contexts (Miles et al., 2013; Lincoln and Guba, 1985). Transferability was enhanced by using diverse sampling through multiple case studies which led to broader applicability of this study by providing a thick description and a robust data with a wide possible range of information. The use of theory triangulation, through the application of multiple theoretical lenses can produce findings that can broaden perspectives and interpretations of the studied phenomenon (Padgett, 2016). Findings of this study are compared with extant literature to clearly outline contributions and they are presented to allow readers to assess appropriateness for their own settings.

## 5.7 Chapter Summary

This chapter provides an overview of the research methodology, research design, and a step-by-step approach to conducting the fieldwork. The philosophical stance determines the methodological and practical considerations applicable to this study, which consequently led to the empirical design of the research and the fieldwork. In terms of philosophical considerations, the social constructionism was adopted as the philosophical stance of the research, which then informed the research logic of

qualitative inductivism as the research methodology. For practical considerations, case study method was employed with the application of semi-structured interviews and document analysis as the data collection techniques.

The challenges for conducting empirical research in China are formidable. In this study, the researcher confronted two main practical issues during the fieldwork. One of the main challenges of conducting empirical research in China is to gain access to the research field. In order to obtain access to the companies, it is crucial for the researcher to obtain local contacts and gain trust and acceptance of the participants, which involves some combination of strategic planning, hard work and opportunities. Secondly, researchers are often not welcomed in Chinese enterprises as they are considered outsiders of the companies, especially if the research topic is sensitive. Chinese companies in general distrust non-governmental researchers and they often do not see benefits in participating in research projects. As a result, companies are often reluctant to share much information about themselves. Therefore, the researcher has used *guanxi* of the local contact to build trusting relationships with the participants. The researcher also conveyed the benefits of participating in this research to the companies which encouraged them to provide rich data.

Fieldwork was conducted in three stages, resulting in several modifications and adjustments. Various procedures were involved in conducting the fieldwork for the purpose of ensuring a high level of rigour of the overall study. After an arduous journey, seven companies were selected to construct the multiple case studies. For each case, robust information was attained through interviews (both informal and formal) and the secondary resources, which provided rich empirical data to assist with the exploration of the research problem. The government perspective was primarily studied through secondary data such as document analysis, which is efficient to explore the policy and regulatory context.

The collected data is an empirical reflection of the concerns of the theoretical framework, and the embedded design of multiple case studies allows the researcher to conduct cross-case analysis to generate research findings and contributions. Within-case analysis and cross-case analysis are presented respectively in the following Chapter 6 and Chapter 7.

# Chapter 6

## Within-case Analysis

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### 6.1 Introduction

Empirical data on the seven cases is presented in Chapter 6 and Chapter 7. This chapter focuses on within-case analysis and Chapter 7 focuses on cross-case analysis. In this chapter, cases are qualitatively presented so as to summarise the relevant information collected through interviews and secondary sources as well as provide necessary background information for the understanding of cross-case analysis in the next chapter. In describing the seven cases, a common structure is adopted where information is presented by capturing elements relevant to the area of concern of the research.

Direct quotes from the informants are provided as evidence to support the analysis and validate the findings. The researcher is aware that company representatives can be more likely to speak positively of their organisations due to the Chinese culture of *Mianzi* – a Chinese concept referring to a person's place, prestige and dignity in the social network. Therefore, as discussed in Chapter 5 (Section 5.6.3), in the data collection stages, the researcher has built trusting relationships with the informants through personal connections in order to gain an inside view of the companies. The researcher also encouraged interviewees to share information concerning their companies and crosschecked the responses as much as possible to address the validity issues.

In the case description, attention is given to the specific SSCM practices and the relevant government interventions applied in the investigated companies. In each case, the analysis starts with an overview introducing the company and describing its supply chain structure. This is followed by a detailed description of SSCM practices activated by the focal company at the corporate level and the extension at the supply chain level. After that, based on the framework of King et al. (1994), an institutional analysis of the regulatory and policy interventions as well as company's responses to them is presented.

The overall logic of inclusion of the seven cases has been illustrated in Chapter 5. The empirical data gathered from each case reflects each unique experience of SSCM implementation in the policy and regulatory context. It is worth to mention that the seven cases differ in length due to the varied richness of the data collected from the cases. For example, some case companies have implemented SSCM practices at a higher level than others, leading to a more detailed presentation of these practices.



In addition, the description of the policy and regulatory context in each case also varies in terms of structure and length as companies have presented different experience of government interventions.

The structure for each case is summarised as follows:

- 1) *Company profile* – The profiles of seven case companies were briefly introduced in Chapter 5. Here, the detailed profile information of each company is presented, including the origins, size, corporate structure and the supply chain relationships. Such information helps understand the company’s sustainability commitment and government interventions and assists later chapters to conduct comparative analysis and generate research findings.
- 2) *SSCM practices* – The key sustainable practices implemented within the company and along the supply chain are identified. Based on the analysis of SSCM practices in the literature review (see Chapter 3, Section 3.3), these practices are grouped into several categories such as internal sustainability governance, green manufacturing, sustainability collaboration, sustainable procurement and reverse logistics.
- 3) *Policy and regulatory context* – Environmental and social policies and regulations applied to the company are examined by employing King et al.’s (1994) institutional framework.

The structure of this chapter is shown in Figure 6.1.

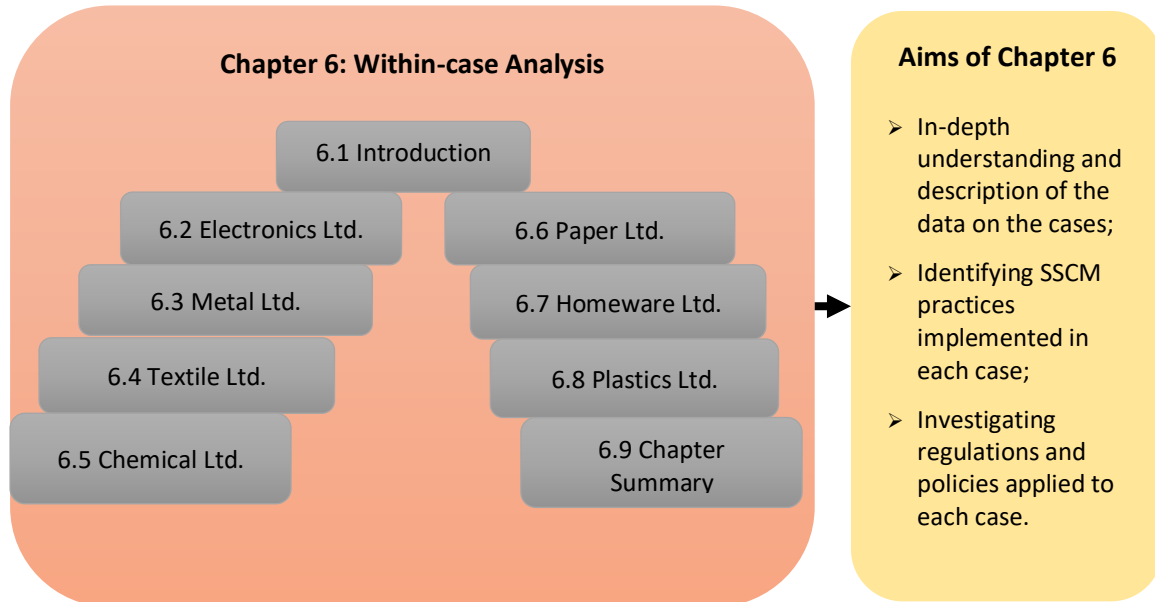


Figure 6.1 Structure of Chapter 6

## 6.2 Case Study 1 – Electronics Ltd.

### 6.2.1 Company Profile of Electronics Ltd.

Electronics Ltd. is a high-tech enterprise specialised in the research and development (R&D) and manufacturing of digital and electronic products. Founded in August 1999, the company started as an original equipment manufacturer (OEM) for global brands. With the rapid business expansion, in September 2004, the company moved to a new industrial park exclusively allocated to the company by the local government. The company therefore invested 25 million dollars into building the 310,000 m<sup>2</sup> ecologically and technologically advanced industrial park which now serves as the company's headquarters and production base. After ten-year development, the company has successfully transformed itself from an OEM to a global brand through R&D and innovation.

Currently, the company has 1,700 employees, about ten percent of which are researchers, developers and technicians that form a strong R&D team. The main product ranges include digital media (e.g. digital photo frame and video language learning machine), IT media (e.g. computer peripheral accessories) and household appliances (e.g. TV tuner products). The company has an average annual production capacity of over 10 million items. In 2013, the company's annual turnover was estimated at RMB 2 billion, which made it one of the TOP3 private enterprise taxpayers in the local city in that year.

Figure 6.2 depicts the Electronic Ltd.'s supply chain. As an end-product manufacturer, the company has an extensive chain of suppliers that provide raw materials, software and hardware components like electronic component and integrated circuit devices. The company designs and develops its own brand products but also provides customised solutions for customers. For example, a customer can require specific software or language packages, based on which Electronic Ltd. will make customised video language learning machines. In the downstream, the company has developed a world-wide network of sales, marketing and distribution, which has helped the company gain a foothold in both domestic and overseas market.

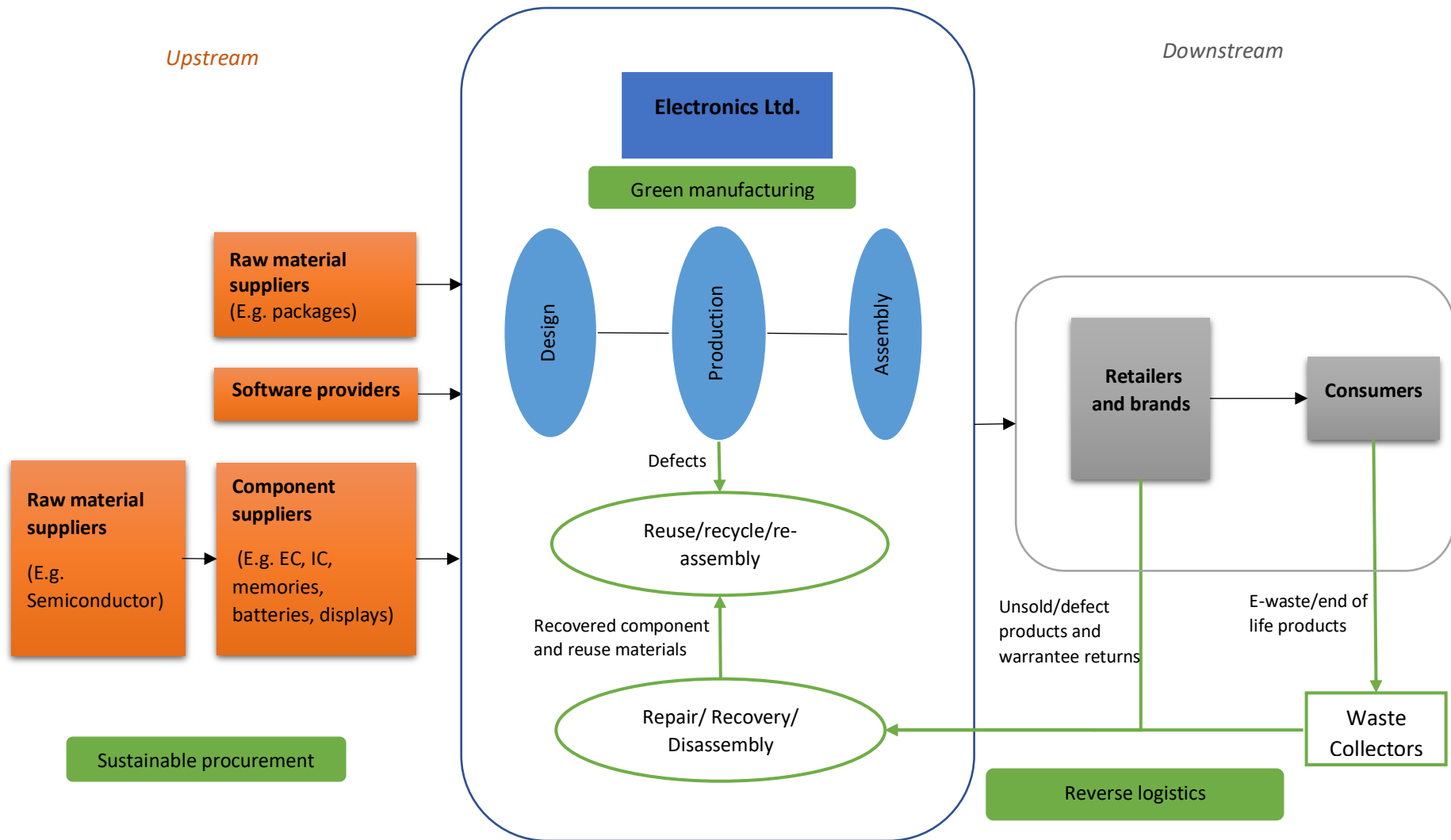


Figure 6.2 Supply Chain Structure of Electronics Ltd.

## 6.2.2 SSCM Practices in Electronics Ltd.

### 6.2.2.1 Internal Sustainability Governance

There is no specific position for sustainability responsibilities within Electronics Ltd.'s corporate functions, sustainability management is nonetheless embedded in the company's general administration. The administration office leads the implementation of SSCM practices together with the participation of all other departments. Roles and responsibilities concerning sustainability are clearly defined: human resource (HR) department is responsible for social sustainability initiatives like employee welfare, trainings and education; security department ensures the health and safety of the overall working environment and runs safety training programmes; and the workshop chief oversees the production process including the environmental performance and working conditions of individual workshops.

The sustainability governance within the company has benefitted from a certain level of coordination between different corporate functional departments and the support of the top management. The company's senior management team actively involves in and acts as an exemplary on sustainability topics for employees, for example, by regular broadcasting of sustainability-related news through internal communication channels, running energy-efficient product design contests and encouraging employees live in a greener way at home.

Training and education programmes on sustainability topics are provided to employees on a regular basis in order to improve the sustainability knowledge base within the company. The company has also been actively absorbing sustainability knowledge from government social media (e.g. micro blog), green tech fairs and exhibitions held and sponsored by the Chinese government and industrial associations.

*'We run a regular training programme where green design and E-waste recycle are highlighted. After the training, we run surveys on employee engagement to provide feedback opportunities.'* — General Manager (Electronics)

The company itself has been certified according to ISO 14001 (the international standard that specifies requirements for managing the impacts of an organisation's activities on the environment) and national social standard GB/T28001 (Chinese national requirements for occupational health and safety management). The senior management is fully aware of the importance of establishing a high-level institutionalised and standardised corporate governance system, and therefore, environmental and social standards and codes have been implemented to guide the company's daily operations, as evidenced:

*'We believe that high-level management and human resources are the keys for companies to gain competitive advantages. Especially for fast growing companies like us, institutionalised and standardised management is very important for sustainable growth. Therefore, we have established standardised management systems based on world standards including ISO 9001, ISO 14001 and GB/T28001.'* — General Manager (Electronics)

Environmental issues and product safety under the legislation and directives from the Chinese government have been the main concern for the company. Therefore, the company has acquired various product certifications such as ISO9001:2000/2008 and China Compulsory Certification (3C). The company maintains Electromagnetic Compatibility (EMC) and Safety compliance as applicable on all products. Products are generally tested to meet sustainability requirements of government regulations such as China RoHS (Restriction of Hazardous Substances).

The company has taken initiatives in social sustainability performance improvements within the factories in compliance with government legislation on labour conditions (e.g. the Labour Law) and working environment conditions (e.g. the Production Safety Law). In addition, the company voluntarily follows Business Social Compliance Initiative (BSCI) requirements of equal employment, working conditions, health and safety standards, child labour and human rights. The importance of social sustainability and compliance to the company was made clear:

*'To ensure social compliance, we would ask a 3<sup>rd</sup> party company to conduct the BSCI factory inspection, they check different aspects, production area, employee living area, and interviews with employees, and give you a grade. From Grade A to E, D is a pass, we got C this year, which is better than D. We spent a lot of efforts to prepare for the inspection every year to ensure our social compliance.'* — General Manager (Electronics)

### 6.2.2.2 Green Manufacturing

To meet environmental challenges, Electronics Ltd. has been pursuing green technological changes in its production. In recent years, the company has made some fundamental shifts in the design of products and processes with the application of product life cycle management that aims to eliminate or minimise waste (e.g. solid waste, hazardous materials, and energy) in all stages of the manufacturing. Practices like the substitution of toxics materials used as inputs, in-process recycling and clean production have been implemented. Distinguished from the traditional end-of-pipe pollution control approach that was adopted by the company at the early stage, these new initiatives targeting at the prevention and reduction of pollution from the source.

*'Responsibility for products begins when they are conceived and designed, from resource extraction, production, packaging, customer experience to disposal. The life cycle of our products is associated with environmental and social standards and we are expected to account for what we make.'* – General Manager (Electronics)

Three main green manufacturing practices implemented in the company include:

- 1) *Product Innovation – considering environmental impact in product R&D.* The company's products have been designed for increased recyclability and recoverability as stipulated by the Waste Electrical and Electronic Equipment (WEEE) directive. To improve product life span, in 2012, the company developed a new series solar powered digital photo frames with higher energy efficiency. In 2015, a TV tuner product was developed by adopting compact product design with improved features while using less material.
- 2) *Inputs Control – using raw materials with relatively low environmental impacts in its production process.* For example, conducting quality inspection of inputs from suppliers before processing; implementing hazardous substance control to achieve lead-free; using non-toxic substitutes like silver, copper, gold instead of hazardous materials; and using modified plastics with higher safety performance of fire retardancy in product exterior.
- 3) *Process Control – minimising environmental impact in the production process.* The company's environmental impacts are driven mainly by the spray-painting process in production. Volatile organic compounds carried by the paint fog particles generated in the process can be a serious health and environmental concern if not treated properly. Therefore, a specially designed ventilation and detoxification system has been installed in the workshop to prevent paint particles spreading into the air.

### 6.2.2.3 Sustainability Collaboration

Electronics Ltd. has made efforts in enhancing collaborative relationships with stakeholders regarding sustainability issues. The company has been actively collaborating with suppliers for the eco-design of products, e.g. joint development of green packaging with recycling materials including paper and plastics and reducing the consumption of packaging materials and waste. In the downstream supply chain, the company collaborates with customers and third-party waste collectors to retrieve unsold/defect products and warranty returns for remanufacturing.

### 6.2.2.4 Sustainable Procurement

Suppliers' sustainability performance is considered as a key factor in the company's purchasing decision-making. For example, priority has been given to suppliers who have acquired ISO14001

and/or OHSAS 18000 (Occupational Health and Safety Management) certificates. Together with regular supplier inspections, the company has developed evaluation standards to assess suppliers' performance. Suppliers are required to provide valid quality assessment reports and EIA reports issued by the government, with minimum one-year validation. According to the company's supplier codes of conduct, suppliers are required to report any changes in materials or production process in advance, and provide new reports certified by 3<sup>rd</sup> parties; and, only with the company's permit, suppliers can start using new materials or process.

Suppliers are required to sign 'Green Product Warranty' and promise that the products provided to the company meet the environmental requirements specified in the purchasing order. For example, all components and raw materials purchased by the company are required to be certified under RoHS directives, and environmental standard statements and eco symbols need to be attached to the packages. These sustainability requirements for suppliers are legally bound by purchasing contracts.

Since Electronic Ltd.'s supply chain involves a complicated supply network, sustainability responsibilities are shared among all tiers along the supply chain to reduce environmental risks. That is, not only direct suppliers (first-tier suppliers) must meet the company's sustainability requirements, environmental responsibilities are also extended to lower tiers of suppliers – both second and third tier suppliers are required to follow the same set of requirements.

*'Everything starts from the source. Problems can happen in any part of the chain and will be reflected in final products provided to customers. It's a common approach in our industry to share risks and responsibilities among all tiers.'* – General Manager (Electronics)

Although Electronics Ltd. demands high environmental standards from its suppliers, there is generally a lack of formal requirements of social standards in supplier management. In principle, suppliers are required to comply with the labour law, however, such requirements are not included in the formal contracts with suppliers, only as an informal agreement. No inspection or auditing has been conducted to monitor the social compliance of suppliers.

### 6.2.2.5 Reverse Logistics

In response to government's regulations on WEEE management, from 2007, the company has implemented reverse logistics to retrieve products from retailers and end customers for recapturing value or proper disposal.

The company's recycled products or parts mainly come from two sources:

- 1) Unsold/defect products and warranty returns from customers are delivered directly to the company for re-processing or direct recovery.
- 2) The 3<sup>rd</sup> party waste collectors gather consumer electronics from community, organisations, and second-hand electronics store, then inspect, select and sort initially to gather usable parts that are transferred to the company's disassembly/recycle workshop.

The company has set up a disassembly and recycling line with two functional workshops to deal with recycled products. The remanufacturing workshop deals with cleaning, repairing, and recovering used durable products to suitable condition for resale. The recycling workshop manually disassembles e-waste into small electronic parts (e.g. IC, memories and transformers) and materials (metal, glass, plastic) as well as recycles some reusable metals like copper, gold and platinum.

## 6.2.3 Policy and Regulatory Context for the Electronics Industry

### 6.2.3.1 Environmental Regulation

The Chinese government has enacted a variety of environmental laws, regulations and standards to force electronics manufacturers to address environmental issues in the production. There are some general environmental laws applicable to the electronics industry, for example, the Environmental Protection Law (2015) which sets forth rules related to the principles of 'pollution prevention' and 'polluter pays', the Cleaner Production Promotion Law (2007) which stipulates that manufacturers of products and packaging materials included in the mandatory recycle list are also responsible for the recycling of the end-of life products and packaging materials, and the Solid Waste Pollution Control Law (2005) which makes it mandatory that solid waste should be reduced, properly recycled and disposed of in an environmentally friendly manner, and institutions and individuals that generate solid waste should take proper measures to prevent and reduce the pollution caused by waste. Apart from these general regulations, some better-targeted regulations have been enacted to address specific issues in the electronics supply chain, for example, regulations on the management of electronic waste (e-waste). Table 6.1 presents the most relevant laws related to the electronics industry in recent years.



Table 6.1 Specific Regulations Related to Environmental Issues in Electronics Industry

	<b>Regulations</b>	<b>Issued By</b>	<b>Main Contents</b>
1	The Circular on Strengthening Environmental Management of Waste Electrical and Electronic Equipment (WEEE)	MEP, 2003	Prohibit the environmentally harmful processing of WEEE; encourage electronics manufacturers to promote cleaner production and eco-design
2	The Technical Policy on Pollution Prevention and Control of WEEE	MEP, 2006	Set forth the guiding principles of 'Reduce, Reuse and Recycling (3R)' and 'polluters pay (i.e. shared responsibility of producers, retailers and consumers)'; stipulate the general provisions of eco-design, the product information disclosure, and provisions for the proper collection, reuse, recycling and disposal of WEEE
3	The Ordinance on Management of Prevention and Control of Pollution from Electronic and Information Products	MIIT, 2007	Requirements for eco-design; restrictions on the use of hazardous substances in electronic appliances; requirements for manufacturers to disclose information on the components and hazardous substances used in products as well as the period of safe use and the potential for recycling. (Counterpart of the EU RoHS directive)
4	Administrative Measure on Pollution Prevention of WEEE	MEP, 2008	Intend to prevent the pollution caused during the disassembly, recycling and disposal of e-waste; specifies responsibilities of relevant parties and the licensed scheme for e-waste recycling companies
5	Circular Economy Law	NPC, 2009	Specify provisions on Reduce, Reuse and Recycle (3R) of electronic products during the production, consumption and other processes
6	Regulation on Management of the Recycling and Disposal of WEEE	NDRC, NPC, MIIT and others, 2011	Mandatory recycling of WEEE; Implementation of Extended Producer Responsibility (EPR) for remanufacturing; Establish of a special fund to assist e-waste recycling; Certification for second-hand appliances, and recycling Enterprises

Source: MEP (2003, 2006, 2008), MIIT (2007), NPC (2009, 2001)

### 1) General Environmental Regulation

The company's environmental compliance started from the Environmental Impact Assessment (EIA) when the company was established in 1999. As was required by the local government, the construction of the plants and factories has gone through several stages of evaluation of the potential environmental impacts and the results of the EIA investigation were disclosed for public opinion. In addition, under the Discharge Permit System of the local government, the company has acquired permits from the local EPB that limit both the quantities and concentrations of pollutants in the wastewater generated by its factories.

## Chapter 6: Within-case Analysis

Under the environmental protection law, the company was required to reduce the generation of pollutants in the production process by giving priority to clean energy resources, adopt processes and equipment to increase resource utilization and minimise emission of pollutants, and adopt technologies to handle waste and treat pollutants.

*'We have to make sure that we do not go above the industry pollutant discharge standards set by the government. EPB has set up environmental monitoring stations in every industrial park, checking up on the activities of enterprises. Previously, if you didn't comply with environmental protection regulations, you would be subject to fines or penalties. But some companies could use 'relationships' or simply pay the fines as a cost of doing business. Under the new [environmental protection] law, the cost of non-compliance is much bigger – heavier penalties, forced factory closures or even end up in prison.'* – General Manager (Electronics)

### 2) China RoHS (Restriction of Hazardous Substances)

The Chinese government has enacted strict regulations to control the use of hazardous materials in industries. In electronics industry, there are specific regulations such as China RoHS that specify how raw materials including electrical and electronic parts, components and products are obtained and purified for proper use by manufacturers in China.

All electronic products entering the Chinese market must disclose environmental protection related information, e.g. name, content, period of usage of the hazardous materials as well as whether the product can be recycled at the time of disposal. Particularly, for electronic products listed in the 'Key Management Catalogues' issued by the government, strict standards and rules are applied, e.g. requirements for concentration limits for certain hazardous substances in electronic products (SJ/T 11363-2006), marking for control of pollution caused by electronic products (SJ/T 11364-2006) and examination approaches for poisonous and deleterious materials contained in electronic products (SJ/T 11365-2006).

*'Government has introduced laws and regulations to govern the entire product life-cycle, from the use of materials for production, the recycling of products at the end of their useful lives, to the handling of e-waste during recycling.'* – General Manager (Electronics)

As mentioned in Section 6.2.2.4, in compliance with government regulations, Electronics Ltd. has to make sure that all purchased materials or parts used in the production follow the national standards.

*'Compliance with RoHS requires extensive knowledge of the supply chain, excellent record keeping, and in most cases testing. We must comply with the requirements, and we also have to make sure our*

*suppliers understand and comply with the restrictions on the use of hazardous substances in all the parts we purchased.* – General Manager (Electronics)

### 3) E-Waste Management

In the electronics industry, one of the biggest environmental concerns is electronic waste, which have been exacerbated by the growing consumption and short life span of electronic products. The Chinese government established a legislative system targeting the pollution caused by the disassembly, recycling and disposal of e-waste. As the counterpart of the EU WEEE Directive, the ‘Regulation on Management of the Recycling and Disposal of WEEE’ (2011) acts as an important regulatory framework for e-waste regulation in China. Following the government regulation on e-waste, the company has set up an e-waste recycling line and implemented reverse logistics to retrieve unsold or defect products from customers and end users.

*‘We have invested a lot in the e-waste recycling production line. It is under the government regulations that we as producers of electronic products shall perform our duty in making contribution to e-waste recycling.’* – Sales Manager (Electronics)

#### 6.2.3.2 Social Regulation

Social requirements are mainly related to labour conditions and production safety. Recently, Electronics Ltd. has experienced the strengthened labour law enforcement that requires companies to pay attention to the employment activities and rectify any non-compliance practices in a timely manner.

*‘Government Human Resources and Social Security Bureau (HRSSB) will check if you are abiding the social security laws, for example, if your company has ever had any history of labour disputes or declared the minimum payment. This year, some companies have received notice that local HRSSB will hire third party company to conduct special audit on total wages and employee social security paid in 2016. Local Production Safety Supervision Bureau will also inspect the factories’ the working environment to see if they are in compliance with the production safety law.’* – General Manager (Electronics)

#### 6.2.3.3 Subsidies for Environmental Management Initiatives

The ‘Household Appliance Replacement Program’ (‘Replace the Old with New’) is one of the national programs launched by the centre that promotes the recycling of old home electronic appliances and offer subsidies for new purchases. Another government program that encourages the manufacturing

and consumption of green electronics is the 'Energy Saving Products Benefit People' projects which provides subsidies to a broad range of energy efficient consumer electronics.

The local EPB has granted special fund to support Electronics Ltd.'s environmental management efforts, for example, the development of recycling technologies and the upgrading of air and water purification facilities. Local finance and taxation bureaus have also provided low interest loans and favourable tax treatment. Government subsidy, however, is the major economic incentive:

*'It is indeed our responsibility to deal with the e-waste generated from the production. However, considering the high operational cost and the investment in environmental protection equipment, we couldn't spend a lot on the collected e-waste. Therefore, government financial aid is very important for the e-waste recycling. Without it (government subsidy), it's unlikely for us to implement recycling due to the high set-up fee and running costs.'* – General Manager (Electronics)

#### 6.2.3.4 Knowledge Deployment

The company's access to sustainability-related knowledge has been improved dramatically in recent years due to the sustainable development campaign initiated by the central and local governments.

*'For years, the information on environmental and social impact and policy decision-making were often kept as government secrets. Public had very limited knowledge about the environment. It's very different now. There are more ways to know about the environmental situation. For example, the local government has held and sponsored green tech fairs and exhibitions where we could meet green technology service firms and research institutes that provide a range of energy-saving and pollution-reducing solutions and consultancy.'* – Sales Manager (Electronics)

The local EPB official has also confirmed that the local government has been trying to provide more education services and training to citizens and organisations.

*'The media, non-profit organisations, enterprises and individuals have been demanding better knowledge about the state of our country's development. The government has been providing more information about the state of the environment in a variety of forms, including circulating environment reports, making bulletins, brochures, and news releases.'* – EPB Official (Q city)

#### 6.2.3.5 Green Supply Chain Innovation Directive

The Chinese government has provided scientific and technical knowledge required to produce and exploit green supply chain innovations in the electronics industry. Over the 12<sup>th</sup> FYP period (2011-2015), the central government has planned to enhance the global competitiveness and accelerate the

growth of the electronics industry, with special attention paid to improving indigenous innovation capacity and making breakthroughs in key technologies within the industry. The 'Guidance on Accelerating Upgrading of China's Home Appliance Industry' issued by MIIT encourages the industry to improve its innovation capabilities for the purpose of emissions reduction and energy efficiency enhancement.

Government policies have brought forth many opportunities for Electronics Ltd., for example, due to the policy of promoting industrial innovations by launching pilot zones and experimental projects in high-tech industries, in 2004, the local government allocated a large plot of land for Electronics Ltd. to build an eco-industrial park that is conceptually innovative. This has been an important motivation for Electronics Ltd. to implement green production practices at an industrial park level, for example, incorporating the '3R' programme (i.e. reduce, reuse and recycle) in the production.

Inspired by the state's promotion of product life cycle management in electronics industry, the company has implemented life cycle assessment (LCA) programme. This has helped the company capture the environment-related inputs and outputs of the entire value chain (e.g. sourcing, production, product return and recycle), leading to the discovery of, for example, that some of its suppliers were still using hazardous chemicals.

*'Central to building a sustainable supply chain are operational innovations. Our company is in the largest and fastest growing market for green innovations thanks to government innovation directive.'*

– General Manager (Electronics)

#### 6.2.3.6 Sustainability Mobilisation

The Chinese government has been enhancing general public's understanding, recognition and participation of sustainable development in many ways, for instance, the extensive use of social media to enhance public's awareness of environmental protection, promotion of e-waste recycling, and cultivating consumer's green purchasing habits. These initiatives have encouraged and benefited Electronics Ltd.'s implementation of reverse logics in the supply chain.

*'Public education and promotion enhanced environmental protection awareness of customers, which has greatly facilitated the recycling of WEEE. We've seen an increased volume for recycling in recent years due to increased public awareness of recycling, which is very positive for our recycling business.'*

– General Manager (Electronics)

The local government has been playing its due role of coordination, mobilisation and supervision to form the social synergy for the implementation of sustainable practices. For example, in the pursuit

of 'National Civilised City' (WenMing Chenshi), the local government has been promoting the concept of social harmony in public.

*'We can see the effort made by the government. There are signs everywhere that remind people to behave responsibly. Some might think these are just slogans, but to some extent they did help improve people's environmental and social awareness.'* – Sales Manager (Electronics)

## 6.3 Case Study 2 – Metal Ltd.

### 6.3.1 Company Profile of Metal Ltd.

Established in 2003, Metal Ltd. is now a leading high-tech company that develops rare earth metals and derivatives (e.g. selenium, tellurium, gallium, indium, germanium, bismuth and cadmium). Rare metals are valuable raw materials inputs for various high-tech industries (e.g. clean energy, electric vehicle, and laser and medical equipment). They are also increasingly used as mandatory inputs in many green products (e.g. solar cells) given the superior physical properties such as strong magnetic effects and high thermal resistance.

Rare earth metal sector is one of China's strategic industries. Although Metal Ltd. is privately owned, it is subject to close state scrutiny and control, such as quotas. In this way it can be said to be quasi-private. As one of the world's largest manufacturers of rare metal materials, about 60 percent of Metal Ltd.'s products are exported to the global market through its sales network. Currently, there are over 1,600 employees in the company. The company operates a number of manufacturing bases including a high purity material plant, an advanced material plant, a rare metal plant, an infrared materials plant and a recycling plant, which are spread in several industrial parks in Guangdong province. Figure 6.3 illustrates the company's position in the value chain of rare metal industry.

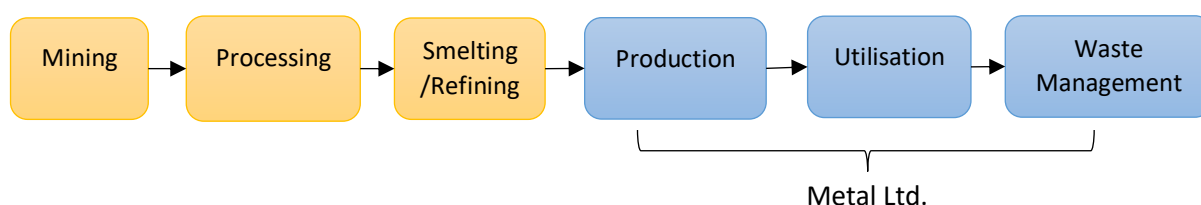


Figure 6.3 Rare Metal Industrial Chain

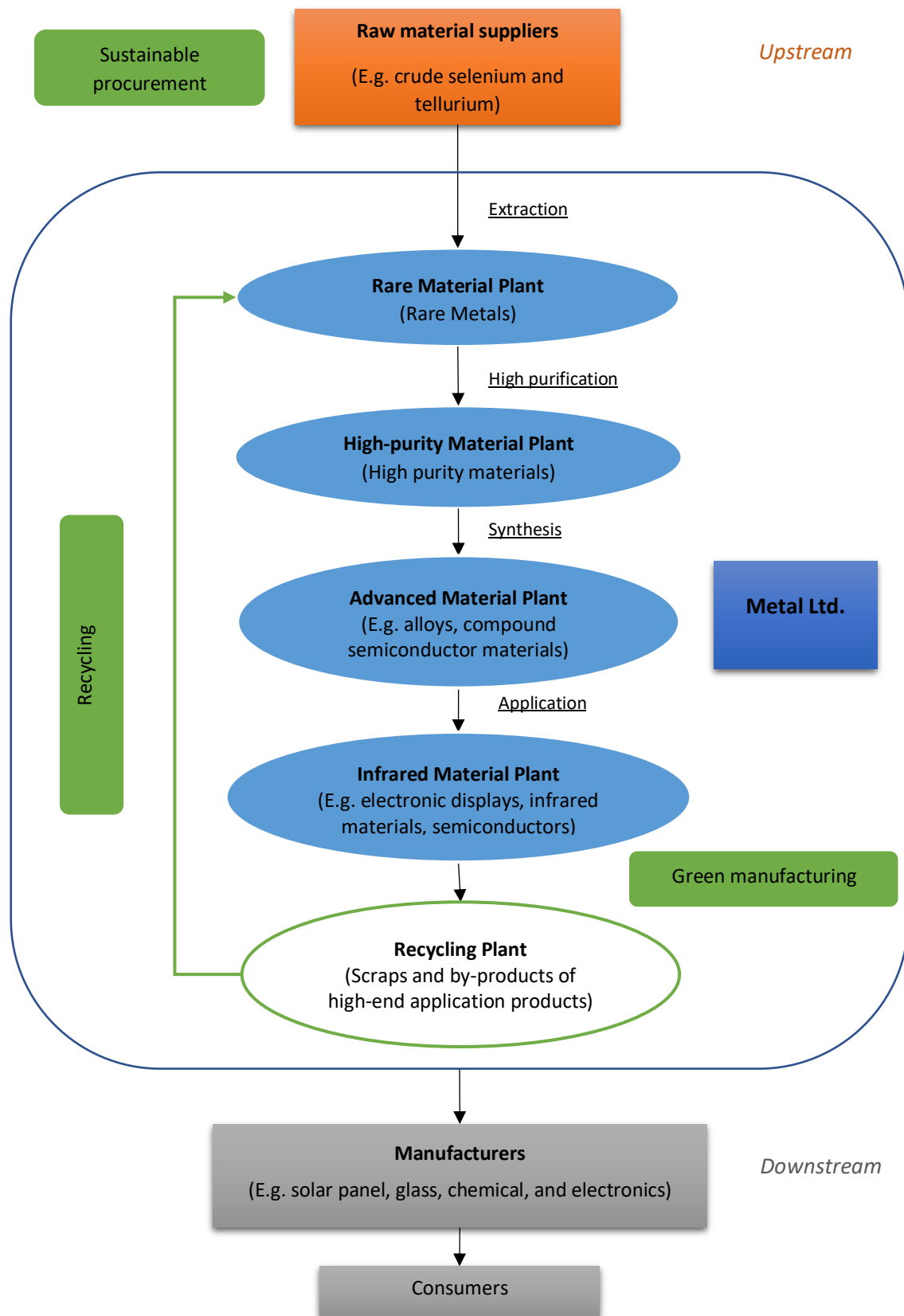


Figure 6.4 Supply Chain Structure of Metal Ltd.

Figure 6.4 depicts the Metal Ltd.'s supply chain structure. Two main chains were formed among the company, including the rare metal chain and the recycling chain. The rare metal chain consists of the rare metal plant, the high purity material plant, and the advanced material plant. Along the chain, each down-stream plant uses the products from its up-stream plant as raw materials. For example, the rare metal plant extracts rare metals from the raw materials provided by suppliers, which are then used by the high-purity material plant to produce highly purified rare metals. The advanced material plant produces alloys or compound materials by using these high purity rare metals. All the scraps and by-products generated in the production are processed by the recycling plant. The principle of using 'wastes' from up-stream plants as raw material for the recycling plant is the core of the recycling chain.

In the upstream, Metal Ltd. purchases two types of main raw materials – crude selenium (Se) and tellurium (Te). Due to the small natural reserves of rare metals, these raw materials are primarily extracted from by-products generated by copper electrolysis. At present, the global annual output of Se is about 3,000 tons, and the annual output of Te is about 400 to 600 tons, which means the raw material supply for the company is very limited. Therefore, the company has established a global Se and Te raw material supply network by building long-term stable relationships with the world's major Se and Te suppliers. Apart from making long-term procurement agreements with extant suppliers, the company also continuously seeks for new sources of procurement. With the expansion of the business scale, the company might face the risk of being in short of raw material supply in the future.

In the downstream, with the rapid growth of global high-tech industries, the demand for selenium, tellurium and its compounds has been increasing in downstream industries like solar, metallurgy, glass, chemical, and electronics. Whilst the company plays an important role in both domestic and overseas market, currently the company's sales are dominated by overseas market. The wide range of products have attracted customers from various sectors. For example, as a safe and non-toxic 'green metal', Bismuth (Bi) products have been widely used as mandatory inputs in industries like pharmaceuticals, coatings, cosmetics, catalysts, flame retardants and superconducting materials. Although the use of cadmium (Cd) has been gradually limited or prohibited in some traditional industries like paints, batteries and plastics due to the toxicity of cadmium, there is an increasing demand of the company's highly purified Cd in the cadmium telluride (CdTe) thin-film solar industry. The company's most popular products are highly purified Te and its compounds, which are key inputs for the new energy industry.



## 6.3.2 SSCM Practices in Metal Ltd.

### 6.3.2.1 Internal Sustainability Governance

There is a specific function that is dedicated to managing sustainability issues in the company. The Safety and Environment Department oversees the environmental management and production safety across the company. The main activities conducted by the department include formulating and improving the system of safe production and labour protection, providing safety and environmental training, supervising the implementation of corporate codes of conduct, and anticipating and preparing for unexpected situations.

Different departments are coordinated to work to continually reduce accidents and improve overall safety in the production environment. In addition, there has been great support from the senior management. For example, sustainability issues are frequently discussed and highlighted in the senior management meetings.

Education and trainings on sustainability-related topics are provided to all employees. Employees are also required to follow the company's codes of conduct. Bulletin boards have been put up in various places in each plant in order to promote environmental protection and cultivate safety awareness among employees.

The company has demonstrated its compliance with environmental and social standards by obtaining ISO 14001 certification, Feed Safety Management System certification and OHSAS 18001 certification. Facilities and production equipment are managed according to these guidelines and standards in order to provide a well-protected safe and healthy workplace for employees. Workplace safety performance is evaluated regularly to ensure continuous improvement and high standards in every plant.

The company's labour contract system is in accordance with the Labour Contract Law. Employee social welfare programme has been implemented, such as pension scheme, work-related injury insurance premiums, unemployment insurance benefits, and medical insurance, as required by the local government. In compliance with government regulations on workplace conditions, safety is high priority in the company.

*'Management's emphasis on health and safety instils an ethic of continuous improvement. Management team works to continually reduce accidents and improve overall safety in the production environment.'* – Production Manager (Metal)

### 6.3.2.2 Corporate Citizenship

The company has established collaboration with Central South University in terms of talents cultivation and training. To repay the society, since 2011, the company has set up the 'Central South University Pioneer Scholarship' at Central South University, contributing more than 100,000 yuan every year to support the development of higher education in China.

### 6.3.2.3 Green Manufacturing

The main manufacturing process involves the complex extraction and purification of rare metals. Environmental protection is embedded in the company's daily operations. The company has invested a lot of manpower and financial resources to ensure the effective implementation of the environmental management system. The company has introduced advanced spray towers and sewage treatment system to deal with emissions and wastewater.

One of the main principles of green manufacturing is that product should generate as little waste as possible and conserve energy at each stage of the product life cycle. In the case of Metal Ltd., recyclable 'waste' has been considered as resources. Non-recyclable wastes generated during the production are classified, marked, and disposed properly. There is a designated slot for the storage of hazardous production wastes which are then promptly handed over to qualified departments to process.

### 6.3.2.4 Sustainable Procurement

In the upstream supply chain, Metal Ltd. aims to maintain close and stable relationships with their primary raw material suppliers to reduce procurement risks and build a sustainable supply base. The company has established the 'Procurement Control Procedure' to ensure the adequate supply of high-quality raw materials. All purchased materials are inspected and tested by suppliers according to the company's quality and safety requirements. Suppliers are required to provide corresponding product quality examination reports or third-party auditing reports. After receiving the materials, the company's quality department and safety and environmental department conduct inspections on the purchased products and keep samples for future reference.

The 'Supplier Performance Evaluation Procedure' has been implemented to ensure the responsible behaviours of suppliers. Suppliers are required to comply with relevant environmental laws and regulations. The company conducts hierarchical assessment of suppliers in terms of product quality and sustainability compliance performance. According to the results of supplier evaluation, the

qualified supplier list is updated regularly, including the elimination of unqualified suppliers and development of new suppliers.

#### 6.3.2.5 Sustainability Collaboration

The company has established collaborative relationships with upstream and downstream supply chain partners. In the upstream supply chain, dialogue and collaboration are imperative to improve the company's environmental performance through green purchasing. In the downstream supply chain, the company has initiated technological collaboration with key customers to jointly develop advanced rare metal materials.

#### 6.3.2.6 Recycling

As one of the core features of a green supply chain, recycling plays a vital role in the rare metal industrial chain. Compared with common base metals, rare earth metal reserves are extremely small, and they are predominantly extracted as by-products of base metals. A large portion of metal wastes generated in industrial production contains valuable metal elements, which serve as the main source of raw materials to produce rare metals. Therefore, Metal Ltd. is dedicated to the development of tailor-made recycling technologies, allowing for the reuse of these valuable metal elements by means of re-purification.

As shown in Figure 6.4, the recycling plant collects and recovers metals that can be re-used, recovered or recycled so that they are not wasted. The company takes full advantage of the raw materials and actively develop the relevant industries that use the by-products (base metals) and even the residual products (metal waste) from its production. For example, the company sells base metals recovered from wastes back to some of its suppliers. In this way, suppliers of Metal Ltd. also become its customers. Meanwhile, the company provides recycling solutions to external customers, covering a broad range of by-products and end-of-life products from various industries, such as electronic devices, alloys, optical fibre, solders, and metal residues. In doing so, the company not only protect environment by reducing the wastes to the minimum but also gains economic benefits from the recycling sales.

### 6.3.3 Policy and Regulatory Context for the Rare Metal Industry

China is among the few countries with relatively abundant rare earth reserves. While remarkable growth has been witnessed in China's rare metal industry, the exploitation of rare metals has caused increasingly salient ecological issues which pose significant challenges for the industry. The rare metal supply chain in China is heavily influenced by the state. In recent years, the Chinese government has

taken comprehensive measures to control the production and utilisation of rare metal products and strengthened efforts in the protection of rare metal resources and the environment, endeavouring to achieve a sustainable rare metal industrial chain. For instance, in May 2011, the GOSC issued the 'Guideline on Promoting the Sustainable and Healthy Development of the Rare Earth Industry', which has highlighted the tightened supervision over the entire supply chain, from mining, production, reserve, to consumption and exporting of rare metals. In April 2012, under the supervision of the Chinese government, the Association of China Rare Earth Industry was established to promote industrial self-discipline and coordinate the implementation of national policies and regulations concerning the sustainability issues in the industry.

### 6.3.3.1 Regulation of Rare Metal Resources

It was recognised that rare metals are non-renewable natural resources which should to be effectively protected and rationally utilised in order to secure a stable supply for sustainable development. Therefore, the Chinese government has established a series of legislations and polices to control the rational exploitation of rare metal resources. The most important one is the Mineral Resources Law promulgated in the 1980s, which prescribed the state policy of planned protective exploitation of mining areas. Since then, China has been exercising the planned and unified regulation and control over the rare metal industry, including mining, dressing, smelting, processing, importing and exporting procedures. For example, in 2006, China began to exercise the total-amount control over the exploitation of rare metals by setting mandatory planned quotes for rare metal production. In 2008, the state issued the 'National Plan for Mineral Resources (2008-2015)', aiming to tighten the regulation on restrictive exploitation and utilisation of rare metals and other important mineral resources. In 2011, the government dramatically increased the tax rates on rare metal mining, which further limited the total production volumes to slow down the depletion of rare metal resources and advance sustainable development.

Government regulations on limiting domestic production of rare metals have great impact on the upstream supply chain. Due to the short supply of rare metals from the upstream mining companies, Metal Ltd. must seek for other longer-term solutions, such as recycling programs, increased efficiency in resource use and the development of alternative supplies outside of China. This in turn, has forced Metal Ltd. to implement integrated life cycle management to effectively and rationally use available rare metal resources.

*'Government has provided great support to promote circular economy in the rare metal sector. For example, the construction of demonstration centres in eco-industrial parks to guide enterprises how to use rare metal resources in a sustainable way. Enterprises are encouraged to adopt advanced*

*technologies to increase the recovery rates of rare metals and promote the recycling of rare metal resources. That is why we integrate material life cycle management into the supply chain to effectively use resources. We build the recycling plant and it has now become one of our major businesses.'* – Production Manager (Metal)

### 6.3.3.2 Coordination of Environmental Protection in Rare Metal Production

Rare metal supply chain has a long history of ecological concerns of pollution, particularly, the environmental risks that have materialised along the upstream mining and refining processes. In recent years, the rare metal sector has come under intense public scrutiny due to the growing concern about the growth of the rare metal production.

This concern is reflected at the government level:

*'The state has initiated stringent environmental protection regime to deal with environmental issues in the rare metal industry. In these environmental campaigns, governments at all levels require the rare metal manufacturers to construct environmental protection facilities, abide by the pollutant discharge standards, and implement cleaner production. Firms that fail to meet environmental requirements face heavy penalties, including fines, criminal liabilities, restricted production, order to cease production for rectification, and order to shut down if they fail to make renovations within a specified time limit. Heavy polluters that cause severe environmental hazards or violate environmental laws and regulations will be publicized.'* – EPB Official (Q city)

The company is acutely aware of this government scrutiny:

*'The environmental regulation is very strict now. We have to be very careful while dealing with the wastes, for example, some of the radioactive wastes and hazardous substances must be handed over to special waste centre. If these wastes cause serious environmental pollution, we would face administrative detention and even being investigated for the criminal liabilities.'* – Production Manager (Metal)

Apart from ensuring the compliance with state laws, the company also must meet local regulations and emission standards regarding discharge which are usually stricter than those at the national level.

*'We have to follow not only the national standards but also the provincial standards of the "Water Pollutant Emission Limit" and the "Air Pollution Emission Limit", which means that we can only discharge emissions when both [national and provincial standards] are met.'* – Production Manager (Metal)

Since 2011, a state-led environmental protection inspection has been conducted across the entire rare metal chain, including mines, smelting, separation and metal production enterprises. In July 2016, eight state inspection teams were sent to evaluate the environmental performance of rare metal enterprises in eight provinces, and Metal Ltd. is one of the firms that have been assessed. In compliance with government regulations, the company has acquired the discharge permits from local EPB and the Dangerous Chemicals Production Enterprise Approval Certificate issued by the Safe Production Bureau.

### 6.3.3.3 Promotion of Rare Metal Industrial Upgrading

The Chinese government has been promoting technological transformation and industrial upgrading of rare metal industry by encouraging technological innovation, providing technological support and adjusting the structure of rare metal market.

#### 1) *Encouraging Technological Innovation*

The Outline of the National Program for Long- and Medium-term Scientific and Technological Development (2006-2020) has listed rare metal as a key R&D field supported by the Chinese government.

*'Government policies like the "Made in China 2025" scheme greatly encouraged the upgrading of rare metal industry. Government has created a favourable environment to support the R&D of frontier technologies related to the production and application of rare metals, for example by fostering science and technology personnel, protecting intellectual property rights, and establishing technological standards.'* – Production Manager (Metal)

With the support from the state, Metal Ltd. has established an enterprise-centred and market-oriented technological innovation incubator that combines the efforts of the enterprise, universities and research institutes. The company has been certified as a national enterprise technology centre and a state approved post-doctoral research centre. Since 2012, the company has established collaboration with the China National Rare Metals Engineering Research Centre and the national certificated Materials Characterisation Laboratory (the CNAS LAB). In addition, the company has established its own R&D centre, focusing on the R&D of advanced materials such as thin-film materials, infrared and radiation detection materials and other applications of rare metals.

#### 2) *Promotion of Green Technologies*

Metal Ltd. was required by the local government to improve its facilities to reduce the consumption of poisonous materials and discharge of wastes. Therefore, the company has adopted new technologies and equipment featuring low discharge and low energy consumption to increase

production efficiency and reduce energy and material consumption. Furthermore, in response to the state's call for investment in green technologies and research programmes relevant to environmental protection, Production Manager at Metal Ltd. said:

*'The company has put a lot of money and resources into the rare metal recycling research as the central government has been very supportive in providing technological inputs into this area.'* —Production Manager (Metal)

### 3) Promotion of High-end Rare Metal Market

The government has made efforts to adjust the structure of rare metal products and the market for sustainable consumption of rare metals, for example, curtailing the excessive consumption of rare metal resources in low-end products, reducing the output of low-grade processed products with high consumption of rare metals, and encouraging the development of high-performance rare metal materials with more added value for high-tech industries.

*'As a high-tech materials company, our focus has always been on the high-end market, developing advanced materials and technologies for fast-growing high-tech industries like clean energy, fibre and health care. As we all know that government has been promoting the development of these industries, the development strategy of our company is in alignment with government policies.'* – Production Manager (Metal)

#### 6.3.3.4 Communication of Knowledge

To build and deploy relevant knowledge in the rare metal industry, the Chinese government and industrial associations have initiated and supported a number of conferences and other academic exchange activities, such as the International Conference on Rare Earth Development and Application, International Rare Earth Industry Summit and Baotou Rare Earth Industry Forum. Enterprises are encouraged to take an active part in these activities to share information and knowledge.

*'We were invited to participate in industrial conferences and forums held by the government and industry associations. They assist the multilateral knowledge exchange on important sustainability issues. I am happy that China is now building more platforms where enterprises can share information and work hand in hand to develop green and advanced technologies to promote the sustainable development in rare metal industry.'* – Production Manager (Metal)

In recent years, China strives to cultivate a fair and open environment that welcomes foreign investment in the rare metal industry regarding environment protection and the development of high-end products. Metal Ltd. has been encouraged to collaborate with their international counterparts.

*‘With government support, the overall business environment is very positive. We are encouraged to establish technological and economic cooperation with overseas enterprises. We have established close relationships with some foreign customers like First Solar, to jointly develop advanced rare metal materials for solar cells.’ – Production Manager (Metal)*

### 6.3.3.5 Subsidies for Green Projects

Metal Ltd. as a high-tech company enjoys 15 percent annual tax discount and 50 percent tax discount on R&D expenses provided by the local government. In addition, the company has received generous subsidies from both local and central governments. As shown in Table 6.2, based on the company’s financial reports, the company has received more than 13 million yuan direct subsidies provided by the central and local government from 2009 to 2011, most of which have been used for the R&D of green and advanced materials.

*Table 6.2 Government Subsidies for Metal Ltd.*

Year	2011	2010	2009
<b>Subsidy (RMB 10,000)</b>	831.52	256.05	215.93

*‘The highly purified tellurium and CeTe are commercialised photovoltaic materials used for thin film solar cells in the solar energy industry. Since the state has introduced various subsidy policies to support new energy industry like solar energy, our company as one of the biggest domestic providers of CeTe, has also benefited from these policies.’ – Production Manager (Metal)*

### 6.3.3.6 Sustainability Mobilisation

In 2008, Metal Ltd. was recognised as a high-tech enterprise by the Guangdong provincial government and in 2010, it was recognised as the key high-tech enterprise of the National Torch Plan by the Ministry of Science and Technology. In 2005 and 2006, the company was awarded the title of ‘Advanced Unit’ by the local Safety Production Supervision Bureau. The chief manager of the company was awarded the title of ‘Enterprise Safety Production Advanced Individual’ by the Guangdong Provincial Safety Production Supervision Bureau. These awards and recognitions have become important motivations for Metal Ltd. to fulfil their social responsibility and pursue better environmental performance.



## 6.4 Case Study 3 – Textile Ltd.

### 6.4.1 Company Profile of Textile Ltd.

Established in 2001, Textile Ltd. is a cotton yarn manufacturing company. Currently, there are about 1,500 employees working with the company and the average annual turnover is estimated at RMB 10 million. The company is equipped with state of art technologies and machinery to produce various types of high-quality combed and carded yarns.

Figure 6.5 shows the supply chain structure of Textile Ltd. where the company is positioned at the beginning of the textile industrial chain – producing cotton yarns that can be used as inputs to make various end-customer goods like garments and household goods. The upstream supply chain of Textile Ltd. involves purchasing raw materials (mainly cotton) from various sources, including state and private cotton farms, global cotton trading companies and recycled fabric collectors. Most of the company's raw materials are purchased from domestic suppliers while imported cotton only counts a small portion (less than 10 percent) due to government cotton import quota regulation. Original materials come to the mill in mixed large bales which contain a certain number of different grades, staples or colours of cotton. Cotton bales will then be cleaned and separated accordingly for the production. The manufacturing process involves transforming cotton into natural fibres and spinning. Downstream buyers are mostly domestic companies, such as weaving factories, textile companies, and cotton yarn traders. The company also conducts processing-on-order business, namely, processing with materials provided by international customers and then export to them.

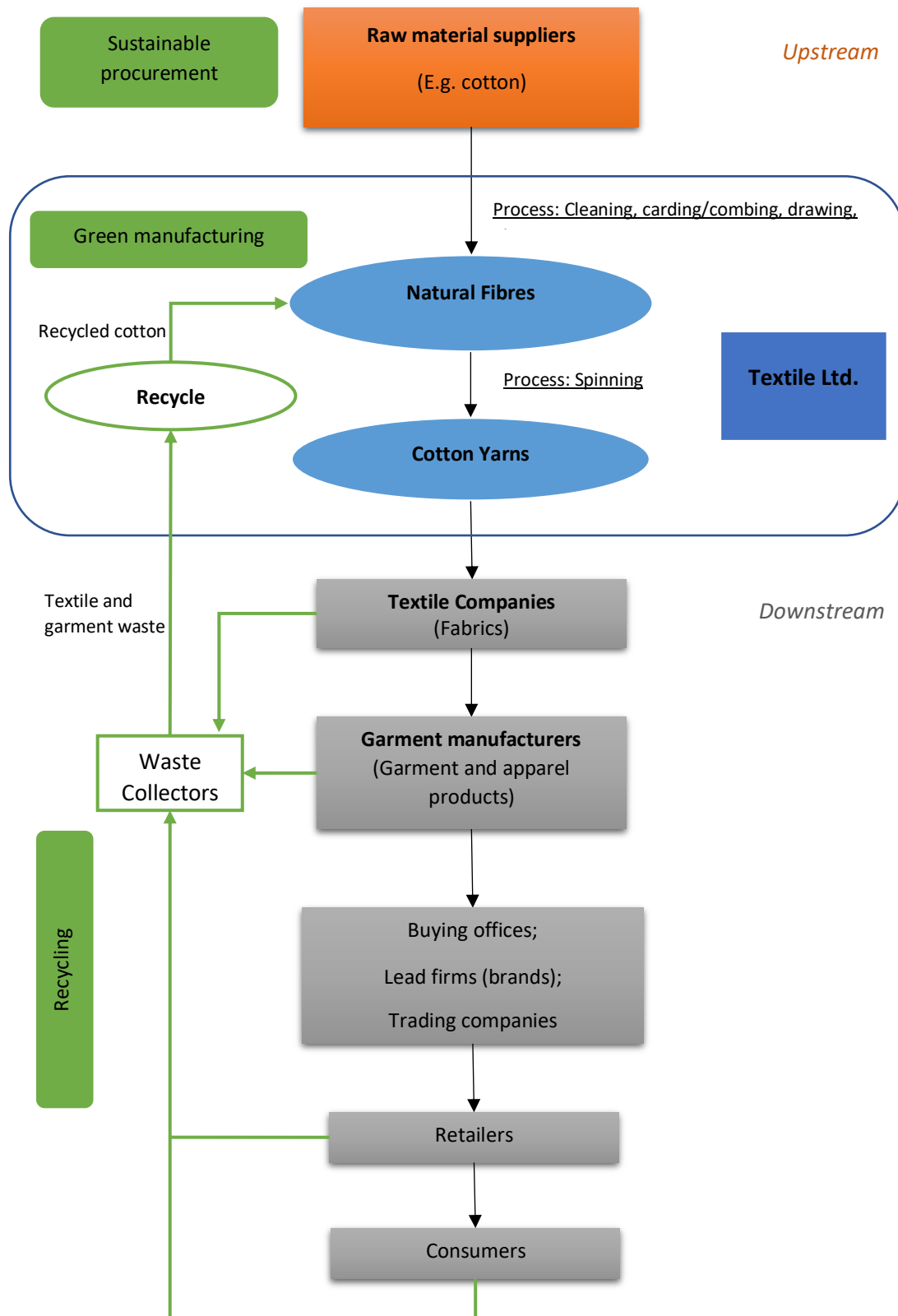


Figure 6.5 Supply Chain Structure of Textile Ltd.

## 6.4.2 SSCM Practices in Textile Ltd.

### 6.4.2.1 Internal Corporate Governance

There is no specific position within the company that is dedicated to sustainability governance. The implementation of sustainability initiatives is based within the Human Resource (HR) department and Public Relations (PR) department. HR department is responsible for the internal corporate sustainability governance and plays a key role in addressing the company's sustainability agenda through people management – get all employees engaged in day-to-day corporate operations. PR department deals with external stakeholders like the government, industrial partners and media.

At the top management level, the company provides education and professional training to senior managers. To help employees understand the company's sustainability missions and principles, the HR department circulates booklets with sustainability knowledge among employees.

The company has focused on developing people-oriented corporate culture and cultivating qualified personnel as it considers people as the most important asset that enables the continuous growth of the business. The company aims to create and maintain a cooperative, harmonious and productive environment where employees can maximise the personal value and have a sense of accomplishment and satisfaction in their work. A talent development scheme focusing on recruitment and retention has been incorporated into the company's sustainability strategy.

The company's commitment to sustainability has been guided by the principle of law abidance, i.e. strict compliance with government regulations regarding environmental protection and occupational health and safety. The company has completed a number of environmental assessments and audits to demonstrate the compliance, including ISO 14001, OHSAS18001 and Organic Cotton certificates OE 100.

### 6.4.2.2 Green Manufacturing

In Textile Ltd., the main environmental impact is driven by the energy intensive production – the consistent operation of the combing and spinning represents a typical high energy consumption. The company has developed practices to minimise environmental impact, particularly with the adoption of best available technologies for reducing energy consumption and innovation solutions for the reuse of the wasted cotton fibres collected in the production process. In 2017, the company implemented the technical reformation of spinning machine fan, which has greatly reduced the energy consumption.

### 6.4.2.3 Sustainable Procurement

Organic cotton has been rapidly gaining market traction, particularly in fashion and home textile products in recent years. The company has implemented the sustainability initiative of sourcing organic cotton, by establishing collaboration with a cotton farm in XinJiang province Akesu area that uses biologically based rather than chemically dependent growing systems to raise cotton crops. In order to maintain a reliable cotton supply, the company has developed a few long-term strategic suppliers by building relationships with them.

### 6.4.2.4 Recycling

In response to the government's call for recycling the company has established a yarn production line using 100% recycled cotton from textile and garment waste. The main challenges for cotton textile recycling, however, are the technical issues involved in the production process and the lack of regulations on the domestic recycled textile trading market.

*'Textile waste has been piling up at a catastrophic level in China and causing clogged landfills, environmental pollution, and health hazards, which has drawn attention of the government. Government encourages recycling in the industry as it can lead to the conservation of natural resources and pollution reduction. However, the domestic recycling market still lacks relevant laws and standards.'* – Financial Manager (Textile)

## 6.4.3 Policy and Regulatory Context for the Textile Industry

### 6.4.3.1 Environmental Regulation

Textile industry in China was historically considered as one of the worst polluters in terms of carbon emissions and water pollution. Like any other companies within the textile industry in China, Textile Ltd. has found itself in the spotlight. Recent years, additional revisions and restrictions have been made to existing legislation system to further strengthen environmental regulation in the industry. Changes have been made to specifically target certain types of pollution and increase penalties for non-compliance. For example, the non-compliance with EIA requirements can lead to increased penalties (up to 5% of the total project cost). Revisions to the Water Pollution Prevention and Control Law also vastly increased fines for illegal water discharge.

*'EPB inspects the factory more often than before. Monitoring devices are installed in the factory to keep real-time records of the emissions. Now, it's impossible for factories to cheat by giving false information about their pollutant emissions or changing the reading. Tampering with the monitoring*

*data is illegal and it leads to heavy fines, equipment seizure and production stoppage. In extreme cases where flagrant violations are found, people in charge of the company can be detained or even charged criminally.*' – Financial Manager (Textile)

Companies are forced to comply with ever-stringent regulations. However, these strengthened environmental and social standards, coupled with additional expenditure burdens, put many companies in the industry in a difficult situation.

*'Textile industry in general is facing huge pressure. Under such stringent government environmental regulation, we need to spend more on upgrading equipment and conducting training for employees, which eventually lead to the increased production costs. Facing higher costs, many SMEs that won't be able to take on the additional burdens, i.e. the capital expenditure required to upgrade equipment and meet other requirements, might be forced to shut down.'* – Purchasing Manager (Textile)

#### 6.4.3.2 Textile Product Standards

Textile and apparel products in China are subject to a number of mandatory quality and safety requirements expressed through national standards (GB standards), which cover product quality, safety and use of product. Products in the market found to be non-compliant will be taken off the shelf or banned from production. In addition to mandatory national standards there are also a range of voluntary professional standards that are usually more specific and set out additional product quality requirements.

Those product-based regulations drive the focal company to improve its capacity to develop products that respect the environment, through the coordination among organisational functions (e.g. design, purchasing, manufacturing) as well as interactions with major actors in the supply chain such as suppliers, retailers and franchises.

*'The government has made very detailed standards for textile products with explicit instructions. In addition to GB standards, there are also common product specific standards in textile industry, but they are mainly voluntary for product quality demonstration purposes. For exported products, we have to self-declare conformity to relevant Chinese standards. Some products need conformity testing based on the safety, hygienic and environmental factors as outlined in GB 18401 and other relevant GB standards.'* – Purchasing Manager (Textile)

#### 6.4.3.3 Coordination of Social Responsibility in Textile Production

In term of social responsibility standards in textile industry, in 2006, with the endorsement by the Chinese government, the China National Textile and Apparel Council (CNTAC) enacted the CSC9000T

— a social compliance management system for China’s textiles and apparel sector, aiming to provide a practical managerial system for Chinese textile and apparel manufacturers. CSC9000T has been used by authorities as rigid industry rules to assess whether a textile or apparel manufacturer complies with labour laws in China. Textiles Ltd. complies with requirements of the legal social security system by adopting and implementing a number of caring and welfare programs for its employees.

*‘Social requirements are mainly based on the labour law and the enterprise law. For example, no deduction or late payment of wages without cause, no child labour, rules of working hours and leave, and mandatory social security contribution obligations. Local Human Resources and Social Security Bureau makes random inspections to check labour protection and social security matters. In addition to non-compliance fines, they also do credit rating (A, B, C) by evaluating the labour law compliance status. Any non-compliance will damage the company’s social credit rating, leading to bad reputation. Under the current Social Credit System, company that has a history of severe environmental damage or product safety concerns might be exposed on the online blacklist. I don’t think anyone will risk losing credits by any violation against the laws. That is why we always pay close attention to our employment activities and rectify our practices according to the regulations to avoid any issues.’* – HR Manager (Textile)

With the increasing labour costs in China, social security contribution is becoming a heavy burden for textile manufacturers. The new revisions to the social security regulation and personal income tax system have led to increased social security payments by employers. As a result, firms that are not able to take on the additional burden are forced to shut down, which has big impact on the textile supply chain.

*‘The implementation of the new policy will have a positive impact on individual employees, which can effectively avoid the situation of late or inadequate payment made by many companies previously. On the other hand, labour is getting more expensive which increases the burden for employers. It’s getting more and more difficult for traditional manufacturers like us. Increasing costs are being passed down to consumers, that is why many MNCs and big brands are moving their textiles production to countries with lower-wage and less stringent regulations like Vietnam and Bangladesh.’* – Financial Manager (Textile)

#### 6.4.3.4 Promotion of Sustainable Cotton Supply

The Chinese government has implemented policies and measures to support a stable cotton supply chain, such as controlling cotton price and providing subsidies for cotton farmers. From 2014, the state started to provide direct fiscal subsidies to cotton production in China, e.g. allowance for cotton

agricultural machinery and facilities (up to 30-50% of the sales price), chemical fertilizers, diesel, and training and education for cotton farmers.

*'In the upstream textile industry, there is a long-term state support for cotton production in China. Cotton farmers are mostly from rural households which are still living in poverty. The government has enacted policies to protect the profits of cotton farmers, for example, setting the minimum cotton price, price fixing for reserved cotton purchasing, quota for imported cotton and benchmark price of sliding standard tax. It is very important to ensure social stability. The market is under control of the state.'* – Financial Manager (Textile)

In 2000, Textile Ltd. announced the plan of using organic cotton in its high-end product line of cotton yarns, but the company did not embrace the shift due to costs and the short supply of organic cotton.

*'It all comes down to cost. We wanted to do the good thing but were afraid of a negative hit on our profits. Organic cotton was much more expensive than conventional cotton. The organic cotton sourcing was also a big challenge. We couldn't find reliable organic cotton suppliers in China, neither can we import [organic cotton] due to the cotton import quota.'* – Purchasing Manager (Textile)

In 2008 the company established an organic cotton yarn production line with government support for organic cotton production.

*'When we switched to organic cotton in 2008, it initially dropped our profits, but it didn't hurt our financial bottom line thanks to government fiscal support. More importantly, with the dedicated support of the government for environmentally friendly farming, more farmers are now willing to grow organic cotton. Sourcing won't be a problem anymore since we established a long-term relationship with the organic cotton farm in Xinjiang Province.'* – Financial Manager (Textile)

#### 6.4.3.5 Promotion of Textile Industrial Upgrading

The Chinese government has initiated a range of policies to guide the modernisation of the textile industry. For example, in 2016, MIIT published the 13<sup>th</sup> Five-year Textile Industry Development Plan (2016-2020), which highlighted the importance of the transformation from labour-intensive to technology-intensive manufacturing in the industry.

*'Government policies are important national initiatives to encourage traditional manufacturers to pursue green development and technologies. Momentum is growing for green manufacturing. This year I went to the Inter-textile trade show in Shanghai, I saw a number of eco-friendly manufacturers, including organic cotton suppliers. You know, 10 years ago, it was nearly impossible to find eco-friendly textile factories in China.'* – Financial Manager (Textile)

The lack of technical knowledge has become one of the biggest barriers to the implementation of recycling in textile industry. Although the government has been promoting textile recycle, there is still a lack of government knowledge inputs into addressing the technical issues.

*'I think the biggest problem is technical issue. Even when we were eager to do recycling at the beginning, managers did not have the advanced knowledge and capacity to develop and design the recycling production line. We tried to seek help from industrial experts and specialists. In recent years, government has been promoting circular economy in textile industry, for example, the 12<sup>th</sup> Five-Year Plan for Textile Industry has highlighted the importance of resolving technical issues in textile recycling. However, there is still a lack of specific policies addressing how to solve these problems.'* – HR Manager (Textile)

## 6.5 Case Study 4 – Chemical Ltd.

### 6.5.1 Company Profile of Chemical Ltd.

Established in 2007, Chemical Ltd. focuses on the R&D and manufacturing of halogen-free flame retardant and modified plastics. Halogen-free flame retardant is environmentally friendly in nature and has been used as a type of additive in flame retardant plastic materials, coating materials and other fields. Given its advanced features, modified plastic has led to wide applications in various industries. The company provides modified plastic products that are customised according to customers' needs and requirements. It also provides integrated product solutions including requirement analysis, product development, manufacturing, application assessment and professional services.

As one of the leading organophosphorus flame retardants manufacturers in China, Chemical Ltd. has a very strong technical base and it has always been pursuing innovations, given that halogen-free flame retardant products are closely tied to challenging technological, environmental and safety issues.

The company has been growing gradually over the past ten years. By 2017, it reached an average annual turnover of 742 million Chinese yuan. Recently, the company decided to expand its halogen-free flame retardant production, for example, by building a new R&D centre and expanding its 47,000 ton/annual modified plastic production line.

The company has acquired several high-tech qualifications since the establishment, including:

- Private Technology Enterprises in Guangdong Province (2010)
- Private High Technology Enterprise in Guangdong Province (2011, 2014)



- The First Batch of Key Innovative Fast-growing Private SMEs Supported by Guangdong Province (2012)
- '12<sup>th</sup> Five-Year' Manufacturing Industry Information Technology Project Pilot Enterprise (2012)
- National Torch Plan Key High-tech Enterprise (2012)
- AEO (Authorized Economic Operator) Accreditation (2015)

As shown in Figure 6.6, Chemical Ltd. has two main types of products: modified plastic and flame retardant. The main raw materials are base plastics and additives. The company has a relatively short supply chain, involving suppliers that are directly responsible for the sourcing of materials or commodities (e.g. oil and chemical). For modified plastic, the company purchases universal plastic resin like Polyethylene (PE) and Polypropylene (PP) from both domestic and overseas petrochemical giants or trading companies in oil, gas and chemical industries. For flame retardant products, the company purchases raw materials (e.g. phosphorus pentoxide, diammonium phosphate and liquid nitrogen) only from domestic chemical suppliers.

In the downstream supply chain, the company has a large domestic customer base, whilst the export trading contributes only a small portion of the whole business (approximately 6%). The company's modified plastic products have been used as inputs in a wide range of industries, such as wires, automobiles, energy-saving lights, toys, household electric appliances. Particularly, the flame retardant plastic has been very popular among decorative lighting manufacturers. In recent years, the company has seen an increased demand of new modified plastic, especially in automobile industry. Automotive light sections like the car bumper and dashboard have been increasingly using high performance modified plastic. Influenced by the rapid growth of the downstream automobile industry, the company has been shifting its business focus towards the automobile materials which has a bigger market and higher profit margin.

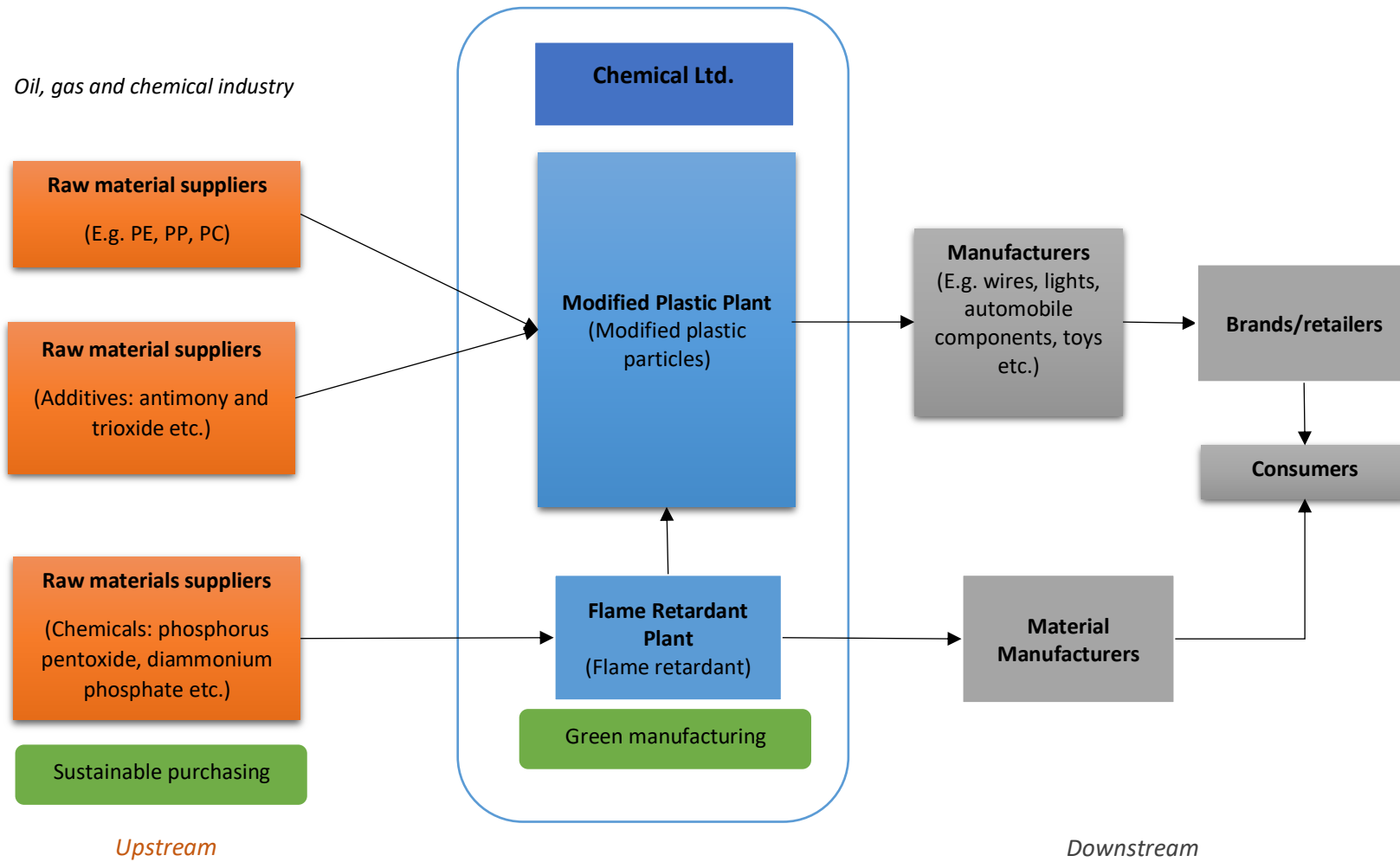


Figure 6.6 Supply Chain Structure of Chemical Ltd.

## 6.5.2 SSCM Practices in Chemical Ltd.

### 6.5.2.1 Internal Corporate Governance

Chemical Ltd.'s commitment to sustainability is highlighted in its sustainability manifesto and codes of conduct. The company strengthened the governance mechanism by establishing a structured internal governance system. The Sustainability Development Director is responsible for sustainability related strategic decision making and planning. The board of directors monitor the implementation of sustainable practices. Internal audit and assessment are conducted to ensure the sustainability compliance. Senior management supports cross-functional work, where people from different areas are encouraged to work jointly towards the company's sustainability goal. Individuals exercise responsibility and are held responsible in the company by carrying out their own obligations.

Education and training programs are provided to the senior management team to improve their management skills and the ability to handle emergent situations like environmental challenges. The company has implemented the Employee Caring Program, aiming to care and help employees and enhance their work-life experience. The company arranges physical examination for employees every year and provide staff training on environmental, health and safety issues.

### 6.5.2.2 Corporate Citizenship

Chemical Ltd. considers it as its responsibility to involve in community and contribute to solving social issues in society. The company not only exercise its corporate citizenship by offering support in the form of classical donations, but also through the active involvement of employees. In the past five years, the company has financially sponsored several social institutions and relief projects in Guangdong province.

### 6.5.2.3 Sustainability Compliance

The concept of sustainability has been built into Chemical Ltd.'s regulatory compliance and risk management. In addition to the compliance with the domestic environmental and social regulatory requirements, the company follows international sustainability standards. The company has acquired internationally recognised certifications to demonstrate its performance and products in specific areas, for example, environmental management (ISO14001), occupational health and safety management (ISO18001), and product quality management (ISO9001).

In compliance with government social regulations, Chemical Ltd. has implemented a range of specific programs and governance mechanisms to strengthen workplace safety. All employees are required to

participate in the safety training courses. The safety of workplace is ensured by assigning security staff to check each of the workshops on daily basis and conducting regular maintenance of fire equipment and emergency facilities.

*'We protect the fundamental rights of employees, and the first thing is to ensure their workplace safety. The corporation fully respects the value of human lives and puts the safety of the public and employees on top of everything. That is why we acquired the certification of OHSAS 18001: 2007, which has been used to guide the safety production in the plants.'* – Production Manager (Chemical)

#### 6.5.2.4 Green Manufacturing

Chemical Ltd. has been conceived by the founder with a strong focus on product performance. Continuous product improvement and innovation are the foundation on which the company's success is established. Particularly, the company has made technological breakthroughs in the field of halogen-free flame retardant technology, which laid a solid foundation to the company's development of safe and green new materials and the high-end application of its products. The design of halogen-free flame retardant incorporates the concept of green by addressing improved safety and avoiding use of hazardous materials.

The company is equipped with state-of-art environmental technologies and pollution treatment facilities. In response to government's call for mandatory cleaner production auditing, cleaner production has been implemented in the company to enable process control for pollution reduction and saving on materials and energy. Giving the challenges of working in the chemical sector, the company respects the health and safety of employees by taking precautionary measures in all plants to deal with emergent situations.

#### 6.5.2.5 Sustainability Collaboration

The company has sustainability collaboration with external stakeholders, for example, joint green products R&D programmes with universities and research institutes and participation in buyers' training courses. As a supplier representative, Chemical Ltd. has participated in several sustainable development training courses, for example, the one initiated by the TFS (Together for Sustainability) Auditing Program and the East China Institute of Technology in Shanghai in 2014, where the company has gained knowledge and relevant experience on environmental protection, health and safety, and governance and management from other successful companies in the industry.

### 6.5.2.6 Sustainable Procurement

Apart from fulfilling its own environmental and social responsibilities, the company has also extended sustainable practices to upstream suppliers through purchasing activities. In the upstream supply chain, sustainability is implemented according to the principle of ‘both hands on selecting and auditing’. Supply chain sustainability governance is formalised with corporate purchasing regulations and supplier Codes of Conduct, where alignment to the company’s ethical and sustainability principles is demanded. For instance, the company has provided the Supplier Material Management Handbook for domestic chemical suppliers to guide their responsible behaviour.

The company has established long-term relationships with a couple of reliable domestic suppliers. In terms of supplier selection, the company has a pre-defined and audited list of qualified suppliers where the company can directly ask for quotations, compare costs and select from those on the list.

*‘We conduct systematic supplier auditing through factory visits and regular evaluation based on a performance rating system from “green” to “red”, where “red” is the lowest and “green” means the highest. If a supplier scores “red” then we would not buy from it. If the auditing result is between red and green, for example, yellow and orange, then the supplier is required to work on improving its performance until it achieves the standard to be qualified as a supplier.’ – Planning Manager (Chemical)*

## 6.5.3 Policy and Regulatory Context for the Chemical Industry

### 6.5.3.1 Promotion of the New Materials Market

The Chinese government has been promoting the development and application of modified plastics that can provide safer and greener production solutions to various industries in the country.

The government has enacted a number of fire-prevention rules and standards and adopted increasingly stringent supervision and regulations on the use of flame retardants in industries such as the automobile manufacturing, energy saving in buildings, and electronic appliances. In addition, aligning with these regulations, the central government has promulgated ambitious industrial policies to catalyse new materials industrial production revolution and supply chain upgrading. For example, the national 12<sup>th</sup> and 13<sup>th</sup> FYPs have named halogen-free flame retardant as a type of urgently needed new materials for the development of environmental protection industry. These regulations and policies have helped to release the market potential of the modified plastic industry in China. The tax and duty exemptions on new material manufacturers have also triggered investment in it and generated growth.

*'The state has implemented policies to catalyse the downstream market of flame retardant materials in terms of production, domestic consumption as well as direct exports, which has brought objective demand for the sustainable development of the industry. In view of factors such as environmental regulations and policies as well as the increasing market demand, there has been a growing number of manufacturers beginning to follow the development trend and turn to halogen-free flame retardants, especially the more environmentally friendly organophosphorus flame retardant products.'*

– Planning Manager (Chemical)

Chemical Ltd.'s halogen-free flame retardant products enjoy priorities in local government procurement, which greatly incentivises the company to invest in the R&D and production of eco-friendly products to meet the guaranteed long-term and high-volume government demand.

*'Government promotes the use of green materials in public area. It's quite important as government has strong purchasing power. Government has issued the list of energy-saving and eco-labelling products, and these listed products can enjoy priorities in the government procurement projects. New materials are generally the integral inputs for these products. These policies greatly motivated our company's initiative of developing halogen-free flame retardant.'* – Production Manager (Chemical)

### 6.5.3.2 Promotion of Technological Innovation

The Chinese government has enacted policies to support the technological upgrade and industrial transformation in the chemical material sector. For example, the 'Made in China 2025' Plan has listed the new material industry as one of the strategic key emerging industries that are directed to focus on strengthening capacity for innovation and improving core competitiveness. The National 12<sup>th</sup> FYP and Guangdong provincial 12<sup>th</sup> FYP for the development of high-tech industries both highlighted the importance of developing new materials with superior environmental performance. Industrial associations like China Plastics Processing Industry Association and China Petroleum and Chemical Industry Federation also responded to the government's call and made guidelines for the development of high-performance engineering plastics.

*'China's innovation-driven strategy promotes the transformation of traditional manufacturing into innovative industries. The government fully supports the building of first-class research institutions and laboratories, especially in key areas like new materials. The local government focuses on cultivating innovative enterprises and attracting strategic scientists and leading talents in science and technology. These are very good attempts to promote innovation-based sustainability initiatives in enterprises.'* – EPB Official (Q city)

### 6.5.3.3 Economic Incentive

In recent years, the Chinese central and local governments have provided great support to emerging high-tech industries. Chemical Ltd. has taken advantage of the favourable industrial policy environment to improve its sustainability performance. According to the company's financial reports, from 2013 to March 2017, the company has received a total of 58.9 million Chinese yuan direct fiscal subsidies from the government at the national, provincial and local levels. Most of the funds have been used for establishing infrastructure and tackling technical difficulties, e.g. building a new green product R&D centre, expanding the production line, and seeking collaboration with research institutes, universities and industrial partners on green and innovative programmes. As a government recognised and qualified high-tech enterprise with independent intellectual property, Chemical Ltd. has enjoyed tax deductions and exemptions. For example, within three years after obtaining the qualification of high-tech enterprise (2011-2013), the company enjoyed 10% income tax deductions and tax exemptions for green product R&D expenses. The local government rewarded 50,000 Chinese yuan for the company's success in cleaner production auditing.

*'From central to local government, we have received quite a lot of financial support. I would say this is very important for us. Without government support we wouldn't be able to run some of the projects as they are usually very expensive, for example, the project of developing environmentally friendly halogen-free flame retardant ABS (Acrylonitrile Butadiene Styrene) and the construction project of halogen-free retardant production line.'* – Production Manager (Chemical)

The company has established good relationship with the local government in order to gain financial support.

*'China is a relationship-based society. Big funds are not entirely given according to the quality of the projects. To some extent it also depends on enterprise-government relationships. Small funds usually set a low bar, but you need to prepare a lot of materials for the complicated application and compete with many other companies. There are big funds from the state, however, they are mostly for medium-large projects or enterprises in some specific industries, and therefore, they usually have relatively high requirements, such as corporate annual tax more than 8 million yuan. Even if you are eligible, you will need the recommendation of local authorities. Therefore, building good relationships with them is very important.'* – Planning Manager (Chemical)

#### 6.5.3.4 Coordination of Environmental Protection in Chemical Production

Government environmental regulations have great impact on the Chemical industry. Due to the ever-stringent environmental regulations, many heavy-polluting small chemical plants have been relocated away from the big cities or forced to shut down.

*'Government has enacted new environmental laws. We can see the big impact on the entire chemical industry. The major PE (polyethylene) and PP (polypropylene) market across China has especially been affected as hundreds of downstream companies, factories and plants has been forced to shut down under the new regulations. Many chemicals are as a result in short supply.'* – Planning Manager (Chemical)

*'Chemical sector is greatly affected, especially firms engaged in production activities labelled as environmentally impactful. Widespread factory closures have been witnessed in recent years, which have impacted numerous firms across the country.'* – Production Manager (Chemical)

In comparison to requirements imposed on firms in other industries, pollutant discharge regulations are usually more stringent for chemical plants. The local EPB official explained that the central government issued new standards which aim to limit major pollutants in certain industries, and local standards should be stricter than national standards in principle.

*'The new standards are part of government measures to implement the action plans on pollution prevention and control. It was expected by the government to help cut industrial discharge by more than half. Under the new standards, discharges of COD in particulate chemicals like chloroethylene and non-methane hydrocarbon will be slashed by 72 percent and 58 percent, respectively, compared with the current standards. We hope these measures can help reduce industrial pollution and stimulate industrial transformation and upgrading.'* – EPB Official (Q city)

Although cleaner production is still largely based on a voluntary approach nationwide, Chemical Ltd. is on the local government's mandatory auditing list as it is among the heavy polluting industries which are required for the compulsory cleaner production auditing.

*'Not many enterprises will voluntarily participate in the cleaner production auditing program as it is very complicated and costs a lot. But for heavy polluting industries and enterprises, government made the cleaner production mandatory. We had to implement cleaner production auditing as the company was on the mandatory auditing list.'* – Planning Manager (Chemical)



### 6.5.3.5 Knowledge Inputs

The local government has provided personnel and technical support which greatly assisted in Chemical Ltd.'s successful implementation of cleaner production auditing.

*'We received the notice from the government that we must implement cleaner production auditing, however, we had no idea as to what to prepare and how to start. The person in charge of the environmental management was new to the company and he didn't have any experience needed to operate the project. Local government held a range of seminars and lectures where enterprises in the high-tech industrial park can attend to gain knowledge on cleaner production implementation. The training was quite helpful as we got to know the technological and management issues we might face and the solutions to the potential problems.'* – Sustainability Director (Chemical)

During the implementation process, the local government assigned engineers and specialists to provide on-site support.

*'We responded to the call of local Economy and Information Bureau for the implementation of cleaner production. Our fast response and positive attitude have been appreciated by the local government. They assigned experts to help us with the implementation process as it is a very complicated project. We are among the first batch of enterprises which passed the auditing.'* – Planning Manager (Chemical)

## 6.6 Case Study 5 – Paper Ltd.

### 6.6.1 Company Profile of Paper Ltd.

Paper Ltd. established its papermaking business in 1992, and since then the company has gone through rapid expansion. Currently, the company operates seven pulp and paper mills and two forestry subunits in China, which offer a range of products including pulp, fine paper, industrial paper, household paper and paper products.

Figure 6.7 depicts a simplified pulp and paper supply chain of the company. The pulp and paper production of Paper Ltd. is based on wood fibres. In the upstream supply chain, the procurement mainly relies on pulpwood purchased from local suppliers and its own forestry divisions. When the domestic wood supply cannot satisfy the demand, the company also imports pulpwood from other countries such as Indonesia. The company's pulp mills convert wood into pulp which is then utilised by the paper mills to make paper rolls and convert them into finished paper products. In the

## Chapter 6: Within-case Analysis

downstream supply chain, the company has developed a sales network covering most provinces in China.

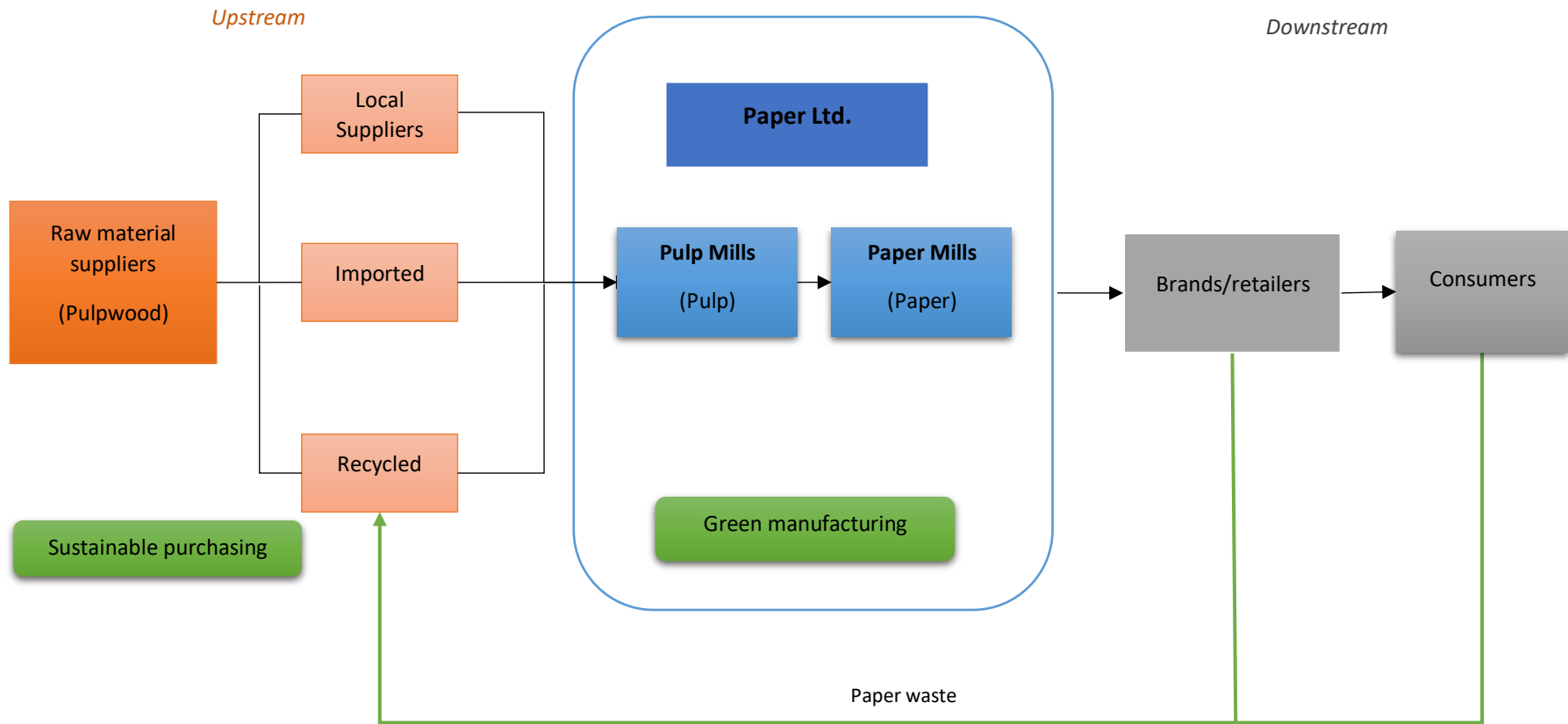


Figure 6.7 Supply Chain Structure of Paper Ltd.

## 6.6.2 SSCM Practices in Paper Ltd.

### 6.6.2.1 Internal Corporate Governance

The senior management of Paper Ltd. is dedicated to sustainable development and considers sustainability as a transformative agenda for modern reforms of the traditional paper industry in China. The company demonstrates 'people first' philosophy in its business which regards employees as valuable assets. In order to enhance employees' sustainability awareness and knowledge, education and training courses are provided to employees, such as occupational health and safety training and legislation compliance training.

All pulp and paper mills established by the company have acquired environmental management ISO14001 certification. Five categories of products have obtained the China Environmental Label (Type II) issued by the central government. The company was also among the first batch of pulp and paper manufacturers in China that have undergone an overall carbon footprint assessment, with three pulp and paper mills and two forest bases being successfully assessed by the end of 2009. The company publishes annual sustainability reports on its website to receive public opinions and comments.

The company has established the 'Internal Auditing Control System' which aims to regulate and control the operations amongst all plants and mills. The headquarter conducts self-audit and internal inspection, such as quality management, environmental management, occupational health and safety management, and energy systems, making sure that everything is operating effectively in all the mills.

### 6.6.2.2 Green Manufacturing

Pulp and paper making is a discharge intensive sector which has long been among the major water polluters in China. To address environmental issues in its production, the company implemented stringent standards and set specific targets for operations related to water conservation and wastewater treatment. The company has designed and constructed two sewage treatment systems with potential daily processing water of 4,000 tons. The average water consumption is less than 20 tons for each ton of paper produced, and COD (Chemical Oxygen Demand) discharge is 0.6kg per ton of paper, which are among the lowest in the industry. The average wastewater discharge per ton of paper is below 9 tons, less than one half of the volume required by the national standards. In addition, the company has built green power plants in its major mills which lead to low energy consumption. Wastewater pollutant discharge has been monitored online in real-time and surveillance data is uploaded to the company website and the EPB website for public scrutiny.

### 6.6.2.3 Corporate Citizenship

With the support of senior management, Paper Ltd.'s public footprint is across China. The company has founded a charitable foundation that aims at supporting China's public welfare, helping disadvantaged groups, appeasing the young and old, and building a harmonious society. The company has donated a lot of money to national events like Beijing Olympics and Shanghai World Expo and helped with the post-disaster reconstruction of Wenchuan Earthquake and other major disasters in China.

The company's efforts to promote social development have been applauded by the public and government authorities. In 2015, the company was awarded the '2015 Most Responsible Enterprise' on the 11<sup>th</sup> China Corporate Social Responsibility Forum. The company's public welfare programmes are implemented locally by dedicated management teams in different mills, and they are tailored to the needs of the local community requirements within the areas they operate.

*'Corporate social responsibility is a journey which has no end, and we constantly seek to improve and protect the landscapes on which we depend, while improving the livelihood of the communities who depend on us'* – Chief Administration Officer (Paper)

### 6.6.2.4 Sustainable Purchasing

Paper Ltd.'s sourcing policies highlight that the company relies exclusively on fibre sourced from responsibly managed plantations throughout the supply chain. The company strives to minimise the environmental impact by only sourcing raw materials from plantations and commercial forests. By implementing stringent chain of custody, the company ensures legality and traceability of fibre materials and pledges its products do not contain fibre from high conservation value forests.

The company has developed the 'Supplier Evaluation & Risk Assessment' programme which serves as a tool to ensure continuous compliance of current suppliers with its policy and evaluate risk levels of potential suppliers. With sharpened focus towards sustainable forestry, the company aims for zero deforestation. Therefore, it insists on not being involved in operations with natural forests, for example, strictly preventing natural forests from entering the supply chain and terminating business cooperation with contractors that violate government regulations.

### 6.6.2.5 Supply Chain Integration

Paper Ltd.'s commitment to sustainable development is demonstrated in its circular economy development model based on a vertically integrated supply chain of plantation-pulp-paper. The company's principle of 'you use paper, we plant trees' is at the core of its business model. The

company has established several self-sustained forestry bases that supply pulpwood to its entire product chain. Currently, Paper Ltd. manages over 30,000 hectares of plantations on degraded lands or commercial forestry areas approved by the Chinese government, generating great benefits for the eco-system and natural forest preservation. The company has also made efforts in developing the cloning technology of seedlings and established a centre for seedling technology in cooperation with the China Forestry Science Academy.

*'The company proposes and advocates the "integrated pulp and paper" mode of production. That is, apart from importing wood and pulp, we also grow our own forests to supply raw materials and reduce the reliance on imported raw materials. The forest division manages and supplies fast-growing and high-yield trees, pulp mills produce pulp, and paper mills make paper. Our company is one of the pioneers in the field of integrated paper supply chain in China.'* – Chief Administration Officer (Paper)

### 6.6.2.6 Recycling

As part of the company's commitment to protect the environment, the company has established recycling production line with the ability to produce multi-layered paperboard using both virgin and recycled materials. The production line utilises recycled newspapers, office paper, and magazines as inputs to produce recycled paper product.

*'We have made significant investments to build the recycling production line. One ton of recycled paper represents approximately 60 trees. It is worth it.'* – Chief Administration Officer (Paper)

## 6.6.3 Policy and Regulatory Context for the Pulp and Paper Industry

### 6.6.3.1 Promotion of Supply Chain Integration

As a forest-based industry, the unique raw material base makes pulp and paper sector both economically important and socially and politically sensitive in the institutional context of China. As part of its broader effort to expand and modernise the pulp and paper industry, the Chinese government has enacted a variety of policies to promote the development of an integrated plantation-pulp-paper supply chain.

In order to meet the increasing domestic demand of fibre and ensure that manufactures have a sustainable fibre supply, the Chinese government has been actively promoting the development of a plantation-based pulp and paper production. The 12<sup>th</sup> FYP (2010-2015) Development Plan for the China's Paper Industry called for the capacity expansion and prioritised green-cycle projects that

integrate fast-growing and high-yielding plantation, pulp production and high-grade paper production (i.e. Plantation-pulp-paper Integration) in the pulp and paper supply chain.

*'The government has set ambitious capacity expansion targets for plantation-pulp-paper integration projects and allocated several million hectares of land for the establishment of fast-growing pulpwood plantations. This policy is great for sustainability of the industry chain as it ensures the supply of raw materials.'* – Chief Administration Officer (Paper)

Furthermore, the government has sought to shut down most of the heavily polluting traditional non-wood pulp mills that have caused major water pollution in China. Within this context, the expansion of plantation-based wood pulp production has become an important way to replace the lost capacity with a cleaner and more efficient pulp production.

*'A large number of heavily polluting small non-wood pulp mills have been closed by the government as they became a major source of water pollution in many parts of China. Small mills generally do not have enough capability to deal with environmental issues in the production. The government has initiated policies to promote the development of large-scale pulp and papermaking mills equipped with modern technologies. It means that small-sized non-wood mills are more likely to shut down in face of stringent government inspections. Large businesses will obtain more policy support and development opportunities in the long-term.'* – EPB Official (Q city)

### 6.6.3.2 Economic Incentives for Plantation-based Product Chain

To support the sustainable development of the pulp-paper product chain, the government has streamlined the investment approval process for plantation projects and provided a variety of economic incentives, such as capital subsidies, loan interest subsidies and loans from state-owned banks.

*'Previously, the central government has played a lead role in approving forestry and pulp-paper projects, which has frequently led to long delays before some of these projects could begin. Now the state has devolved to local government substantial authority over the approval process for these projects, which has significantly reduced bureaucratic hurdles for green investors. Provincial government can also offer preferential conditions above and beyond those stipulated in national policies, e.g. setting tax rates and fee waivers according to local conditions.'* – Chief Administration Officer (Paper)

*'The government has provided significant financial incentives, like loans with lower interest rates from the central banks and other subsidies. They have been an important source of financing for the fast-*

*growing wood plantation projects of our company. We have cooperation with a number of provincial governments like Yunnan, Guangdong, and Hainan to plant fast-growing forests and build large-scale pulp mills. With government support, we turn barren land into fast-growing forests, which can benefit the local people, e.g. providing local farmers with jobs and helping the poor in rural areas.'* – Chief Administration Officer (Paper)

### 6.6.3.3 Environmental Regulations in Pulp-paper Production

Given the major concern of water pollution in the pulp-paper industry, the government has set stringent standards to regulate environmental issues in the sector. All newly built pulp and paper mills and expansion projects of existed plants must pass the EIA. For example, in 2008, Paper Ltd. planned to develop two large-scale pulp and paper mills in the north of Guangdong province, but the proposed project did not get the EIA approval from the local government and the company was not allowed to proceed with the construction due to the concern of high risk of water pollution.

As Paper Ltd.'s supply chain involves multiple production processes running across different plants, the company has to ensure the sustainability compliance of all its mills.

*'In order to comply with government environmental regulations, the company has implemented the environmental management systems such as ISO14001 in all the plants and subsidiaries to control pollution in the entire product chain.'* – Chief Administration Officer (Paper)

### 6.6.3.4 Promotion of Sustainability Collaboration

In response to the Chinese government's call for industrial collaboration for sustainability, in 2009, Paper Ltd. participated in the China Paper Industry Sustainability Forum. Together with other 27 pulp and paper manufacturers, the company signed the 'Manifesto of Conscientiously Fulfilling Social Responsibility for the Environment and Achieving Sustainable Development' – a solemn commitment and demonstration of the company's dedication in promoting sustainability in China's paper industry.



## 6.7 Case Study 6 – Homeware Ltd.

### 6.7.1 Company Profile of Homeware Ltd.

Established in 2009, Homeware Ltd. started as a family business making homeware products like reed sticks, home fragrance diffusers and hand-made home accessories. The factory is located in a rural town in the north of Guangdong province due to cheap local labour and preferential policies of local township government. As a family-run small business, the company has a simple organisational structure. Currently the company has approximately 50 employees, including 35 workers in the factory, and 15 employees in sales, finance and management departments. The company has two lines of products, i.e. homeware and kitchenware products. The company provides customised manufacturing according to customers' requirements.

The company mainly designs and manufactures its products in house. In the upstream supply chain, the company purchases raw materials such as wood, reed, glass and paper from domestic suppliers. In the downstream supply chain, the company originally focused on the domestic market, which was found to be very competitive and not profitable for the company. Given this situation, the company shifted its focus from domestic retailing business to exporting business. Over the past eight years, the company has managed to secure several big international customers, for example, a cosmetic retailer in Brazil, which has established long-term relationship with the company.

### 6.7.2 SSCM Practices in Homeware Ltd.

#### 6.7.2.1 Internal Sustainability Governance

Within Homeware Ltd., there is no specific position that manages sustainability issues like workplace conditions, production safety and pollution control. The company has an operation manual that details the responsibilities of each department. This manual has been used to guide the production management and performance assessment of employees. With the expansion of the business, the company aims to improve their employee management level by offering employees with better social welfare and improved working conditions. To ensure employees' health and safety, the company has provided personal protective equipment (PPE) to workers, such as gloves and masks.

#### 6.7.2.2 Green Manufacturing

In recent years, there has been a trend of pursuing green lifestyle due to the increasing public concern about the environmental degradation and the Chinese government's call for harmonious society. In 2015, the company has initiated the design and manufacturing of products that better satisfy the

green product standards required by the government, for example, product that can be reused or recycled. The company has established collaboration with several customers to develop a range of products that use bamboo or reed materials instead of traditional plastics in order to cut plastic waste. However, the company only works with customers who are willing to share the increased costs associated with the eco-designed products.

*'These green products require the redesign and more expensive materials, which lead to increases prices. If buyers are not willing to pay for the price, then we wouldn't do it.'* – Owner (Homeware)

### 6.7.3 Policy and Regulatory Context for the Homeware Industry

#### 6.7.3.1 Regulation

Like any other industries, manufacturers in homeware industry are subject to increasingly stringent environmental laws and standards. The local authorities conduct factory visits to monitor companies' compliance with regulations. In the case of Homeware Ltd., environmental and social regulations are the main driver for the company to adopt and implement sustainable practices, although there is still a lack of understanding of the current regulations and policies in the company.

*'We are required by the local EPB to upgrade facilities and equipment to reduce energy consumption and emissions. We must treat wastewater and emissions properly to meet government standards. It would be very bad for the company if the emission standards are not met. The company could end up on the government watching list or even being forced to shut down.'* – Owner (Homeware)

#### 6.7.3.2 Knowledge Deployment

Led by the local government, the local SMEs Association and authorities have provided training and education on how to deal with environmental and safety issues in SMEs. Homeware Ltd. has participated in one of the safety production training sessions run by the local Safety Production Bureau. This has enhanced the work safety awareness in the company.

*'SMEs made great contribution to the local economy growth and the employment of the rural surplus labour force. However, they are also the main sources of many environmental issues as they often lack the awareness of the importance of environment protection. SMEs are still in the early stage of implementing environmental management. That is why the government needs to develop their abilities, awareness and knowledge of environmental regulations by offering human, financial and technological support. Unfortunately, we have not done enough yet.'* – EPB Official (Q city)

### 6.7.3.3 Subsidy for Technological Reform

The local government has offered financial support like discounted loan interest and funds for technological reform and upgrading of environmental protection facilities. The owner of Homeware Ltd. has established a good relationship with local authorities, which has to some extent enabled the company to have access to these funds.

*'We received some special funds and loans from the government but it's not that easy for small enterprises to get. You need "guanxi" (relationship).'* – Owner (Homeware)

## 6.8 Case Study 7 – Plastics Ltd.

### 6.8.1 Company Profile of Plastics Ltd.

Established in 2008, Plastics Ltd. is a micro-sized family business that produces plastic fills for cooling towers. Currently the company has about fifteen employees. The company was originally located in Guangzhou city and later moved to a rural town in the north of Guangdong province.

The main materials purchased by the company are plastic scraps. The production process involves three stages: crushing plastic scraps into tiny granules, using the tablet machine to press plastics pieces in formation, and finally cutting them in to shape according to customer requirements. The customers are mainly domestic companies like cooling tower manufacturers, PVC fill retailers, construction companies and repair service providers.

### 6.8.2 SSCM Practices in Plastics Ltd.

The company's sustainability initiatives are mainly limited to internal corporate governance of environmental issues, i.e. the compliance with the minimum compulsory environmental and social regulations and standards. As required by the government, the company has installed basic equipment and facilities to treat pollution so that the emissions are under the standards set by the government. It has also acquired the EIA report as required by the local government. The company uses recycled plastics as raw materials, which to some extent can help reduce plastic waste and protect the environment.

In terms of social practices, the company has provided the minimum wages for employees and no child labour has been used in the factory. However, the working environment and labour conditions are relatively poor and there are obvious potential health and safety risks in the factory. For example,

fire hydrants are just furnishings – there are no regular inspection tests or occasional maintenance. In the factory visits, the researcher found that some fire extinguishers had even expired a long time ago.

To ensure production safety and the health of the employees, the company has provided workers with face masks to protect them against dust, fumes, and small-particle chemicals. However, workers preferred not to use them due to their lack of health and safety awareness. There are no employee training or education on health, safety and environmental issues in the company. When asked about the labour conditions, respondents claimed that they are satisfied with the working environment as long as they get payment on time.

### 6.8.3 Policy and Regulatory Context for the Plastics Industry

Facing stringent government environmental regulations, non-compliance punishment has become the main driver for Plastics Ltd. to implement compulsory environmental practices.

*'It is important that we follow the rules of game. We have taken measures so that we will not exceed the pollution standard. We will have a lot of troubles if we do not comply with government environmental regulations, for example, failing to meet the emissions standards. The last thing we want is to get a shutdown notice from the EPB because of non-compliance.'* – Vice Manager (Plastics)

*'As a small firm, our goal is to survive in the market and make profits. When it comes to environmental issues, what we can do is the most basic thing, that is abiding by the law and following government regulations.'* – Owner (Plastics)

## 6.9 Chapter Summary

As discussed in Chapter 5, seven case companies of different sizes and industrial sectors are selected in order to follow the theoretical replication logic underlying multiple case study method (Yin, 2014). This chapter presents different sets of empirical data gathered from these cases.

Each case company has shown its unique corporate and industry characteristics as well as supply chain structure, which provide a basis for the analysis. The specific SSCM practices implemented in each case are presented and the government interventions in the sector are analysed through the description of the policy and regulatory context. It is evident that each case company has its own focus on different dimensions of SSCM practices, which is largely influenced by both general and industry-specific policies and regulations in each industrial environment.

## Chapter 6: Within-case Analysis

The observations provided in this chapter assist in the further exploration of the characteristics of each case and the comparison of the seven cases in the cross-case analysis in next chapter.

# Chapter 7

## Cross-case Analysis and Discussion

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### 7.1 Introduction

Chapter 6 presents the details of key SSCM practices implemented by the investigated companies across their supply chains as well as government interventions applied to them. Following the individual case assessments in the previous chapter, a cross-case analysis comparison is undertaken in this chapter. The findings of the case analysis are discussed to answer the research questions. As was depicted in the theoretical framework in Chapter 4, both institutional and contingency perspectives are employed to analyse the cases.

The empirical data gathered from the seven cases is presented in Table 7.1. The table is structured into two parts. In part I, the observed SSCM practices for each of the case companies are listed and classified. In part II, these SSCM practices are further analysed to identify their links to government policies and regulation.

The cross-case tabulation proceeds as follows:

- 1) In part I, the observed SSCM practices are grouped according to the classification of SSCM practices identified in the literature (discussed in Chapter 3, Section 3.3.2);
- 2) For each company the observed SSCM practices are recorded as present or not in two ways. First, the scope of the practice is captured by its reference to the TBL (discussed in Chapter 3, Section 3.3.2). Second, the practice is further classified by its primary focus on internal corporate context or external supply chain context (discussed in Chapter 3, Section 3.3.2);
- 3) In part II, the company's SSCM practices are assessed in terms of whether or not they are linked to the government's intervention actions arising from policies or regulations. The interventions are classified following the institutional framework of King et al. (1994).

Using Table 7.1, together with the detailed data including quotations from the case study participants, the resulting analysis is directly linked to the research questions in Chapter 1. The cross-case analysis is conducted in three stages:

*Stage 1* – SSCM practices are first analysed to draw out patterns in terms of companies' SSCM implementation levels, i.e. how differently (in terms of 'maturity') do Chinese private companies implement SSCM practices in the policy and regulatory context of China. To undertake this analysis, a

new maturity model consisting of four types of SSCM profiles (i.e. beginner, practitioner, satisfier and leader) is conceptualised. This is then used to help explain the observed SSCM practices in the case companies.

*Stage 2* – This extends the analysis of the implementation of SSCM practices through a discussion of their scope in terms of TBL, their intended focus – internal or external – and finally, how contingency factors help explain why companies implement SSCM practices at different levels.

*Stage 3* – Based on King et al.'s (1994) institutional framework, six types of government intervention actions applied to the cases are identified and a detailed account of the respective strength of these interventions is given for each case. The analysis is further deepened by a discussion of the effectiveness of regulatory and influential interventions and the moderating role of contingency factors including firm size, industry and government-corporation relationship.

The structure of this chapter is presented in Figure 7.1. Section 7.2 discusses how SSCM practices are implemented among Chinese private enterprises in the policy and regulatory context of China. The observed government intervention actions and their effectiveness are discussed in Section 7.3. Section 7.4 is the summary of this chapter.

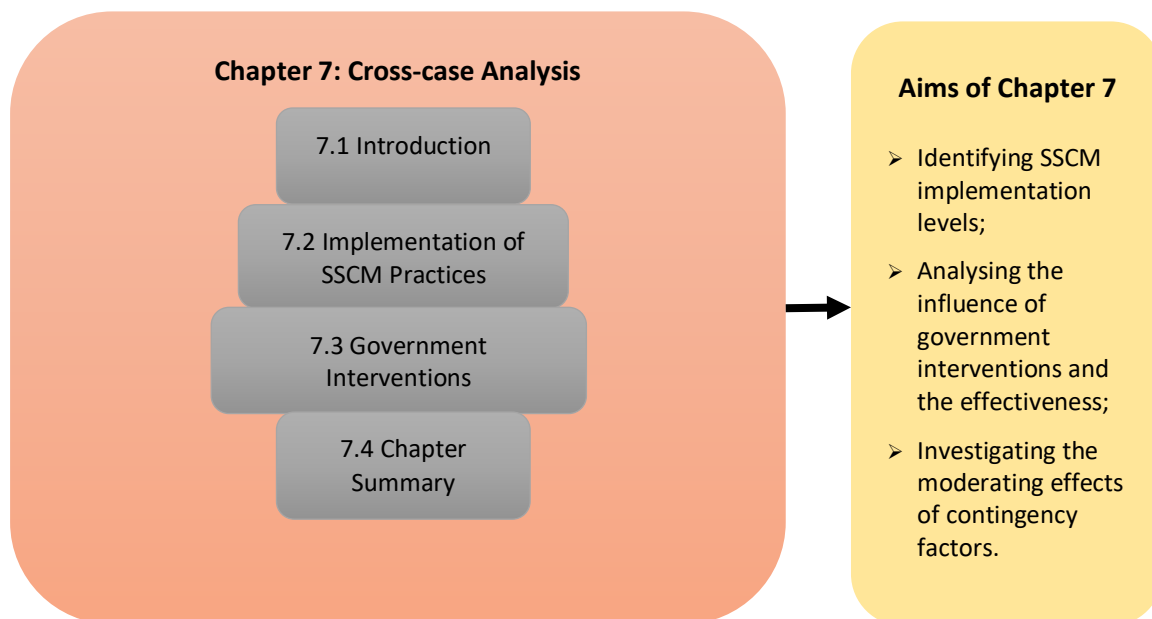


Figure 7.1 Structure of Chapter 7

Table 7.1 SSCM Practices and Government Interventions Evidenced through Case Studies

Part I: Implementation of SSCM Practices						Part II: Government Intervention Actions					
	TBL Dimension			Internal Corporate Context	External Supply Chain Context	Regulation	Economic Incentive	Knowledge Building	Knowledge Deployment	Innovation Directive	Mobilisation
	Econ.	Env.	Soc.								
<b>1. Electronics Ltd.</b>											
Defining roles and responsibilities concerning environmental and social sustainability	✓	✓	✓	*							
Cross-functional cooperation on sustainability issues	✓	✓	✓	*							
Sustainability commitment and support from senior managers	✓	✓	✓	*							
Active involvement and exemplary function of senior managers on sustainability topics		✓	✓	*							◆
Health and safety issues are managed to prevent dangers and risks in operations	✓		✓	*	◆			◆			
Employee social welfare programme			✓	*	◆						
Training and education to improve sustainability knowledge base within the company	✓	✓	✓	*							
Certifications (e.g. ISO 14001, ISO9001, 3C, RoHS, REACH)	✓	✓	✓	*	◆	◆				◆	
Product CE (Conformité Européenne) Mark	✓				◆	◆					
Internal sustainability performance auditing (e.g. BSCI auditing)	✓	✓	✓								
Design of products for reduced consumption of materials/energy	✓	✓		*	◆	◆	◆			◆	
Design of products for reuse, recycle, recovery of materials	✓	✓		*	◆	◆	◆	◆		◆	
Design of products to avoid or reduce use of hazardous materials	✓	✓	✓	*	◆					◆	
Design of process for increased product life span	✓	✓		*	◆		◆				
Process control for pollution reduction and reduced energy consumption	✓	✓		*	◆					◆	
Environmental protection technologies and pollution treatment facilities	✓	✓		*	◆	◆					
Collaboration with industrial players and environmental experts for product R&D	✓	✓						◆	◆		



Chapter 7: Cross-case Analysis and Discussion

Collaboration with suppliers for eco-design	✓			*	◆				
Collaboration with customers and 3 <sup>rd</sup> party for product recycle	✓				◆	◆			◆
Participation in common sustainability programmes and networks (e.g. talent incubation, industrial fairs and exhibitions)	✓		✓	*				◆	◆
Environmental issues are considered in supplier selection and evaluation	✓	✓		*	◆				
Specification of sustainability requirements in legal contracts	✓	✓	✓	*	◆				
Safety, quality and environmental standards (e.g. RoHS and REACH) for suppliers	✓	✓	✓	*	◆				
Supplier Green Products Warranty	✓	✓		*	◆				
Eco-labels for all purchased products	✓	✓		*	◆	◆			
Supplier quality and environmental performance assessment	✓	✓		*	◆				
Monitoring changes in suppliers' product and process	✓	✓		*	◆				
Retrieving end-of-life products from customers for remanufacturing and proper disposal	✓	✓		*	◆	◆			◆
Establishing a disassembly and recycling production line	✓			*	◆	◆	◆		◆
Handling e-waste in different stages of product life cycle	✓	✓		*	◆				◆

**2. Metal Ltd.**

Defining roles and responsibilities concerning environmental and social sustainability	✓	✓	✓	*					
Cross-functional cooperation on sustainability issues	✓	✓	✓	*					
Internal auditing committee	✓	✓	✓	*					
Sustainability commitment and support from senior managers		✓	✓	*					
Health and safety issues are managed to prevent dangers and risks in operations	✓		✓	*	◆				
Employee social welfare programme			✓	*	◆				
Training and education to improve sustainability knowledge base within the company	✓	✓	✓	*	◆				
Certifications (e.g. ISO 14001, ISO9001, UL certification)	✓	✓		*	◆				
Sustainability reporting	✓	✓	✓	*	◆			◆	
Donation that supports the development of higher education			✓	*					◆
Design of products for improved environmental performance	✓	✓		*	◆	◆	◆		◆
Design of products to avoid or reduce use of hazardous materials	✓	✓	✓	*	◆				◆
Design of processes for minimization of waste	✓	✓		*	◆	◆			
Process control for pollution reduction and reduced energy consumption	✓	✓		*	◆	◆	◆		
Environmental protection technologies and pollution treatment facilities	✓	✓		*	◆	◆			◆

Chapter 7: Cross-case Analysis and Discussion

Collaboration with customers for R&D of green products	✓	✓		*	◆		◆	◆
Cooperation with customers for reverse logistics relationships	✓	✓		*	◆			
Long term relationships with reliable suppliers to ensure sustainable supply	✓	✓	✓		◆			
Environmental issues are considered in supplier selection and evaluation	✓	✓		*	◆			
Purchasing regulations for internal corporate functions	✓	✓	✓	*	◆			
Supplier codes of conduct	✓	✓	✓	*	◆			
Supplier quality and sustainability compliance audits	✓	✓	✓	*	◆			
Customised recycling solutions for customers	✓	✓		*	◆	◆	◆	◆
Sale of by-products, scrap and used materials	✓	✓		*	◆			
Waste reuse and recycle in different stages of production	✓	✓		*	◆	◆	◆	◆
Integrated product life cycle management	✓	✓		*	◆	◆	◆	◆

**3. Textile Ltd.**

Defining roles and responsibilities concerning environmental and social sustainability	✓	✓	✓	*				
Cross-functional cooperation on sustainability issues	✓	✓	✓	*				
Sustainability support from senior managers		✓	✓	*				
Health and safety issues are managed to prevent dangers and risks in operations	✓		✓	*	◆			
Employee social welfare programme			✓	*	◆			
Training and education to improve sustainability knowledge base within the company	✓	✓	✓	*				
Certifications (e.g. ISO 14001, ISO9001, OHSAS18001)	✓	✓	✓	*	◆			
Design of processes for minimization of waste	✓	✓		*				
Process control for pollution reduction and reduced energy consumption	✓	✓		*	◆			
Upgrading environmental technologies and facilities for improved production efficiency	✓	✓		*	◆			
Collaboration with organic cotton farmers	✓	✓	✓	*		◆		
Long term relationships with reliable suppliers for low price and high quality	✓			*				
Collaboration with customers for textile recycle	✓	✓		*				
Purchasing organic cotton	✓	✓	✓	*				
Product sustainability standards for suppliers (e.g. GOTS certification)	✓	✓	✓	*	◆			
Collecting textile and garment waste	✓	✓		*		◆		◆
Establishing a production line for cotton recycle	✓	✓		*		◆		◆
Waste reuse and recycle in different stages of production	✓	✓		*	◆			

**4. Chemical Ltd.**

Roles and responsibilities concerning sustainability are well defined	✓		✓	*	
Cross-functional work on sustainability issues	✓		✓	*	
Internal audit and assessment of sustainability compliance	✓	✓	✓	*	
Certifications (e.g. ISO 14001, ISO9001, UL certification)	✓	✓		*	◆
Health and safety issues are managed to prevent dangers and risks in operations	✓		✓	*	◆ ◆
Training and education to improve sustainability knowledge base within the company	✓		✓	*	◆ ◆
Involvement in community and contribution to resolving social issues in society			✓	*	◆
Design of products for improved safety	✓	✓	✓	*	◆ ◆ ◆ ◆
Design of products to avoid or reduce use of hazardous materials	✓	✓	✓	*	◆ ◆ ◆ ◆
Implementation of cleaner production	✓	✓		*	◆ ◆ ◆ ◆ ◆
Environmental technologies and pollution treatment facilities	✓	✓		*	◆ ◆ ◆ ◆ ◆
Process control for pollution reduction and reduced energy consumption	✓	✓		*	◆ ◆ ◆ ◆ ◆
Collaboration with customers for R&D of green products	✓	✓		*	◆ ◆ ◆ ◆ ◆ ◆
Cooperation with industrial partners for sustainability training programmes	✓	✓	✓	*	◆ ◆ ◆ ◆ ◆ ◆
Environmental and social issues are considered in supplier selection and evaluation	✓	✓	✓	*	
Purchasing policy for corporate functions	✓	✓	✓	*	
Supplier performance assessment	✓	✓	✓	*	

**5. Paper Ltd.**

Defining roles and responsibilities concerning environmental and social sustainability	✓	✓	✓	*	
Cross-functional cooperation on sustainability issues	✓	✓	✓	*	
Sustainability committee within the company		✓	✓	*	
Sustainability commitment and support from senior managers		✓	✓	*	
Employee development programme	✓		✓	*	◆
Training and education to improve sustainability knowledge base within the company	✓	✓	✓	*	◆
Certifications (e.g. ISO 14001, ISO9001)	✓	✓		*	◆
Environmental labelling of products	✓	✓			◆ ◆ ◆ ◆
Carbon footprint assessment		✓			◆ ◆ ◆ ◆ ◆



Chapter 7: Cross-case Analysis and Discussion

Compliance with the minimum compulsory environmental and social regulation	✓	✓	✓	*	◆
Environmental Impact Assessment (EIA) report	✓	✓		*	◆
Providing PPE to employees					◆
Implementation of basic environmental protection facilities	✓	✓		*	◆
Ensuring minimum wages			✓	*	◆
No use of child labour			✓	*	◆
Provision of basic safe production appliances			✓	*	◆

## 7.2 Implementation of SSCM Practices (RQ1: How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?)

Empirical evidence of the research reveals that the investigated companies present different approaches to sustainability and in turn a variety of SSCM practices are adopted and implemented. Some companies appear to have little understanding of the SSCM concept, while on the other end of the spectrum, there are companies innovatively implementing sustainable practices and integrating them into the supply chain. In between, there are companies in transition whose knowledge, approach, and practices represent different levels of understanding and sophistication about SSCM.

A comparative analysis was conducted to determine where the differences occur when it comes to the implementation levels of SSCM practices. The research identified what level of SSCM each case company was at by investigating a company's SSCM initiatives. As was discussed in Chapter 3, there are different sustainability dimensions, such as the attitude to sustainability (Baumgartner and Ebner, 2010), motivation (van Marrewijk and Werre, 2003), compliance with sustainability regulation (Huq and Stevenson, 2018), TBL focus and the extension of SSCM practices along the supply chain (Formentini and Taticchi, 2016). By considering the levels of these various SSCM dimensions in the company, four distinctive SSCM profiles were identified, i.e. beginner, practitioner, satisfier and leader.

The four SSCM profiles demonstrate a spectrum of SSCM implementation levels from low to high. The following definitions are provided by the author to briefly depict the four-level SSCM profiles:

- 1) *SSCM beginner* – company just begins to consider sustainability issues in its business and does not necessarily have explicit SSCM initiatives;
- 2) *SSCM practitioner* – company adopts a compliance-driven approach to sustainability, with a limited focus on SSCM initiatives;
- 3) *SSCM satisfier* – company adopts a comprehensive approach to sustainability that integrates some specific SSCM practices at the supply chain level;
- 4) *SSCM leader* – company adopts a holistic approach to sustainability that implicates an outstanding effort towards the extension of SSCM practices to supply chains.

A more detailed explanation of SSCM profiles is presented in Table 7.2, with some main SSCM characteristics demonstrated. Companies' responses to government interventions in SSCM are manifested in the characteristics of their profiles, e.g. general attitude towards sustainability, motivation, scope of sustainability legal compliance and depth of compliance behaviour (See Table

7.2). SSCM beginners just start to consider sustainability initiatives, which means that – if existing – only mandatory regulations are respected. SSCM practitioners also focus on compliance with sustainability regulations but going slightly further. SSCM satisfiers and leaders go beyond legal compliance and actively engage in voluntary SSCM initiatives.

This four-level SSCM profile classification shares some characteristics of the corporate sustainability maturity model developed by Baumgartner and Ebner (2010), namely introverted, extroverted, conservative and visionary. However, Baumgartner and Ebner's (2010) model focuses only on sustainable practices within an organisational context. Although there are also a few other studies that have attempted to categorise sustainability maturity levels from a supply chain perspective (e.g. Huq et al. (2016) and Srari et al. (2013)), these studies have adopted a narrow scope that focuses either on social or environmental aspect of sustainability. Formentini and Taticchi (2016) identify three types of sustainability profiles with an understanding of both social and environmental supply chain practices, but the classification is simplified and not characterised by the sequential maturity levels of SSCM implementation. This research fills these gaps and contributes to the literature by identifying SSCM profiles in an institutional policy context, with a broad SSCM perspective and a more comprehensive understanding of SSCM aspects that were not previously considered in the corporate sustainability or supply chain management studies.

The new conceptualised four-level SSCM profile classification is used in the subsequent sections to evaluate and present the implementation of SSCM practices in the case companies. The reasons for the different SSCM implementation levels are illustrated by reviewing the results through the lens of contingency perspective.

Table 7.2 In-depth Explanation of Companies' SSCM Profiles (Source: Author)

Key SSCM Dimensions	SSCM Profiles (Levels of SSCM Implementation)			
	Beginner	Practitioner	Satisfier	Leader
<b>Sustainability Approach</b>	Considering sustainability issues within the limits of mandatory regulations	Focusing on compliance with sustainability regulations from rightful authorities but going slightly further	Adopting a comprehensive approach to integrate social, environmental and economic concerns into main business operations	Adopting a holistic approach to integrate social, environmental, and economic sustainability into all aspects of business operations
<b>General Attitude towards Sustainability</b>	Sustainability is a constraint imposed by government regulations	Sustainability is legitimacy; license to operate	Sustainability is more comprehensive concept considering environmental and social impacts of business activities	Sustainability is an integral part of corporate decision-making
<b>Motivation</b>	Legal compliance-driven; Sustainability is a regulatory constraint	Legal compliance and profit-driven; Sustainability is a legitimacy and obligation	Going beyond legal compliance considerations; considering social and environmental impacts of business activities	Value-driven; sustainability being the inevitable direction
<b>Scope of Sustainability Compliance</b>	Compliance with lowest possible sustainability standards; only mandatory sustainability-related laws and regulations are respected	Compliance with mandatory laws, plus other stakeholders' regulations/standards (e.g. buyers' codes of conduct or third-party certifications)	Compliance with regulations, plus going further by engaging in voluntary sustainable supply chain programs (e.g. sustainable supplier development)	Going above and beyond regulations and industry standards; proactively extending sustainability aspects to supply chain to enable differentiation and innovation
<b>Depth of Sustainability Compliance</b>	Symbolic compliance in regular circumstances	Compliance in regular, stable conditions	Compliance in most conditions	Complete compliance in all circumstances
<b>TBL Focus</b>	No explicit sustainability initiatives	Limited focus on one or two TBL dimensions; sustainable practices based on already established processes	Focus on all three TBL dimensions	Focus on all three TBL dimensions
<b>Supply Chain Interaction</b>	No interaction with supply chain partners for sustainability initiatives	Passive partner; limited supply chain interaction	Interactive; some specific initiatives with supply chain partners (e.g. information/resource sharing, collaboration)	Mutual partnership influence; outstanding sustainability initiatives that actively involve supply chain partners



### 7.2.1 SSCM Beginner (Plastics Ltd. and Homeware Ltd.)

Plastics Ltd. and Homeware Ltd. are identified as sustainability beginners given the primary focus on economic survival of the business. The two companies are at the rudimentary level of sustainability implementation as they have just begun to considerate sustainability issues within the companies and mainly adopted essential and basic practices that focus on the conformity and compliance with lowest possible sustainability laws and regulations. No explicit SSCM practices have been implemented to enable product or process innovation and entail the companies' willingness to proactively deviate from current operations. Therefore, these companies are on the defensive when it comes to sustainability issues.

Plastics Ltd. and Homeware Ltd. demonstrate to have a scant awareness and an unclear understanding of sustainability concept. For the two companies, sustainability simply means profits and compliance with mandatory environmental and social regulations. Therefore, the operations have only highlighted the traditional competitive priorities such as price and product quality.

#### 7.2.1.1 Plastics Ltd.

Plastics Ltd. presents very limited elements of sustainable practices in its operations. Internally, there is a very simple corporate governance structure, within which sustainability roles and responsibilities are not defined and there are no qualified or specialised staff employees dealing with the sustainability issues. Employees have very limited knowledge base within the company, and they are not provided any training or education on sustainability topics. Externally, the companies have mainly focused on the compliance with customers' requirements regarding product quality, however, there is no active interaction or collaboration with suppliers or customers for any sustainability initiatives.

The owner of Plastics Ltd. has very poor understanding of sustainability.

*'I am not quite sure about what it (corporate social responsibility) means exactly. For our company, making profits so that we can pay workers salary is our responsibility.'* – Owner (Plastics)

*'Competition in the industry is mainly on price and quality, therefore, price and quality control are the two most important factors we consider in our operations.'* – Vice Manager (Plastics)

The company is satisfied with the implementation of the basic sustainable practices in compliance with government environmental and social regulations.

*'Currently we are satisfied with our performance. With the company getting bigger, surely there are more things we need to consider than just the short-term profits. For example, how to make the*

*company more formal in terms of operations and management. We would invest more to improve the working conditions, increase salary and provide more employee benefits.'* – Vice Manager (Plastics)

#### 7.2.1.2 Homeware Ltd.

In Homeware Ltd., sustainability initiatives are limited to internal governance of environmental and social issues such as the control of emissions and working conditions, while none of them have been extended to the upstream supply chain. Price and quality are two key factors in the company's purchasing decisions, while sustainability issues are not considered in supplier selection and evaluation. As was explained by the managers, as a small enterprise, on the one hand, the company does not have the bargain power to require suppliers to conduct sustainable practices, on the other hand, the company does not see sustainability requirements for suppliers are unnecessary for the purchasing as long as the suppliers offer low price and high-quality products.

*'Only so long as suppliers deliver what we need we are happy. I don't think it's that relevant to the business of what they are doing. Honestly, it's not in our hands that if suppliers follow social and environmental standards or not. It's the responsibility of the government to make sure that they (suppliers) follow the laws and regulations. It's EPB's job to control the pollution level of the factories. As for the labour conditions of the factories, it's not our business at all.'* – Manager (Homeware)

When asked about their understanding of sustainability, the owner of the Homeware Ltd. responded:

*'I am not quite sure about what it means exactly. We are just a small family business and our main goal is to survive in the market. On top of that, we must abide by (environmental and social) laws and regulations, paying discharge fees, and ensuring minimum wages and safety in the workplace etc. These are the requirements from the government which we must comply.'* – Owner (Homeware)

In summary, the case of Homeware Ltd. and Plastics Ltd. presents a traditional risk-mitigation approach of small enterprises. The lack of financial capacity and management skills explains the limited SSCM practices implemented in the companies.

*'Small companies like us have a very little profit margin and the market is very competitive. If you want to survive, you'll have to cut costs as much as you can. Implementing sustainable practices is a good thing to do, but it means sources of additional costs. It might not bring you much benefits but for sure it will decrease your profit margin.'* – Owner (Plastics)

The Manager at Homeware Ltd. also pointed out that size is the main constraint of implementing sustainable practices in the company due to the lack of financial power and managerial skills:

*'Compared with big enterprises, small companies don't have the financial power to conduct more advanced sustainable practices. We don't have the bargain power to exert any sustainability pressures on our suppliers. With the expansion of the company size, in the future, the management level of the company needs to be improved in order to pursue sustainable development.'* – Manager (Homeware)

### 7.2.2 SSCM Practitioner (Textile Ltd.)

Textile Ltd. is identified as a sustainability practitioner as the company has adopted a compliance-driven approach to address sustainability issues in the business. The mindset in the company, as reflected in the corporate governance mechanisms and operations, often centres narrowly on the compliance with regulations and industry standards, although it goes slightly further to consider impacts of their business activities. Sustainability initiatives are developed mainly for the purposes of obeying laws, increasing the firm's credibility and protecting its reputation. Therefore, the company appears to take a defensive stance towards external sustainability pressures.

The company has limited SSCM initiatives, which mainly focus on the internal corporate sustainability governance. Although the company has implemented some practices that present positive elements of environmental and social sustainability, most of them are within the company boundary and an integrated sustainability programs are undeveloped. This might partially be explained by the contingency factor of the industrial sector. Textile Ltd. operates in a traditional labour-intensive manufacturing industry where the operating environment do not call for structured sustainability approaches, and it has implemented a traditional manufacturing model based on production efficiency and productivity. The company faces the tension among sustainability, flexible procurement and cost. Price and quality are still the most important concerns when it comes to the company's purchasing decisions as the upstream cotton market is constantly changing. Both ends of the supply chain (e.g. cotton suppliers and garment manufacturers) have the options to grow or buy other raw materials. For example, Chinese cotton farmers may choose to grow other crops like sunflowers or sesame as they are more profitable than cotton, which leads to the increased price and reduced cotton supply. In this case, the company tends to care more about price and flexibility rather than sustainability in procurement.

### 7.2.3 SSCM Satisfier (Metal Ltd., Chemical Ltd. and Paper Ltd.)

Metal Ltd., Chemical Ltd. and Paper Ltd. are considered as sustainability satisfiers due to their initiatives in moving forward to broaden its sustainability agenda by embracing a more comprehensive concept of SSCM. These three companies present a clear component of sustainability in the business, incorporating all three dimensions of sustainability simultaneously. As forward-looking companies,

these companies have adopted a new outlook on their roles and responsibilities, moving from simply complying with environmental and social laws to fulfilling society's increasing sustainability expectations by implementing specific SSCM practices with consideration and reduction of impacts of their business activities. For these companies, the implementation of SSCM practices is no longer a simple question of compliance with regulations but a question of competitiveness and long-term survival. Therefore, they tend to be reactive to new and emerging social and environmental issues.

### 7.2.3.1 Metal Ltd.

Metal Ltd. has made progress both economically and environmentally while the traditional metal industry in China is still struggling for survival. The main objective of implementing SSCM practices in Metal Ltd. is to ensure that material and product flows in its supply chains are managed in a way so that the company can realise environmental, social and economic performance gains. In the efforts to integrate the concept of sustainability into the eco-industrial development, Metal Ltd. has gained valuable experiences not only in the implementation SSCM practices across different functions in the company but also in the extension of sustainability along its supply chain. Internally, most of the plants among the company's supply chains have engaged in the cooperation for the implementation of SSCM practices, which helps the company to secure the sustainable development of their industrial ecosystem and optimise the environmental and economic performance of the whole network of plants within the company. Externally, the company has established good relationships with upstream and downstream supply chain partners. Dialogue and collaboration are imperative to improve the company's environmental performance through green purchasing. To ensure the sufficient supply and the quality of the products, the company has made efforts to build long-term collaborative relationships with key suppliers.

### 7.2.3.2 Chemical Ltd.

Chemical Ltd. distinguishes itself for the green and innovative features of its product. The company's commitment to sustainability is highlighted in its business strategy that integrates all three dimensions of TBL with a long-term sustainability vision. Internally, the company is focused on continual improvement and value creation of its operations through formal governance mechanisms like codes of conduct and environmental and quality management systems. The company has a structured internal governance system which explicitly defines the roles and responsibilities concerning sustainability. Since the establishment, the company has been developing best practices in order to reduce environmental impacts and production risks, particularly with the adoption of best available technologies for improving product sustainability performance standards. Recently, driven by

government regulatory requirements, the company has implemented cleaner production programme which aims to reduce and prevent pollution from the source. At the supply chain level, Chemical Ltd. mainly focuses on external stakeholder engagement and sustainable supplier auditing. The company has established several collaborative initiatives with relevant stakeholders (e.g. buyers and research institutes) for sustainable product R&D, such as using renewable materials and product redesign. In terms of sustainable procurement, sustainability issues are considered in the purchasing decisions and suppliers' sustainability performance are managed through codes and auditing. However, more advanced SSCM initiatives like supplier development programmes are undeveloped.

### 7.2.3.3 Paper Ltd.

A diverse set of sustainability initiatives have been implemented throughout Paper Ltd.'s integrated supply chains in order to improve economic, social and environmental performance simultaneously. At the corporate level, Paper Ltd. has established modern corporate management systems and standards for employee development and green manufacturing within each pulp and paper mill. At the supply chain level, Paper Ltd. has implemented integrated supply chain management by establishing closed-product cycles from extraction of raw materials to manufacturing and the disposal of wastes. The company has focused on material flow within its supply chains and implemented an integrated plantation-pulp-paper model across the plants. The company also established long-term relationships with upstream suppliers (including its own forestry subsidies) and developed sustainability purchasing policies for supplier management.

Industry is a very significant factor that assists the understanding of the sustainability journeys and achievements in these three companies. On the one hand, all three companies operate in industries where environmental regulations and pressures from the government are strongly pushing companies' sustainability commitment. On the other hand, all three companies focused on industrial transformation and technological upgrades. Both Metal Ltd. and Chemical Ltd. are outstanding high-tech innovators which distinguished them from the traditional metal and chemical industries. Metal Ltd. focuses on the R&D of innovative rare metal materials. The improved technologies and operations developed by Metal Ltd. and the resulting higher sustainability performance have offered added value to their products. For example, the company's CdTe thin-film solar cells have gained popularity in the new energy industry as currently they are the only solar cells in the market that have both high conversion efficiency and large-scale industrial production conditions. Chemical Ltd. operates in the new material industry where the fast-growing industrial demands for environmentally friendly products greatly shape and drive the company to move forward to the development of sustainable products. Although Paper Ltd. is still being considered as a traditional manufacturer, the need for the

transformation and upgrading of the production chain has driven the company to actively develop its innovation ability and modernise itself through the implemented of formalised sustainability management systems and the circular economy development model.

#### 7.2.4 SSCM Leader (Electronics Ltd.)

Electronics Ltd. is considered as a sustainability leader given its holistic conception of sustainability that integrates social, environmental and economic aspects into the lines of business and a strong focus on supply chain sustainability initiatives. The high-minded sustainability commitments of the company are reflected in the strong and highly supportive top management as well as the wide range of sustainability programmes developed and implemented by the company, including an integrated sustainability governance system that supports sustainability development and monitors corporate performance throughout the company's business.

Electronics Ltd. has a prominent level of innovation and a sophisticated corporate sustainability management. Internally, the company has shown a high level of commitment to both environmental and social sustainability. Green manufacturing practices have been widely adopted in the company's operations. Externally, Electronics Ltd. takes sustainability as a strategic priority and have focused on specific actions, which are needed to take in order to incorporate sustainability into supply chain decisions. The company sets targets and key performance indicators and monitors the social and environmental performance of its suppliers.

Electronics Ltd.'s sustainability leadership can be explained by considering two important contingency factors – industry and company size. As a large high-tech enterprise, Electronics Ltd. is equipped with innovative abilities, large financial resources, managerial skills and know-how to implement integrated SSCM initiatives.

Industrial environment of Electronics Ltd. also calls for integrated sustainability approaches, which enables and drives the company's leadership attitude and facilitates the company's commitment towards sustainability principles. Electronics industry faces many environmental challenges, such as emissions control, hazardous waste management and recycling. The Chinese government has promulgated stringent rules and standards on the use of hazardous substances and electronic waste management. In order to comply with these government product-based regulations, not only has Electronics Ltd. obtained environmental certifications and applied life-cycle management to its product development functions within the company, but also requires that all of its suppliers obtain RoHS (Restriction of Hazardous Substances) and REACH (Registration, Evaluation, Authorization and restriction of Chemicals) certifications.

In the electronics industry, most of SSCM practices in the product chain rely on the effective supplier sustainability development. In the case of Electronics Ltd., the company has recognised that its suppliers contribute to most of the sustainability risks in the supply chain. Therefore, sustainability issues have been a key component in the supplier development initiatives. The company has implemented various practices like supplier's codes of conduct and assessment, to influence suppliers' behaviours and to ensure that suppliers follow sustainability regulations and requirements. In addition, the company has been working closely with suppliers to improve their capabilities in sustainability implementation, for example, encouraging suppliers to adopt new technologies and processes to reduce environmental impacts.

### 7.2.5 Discussion

#### 7.2.5.1 SSCM Practices (TBL)

Overall, we see that there are some similarities as well as differences in terms of the SSCM practices implemented in the seven case companies. In terms of the focus on TBL, all case companies have shown a strong focus on economic dimension of sustainability, this is not surprising given that it is fundamental to the continuing operation of companies (Güler and David, 2008; Baumgartner and Ebner, 2010). When it comes to non-economic aspects of sustainability, companies have shown a greater focus on environmental dimension of sustainability than on the social aspect. The implementation of environmental SSCM practices is generally more advanced than social SSCM practices. Environmental practices are more innovation-oriented (e.g. product and process eco-design) which tend to involve supply chain partners and capture the market positioning and changes; while social practices mainly focus on the internal corporate functional governance such as employee welfare and working conditions, which are rarely extended to the upstream and downstream supply chain. This can be explained by the current policy context which puts high priority on addressing environmental issues. Compared with the large number of policies focusing on environmental issues, social sustainability policies are generally less developed with respect to the implementation and assessment across all industries. This is because although China is now in the transformation process of the economic and industrial revolution, the country is still at a level of economic development that largely relies on manufacturing sectors which are often characterised by being polluting and accident-prone. As a result, the Chinese government has been actively pushing enterprises to implement environmental SSCM practices.

### 7.2.5.2 SSCM Practices (Internal vs External)

As shown in Table 7.1, the coverage of SSCM practices between companies vary significantly, ranging from basic internal corporate governance to advanced supply chain practices like sustainable purchasing and integrated life-cycle management. Based on the classification of SSCM practices in the literature (discussed in Chapter 3, Section 3.3.2), the study has identified the main internal and external SSCM practices implemented in the investigated companies. Internal SSCM practices include corporate sustainability governance, corporate citizenship and green manufacturing. External SSCM practices that involve the participation of upstream and downstream supply chain partners include sustainable procurement, collaboration, reverse logistics, and closed-loop supply chain. In line with the literature, internal SSCM practices in all the case companies have been adopted and implemented on a greater scale than external SSCM practices (Zhu et al., 2005; Zhu et al., 2012a). Many of the identified SSCM practices are within the organisational boundary and are directly initiated and associated with the focal firm's involvement.

It should also be noted that companies appear to adopt and implement SSCM practices in a specific sequence to most effectively achieve sustainability performance benefits. That is, focal firms have initially prioritised sustainable practices within the organisational boundary to ensure their compliance with regulations, and later voluntarily extend sustainable practices to the supply chain to realise more sustainability performance gains. In this sense, internal SSCM practices are of a precursory nature, facilitating the implementation of a broader range of SSCM practices that extend to the upstream and downstream supply chain. This finding is in align with Zhu et al. (2012a), which has suggested that the initial adoption of internal SSCM practices is necessary for the effective adoption of external SSCM practices and the overall supply chain sustainability performance requires the coordination of both internal and external dimensions of SSCM practices.

### 7.2.5.3 SSCM Practices, SSCM Profiles and Contingency Factors

Companies with different SSCM profiles demonstrate varied interests in SSCM practices. As shown in Table 7.1, SSCM beginners (Homeware Ltd. and Plastics Ltd.) and practitioner (Textile Ltd.) mainly focus on compulsory and basic sustainable practices like internal corporate governance and green manufacturing, while SSCM satisfiers (Metal Ltd., Chemical Ltd. and Paper Ltd.) and leader (Electronics Ltd.) are more likely to implement voluntary and advanced sustainable practices that extend to the upstream and downstream supply chain such as eco-collaboration and closed-loop supply chain. This can be explained through the lens of contingency perspective.



As was discussed in Chapter 3, there is a broad range of factors that influence the implementation of SSCM practices. In this research, companies' SSCM profiles and implementation of SSCM practices are greatly associated with factors such as financial capability, management skills, level of environmental risks and technological requirements. These factors can be collectively grouped under firm size and industry (Tachizawa and Wong, 2014), which are depicted by the interviewees to have exerted strong influence on their sustainability orientation and SSCM initiatives. The findings for the China case companies are consistent with previous western sustainability literature (e.g. Schneider et al. (2014), Tachizawa et al. (2012) and Holt and Ghobadian (2009)) which have identified firm size and industry as two generic, yet most significant contingency factors in sustainability implementation.

In terms of size, SSCM leader (Electronics Ltd.), satisfiers (Metal Ltd., Chemical Ltd. and Paper Ltd.) and practitioner (Textile Ltd.) are large and medium companies that have sufficient financial and human resources, management skills and experience in SSCM implementation. For example, these companies have specific functions or personnel that are dedicated to managing environmental and social issues in the company. Senior management teams in these companies also show good vision for long-term development and higher sustainability commitment. On the contrary, SSCM beginners (Homeware Ltd. and Plastics Ltd.) are micro-small enterprises that have insufficient financial capability and human resources, relatively weak managerial skills and poor knowledge regarding SSCM. They tend to focus more on costs and short-term profits and are satisfied with the implementation of basic SSCM practices to comply with mandatory rules and laws. This is not surprising given that the implementation of advanced SSCM practices necessitates sophisticated corporate structure, sustainability strategy and high managerial skills, which are often disadvantages for SSCM beginners and practitioners.

*'SSCM demands high managerial skills and financial support as the company is responsible for everything ranging from employee training and education, internal cross-functional communication, control of production process, to proper management of the flow and materials and information for integrating the entire supply chain. Currently in China, the leading corporations in SSCM are mostly large corporations like Huawei and Lenovo. Small companies are not capable of doing so due to the lack of resources. Or they simply don't want to do it as they don't see the long-term benefits but only the additional costs at the moment.'* – EPB Official (Q city)

The above observations of EPB official have been evidenced in the studied cases. For instance, in Homeware Ltd. and Plastics Ltd., when it comes to voluntary and advanced SSCM practices like green product R&D, owing to the lack of financial capability and economic returns, these companies have chosen not to invest in these practices so as to minimise the total production cost.

*'Cost is our biggest concern. Small firms like us can hardly survive in the market, the best we can do is to make sure that we don't break the environmental laws.'* – Owner (Plastics)

*'Finance difficulty has always been the biggest issue when it comes to environmental protection. We don't have enough fluid capital. Without money, you can't do anything. In other words, only when you make profits, then you have the motivation of thinking about other things like social responsibility.'* – Vice Manager (Plastics)

The sales manager at Homeware Ltd. also explained the reason why the company is not interested in advanced SSCM practices such as green product development:

*'The development of sustainable practices and producing environmentally friendly products will not guarantee the competitive advantage in the market as sustainable products are usually more expensive than normal products. When it comes to these practices, we need to consider the costs and profits.'* – Sales Manager (Homeware)

On the contrary, in the case of SSCM leader and satisfiers, they are more willing to engage in voluntary and advanced SSCM initiatives.

*'We see SSCM as a business strategy to sharpen competition and increase profit in the long term. For example, although the implementation of e-waste recycling costs a lot, we know that it can bring benefits in the long-term not just to our company but also to the entire supply chain, the industry and the society. As a large company, we have the ability and it's our responsibility to do so.'* – General Manager (Electronics)

In terms of industry, the implementation of SSCM practices is evidenced in the seven cases, which are from various industries each with distinctive characteristics such as the intensity of competition, labour-intensiveness, the level of environmental risk and whether they are operating in high or low-tech industrial environments. The research highlights that companies' implementation of SSCM practices are influenced by the level of technology development and the environmental risk of the industry. More specifically, compared with traditional low-tech industries, manufacturers operating in high-tech industries have shown higher implementation level of environmental supply chain practices due to industries' call for advanced SSCM practices such as green purchasing and collaboration with supply chain partners for eco-design. For example, as a response to the industry's call for product life cycle management (i.e. design, manufacturing, distribution, use and end-of-life management), Electronics Ltd. has implemented green design, green manufacturing and reverse logistics, with the term 'green' being defined across the product life cycle.

*'Due to the industrial characteristics of electronics, customers have very high standards for the materials used in the products... In electronics industry, the design phase determines all the other stages. You need to consider at the design stage how to avoid problems like use of toxic and environmentally hazardous substances in materials and non-recyclable wastes in the production process and products. The core of our SSCM strategy is to prevent and control the pollution at source and throughout the whole process instead of end-of-pipe management. Instead of investing heavily on dealing with wastes and pollutants in the end and struggling with recycling, we incorporate the concept of design-for-recycling in our eco-design right at the beginning, and the word 'prevention' is used to guide the entire product life cycle.'* – General Manager (Electronics)

Furthermore, companies in industries that are characterised by being polluting and accident-prone tend to implement environment SSCM practices at a higher level as they perceive strong environmental regulation pressures and face strict supervision from the government. For example, compared with environmental requirements imposed on other case companies, Chemical Ltd., was required to comply with more stringent pollutant discharge regulations by the local EPB to restrict its COD (chemical oxygen demand) to 15 mg/L, which is much lower than the national standard of 100 mg/L set by the central government.

The above analyses are in line with the findings of previous studies (Galeazzo and Klassen, 2015; Holt and Ghobadian, 2009; Wu et al., 2013), which identify industry specificity as a significant contingency factor in the implementation of SSCM practices.

### **7.3 Government Interventions (RQ2: How do government interventions influence the implementation of SSCM practices amongst Chinese private enterprises?)**

As was discussed in Chapter 2, the Chinese government as a regulator and a policy maker plays a key leadership role in the implementation of SSCM practices in China. Interviewees have identified the coercive pressure exerted by regulatory bodies as the prime trigger for them to undertake SSCM initiatives. The analysis of the investigated cases has confirmed six types of government intervention actions employed by the Chinese government to promote the implementation of SSCM practices. The following Table 7.3 provides an overview of these interventions and the details are discussed further in the following subsections based on King et al.'s (1994) institutional framework.

Table 7.3 Examples of Chinese Government Interventions in SSCM (Source: Author)

Intervention Actions	Examples of Implementation Measures	Examples of Policy/Regulations
<b>Regulation</b>	Laws	<ul style="list-style-type: none"> <li>• Government Procurement Law (2002)</li> <li>• Environmental Protection Law (revised) (2014)</li> <li>• Labour Law (revised) (2018)</li> </ul>
	Permits and standards	<ul style="list-style-type: none"> <li>• Pollution discharge permits</li> <li>• Emission Standards</li> </ul>
	Assessment and auditing	<ul style="list-style-type: none"> <li>• Environmental Impact Assessment</li> <li>• Compulsory Cleaner Production Audit</li> </ul>
	Information disclosure	<ul style="list-style-type: none"> <li>• ‘Measures for Announcing Major Violations of Labour Security’ (2017)</li> <li>• ‘Measures for the Credit Rating of Enterprises for Labour Protection Compliance’ (2017)</li> <li>• ‘Environmental Information Disclosure Measures (Trial)’ (2007)</li> <li>• ‘Guidance on Strengthening the Construction of Enterprise Environmental Credit System’ (2015)</li> </ul>
<b>Economic Incentive</b>	Fiscal subsidies	<ul style="list-style-type: none"> <li>• Providing various funding support and special grants</li> </ul>
	Preferential taxes and fees	<ul style="list-style-type: none"> <li>• Environmental Tax (‘Pollution discharge fees’ before 2018)</li> <li>• Tax deduction or exemption for green products R&amp;D</li> </ul>
	Green procurement	<ul style="list-style-type: none"> <li>• ‘Enterprise Green Procurement Guidelines (Trial)’ (2014)</li> <li>• ‘Implementation Suggestion of Environmental Labelling Products in Government Procurement’ (2006)</li> <li>• ‘Government Procurement List for Environmental Labelling Products’ (2008)</li> </ul>
	Emissions trading	<ul style="list-style-type: none"> <li>• ‘Carbon cap-and-trade system’ introduced by NDRC in China in 2016</li> </ul>
	Green finance	<ul style="list-style-type: none"> <li>• ‘Guidelines for Establishing the Green Financial System’ (2016)</li> </ul>
<b>Knowledge Building</b>	Sustainability research institutes	<ul style="list-style-type: none"> <li>• ‘Made in China 2025’ plan</li> </ul>
	Collaborative programmes	<ul style="list-style-type: none"> <li>• The joint experimental Green Supply Chain Programme by Shenzhen government and Huawei Technologies Co., Ltd. in 2014</li> </ul>
<b>Knowledge Deployment</b>	Educational programmes	<ul style="list-style-type: none"> <li>• ‘National Action Guideline for Environmental Propaganda and Education’ (1996)</li> </ul>
	Green supply chain demonstration centre	<ul style="list-style-type: none"> <li>• The Asia-Pacific Economic Cooperation (APEC) Cooperation Network on Green Supply Chain Demonstrating Centres in Tianjin, Shanghai, Dongguan and Shenzhen</li> </ul>
<b>Innovation Directive</b>	Establishing ecological industrial parks	<ul style="list-style-type: none"> <li>• Low-Carbon Industrial Park Program launched in 2013 as a joint project of the MIIT and the NDRC</li> </ul>
	Green technology and innovation	<ul style="list-style-type: none"> <li>• The Ministry of Science and Technology (MOST) 863 and 973 programs funding to green technology projects</li> </ul>

Chapter 7: Cross-case Analysis and Discussion

		<ul style="list-style-type: none"> <li>• 12<sup>th</sup> Five-Year Technology Plan (2012-2016) set a goal of \$300 billion in renewable energy investments</li> </ul>
<b>Mobilisation</b>	Government programmes and campaigns	<ul style="list-style-type: none"> <li>• The National Environmental Protection Exemplary City Campaign (Guojia huanjing baohu mofan chengshi 国家环境保护模范城市)</li> <li>• The National Civilized City Campaign (Quanguo wenming chengshi 全国文明城市)</li> </ul>
	State-ideologies, guidelines and propaganda	<ul style="list-style-type: none"> <li>• ‘Social Responsibility Guidance for Listed Companies’ released by Shenzhen Stock Exchange in 2006</li> <li>• ‘Guidance on Social Responsibility of Information and Communication Technology Industry’ (MIIT, 2016)</li> </ul>
	Awards and honours for enterprise sustainability efforts	<ul style="list-style-type: none"> <li>• ‘A Hundred Excellent Projects of State Environmental Protection’</li> <li>• ‘Annual Best Enterprise for Corporate Social Responsibility’</li> </ul>
	Naming and shaming violators	<ul style="list-style-type: none"> <li>• Publicising ‘serious’ employer violations in newspapers and magazines and on TV</li> </ul>
	Product green certifications	<ul style="list-style-type: none"> <li>• Environmental labelling program (1993)</li> </ul>

### 7.3.1 Regulation

Regulation directly legitimates the market and business environment in which enterprises operate by means of command and control. Government regulatory interventions consist of a set of ‘hard’ actions based on authority and coercion, e.g. enforced general rules, permits and standards, constraining options of organisations in line with larger social and institutional objectives (King et al., 1994). The Chinese government plays the role of developers of standards and legislation by providing environmental and social standards and regulatory frameworks in a fast-growing economic environment where environmental and social practices might be regarded as additional costs enhancing and detrimental to corporate and industrial competitiveness.

Regulation is essential for pushing all enterprises in various industries to adopt and implement sustainable practices and therefore enhance the overall sustainability performance of industrial chains. The central and local governments have enacted a broad range of environmental and labour laws, which set minimum standards for the respective markets and frame consistent expectations for companies’ social and environmental responsibilities. Apart from the general environmental and social legislation introduced in Chapter 2, the Chinese government has introduced laws that regulate specific sustainability issues in different sectors. For example, legislation that particularly targets the use of materials for production and the management of E-waste in the electronics sector, the utilisation of rare metal resources in rare metal sector and the organic cotton standards in the textile industry.

In China, regulations are conventionally designed to target mainly at end-product manufacturers. Although focal firms are required to comply with regulations themselves, in most cases, it is up to them to transfer regulations to their supply chains through purchasing activities (e.g. green purchasing requirements for suppliers) or collaboration (e.g. joint efforts in eco-design), as the same regulations might not be applicable or enforced in all players along the supply chain.

More recently, the Chinese government has enacted a series of regulations that aim to extend manufacturers’ environmental responsibility to upstream and downstream supply chains. For example, in the case of Electronics Ltd., the China RoHS regulation requires the company to control the use of hazardous substances by managing all suppliers across its supply chain; and the WEEE directives forces the company to improve its overall supply chain sustainability performance by extending environment management efforts to include suppliers for eco-design and customers for proper treatment of end-of-life products (See Chapter 6, Section 6.2.3.1).

*'All components and raw materials we purchase must be RoHS certified products. We require all our suppliers to sign a Green Product Warranty, promising that the products they provide to us meet the environmental requirements specified in our order. Environmental standard statement and environmentally friendly symbol must be attached on every single product package. When we look for new suppliers, the first condition is that they need to provide certified effective quality assessment report and environmental assessment report, which valid for at least one year. For old suppliers, they will have to make sure the stability and consistency of their products. If they change any materials or their production process, they will have to notify us in advance, and provide new reports certified by 3<sup>rd</sup> parties. Only with our permit, they can start using the new materials/process...If something goes wrong, suppliers must take the responsibility. Our suppliers then will have to have the same requirements to their lower tier suppliers. Everything starts from the source. Problems can happen on any part of the chain and will be reflected in the final products. It's a common approach in our industry to share risks and responsibilities among all tiers.'* – General Manager (Electronics)

*'I think it's very important for government to launch more specific regulations, targeting not only the end products, but also different tiers along the supply chain. For example, in many cases, government regulations only apply to a restricted number of end products –by which a firm can claim that it meets the standards of sustainability throughout the life cycle of the products. However, these product-based environmental regulations are less relevant in the upstream of the supply chain because they are not always enforced in all suppliers. So, the problems here is how to transfer these regulations to the upstream suppliers.'* – Production Manager (Chemical)

All case companies confirm that they have experienced tightened regulations and supervisions on their environmental and social behaviours. Particularly, environmental regulation in China is still largely based on the conventional end-of-pipe approach, which may result in investment in pollution treatment technologies and facilities rather than the reduction of pollutant sources. Currently, in compliance with environmental laws (e.g. mandating minimum levels of discharge standards), most Chinese enterprises only need to deal with waste and pollutants at the end of the production process. In this end-of-pipe treatment method, companies can neither gain any economic benefits nor added value for their products. As a result, companies like Homeware Ltd. and Plastics Ltd. implement environmental practices only because of the mandatory government requirements rather than actively fulfilling their corporate environmental responsibility, which often leads to the lack of initiatives to improve environmental performance.

In recent years, environmental regulation in China has been gradually shifting from the end-of-pipe treatment to pollution prevention that involves entire industrial chains. For example, the promotion

of the Cleaner Production Law is one of these new policy initiatives that aim to reduce pollution from the source and drive fundamental process and product changes in supply chains. However, due to the lack of managerial knowledge of environmental problems and the capabilities to address technological changes, the compliance with these new environmental legislations has become a big challenge for many Chinese private enterprises. For example, among the seven case companies, only two firms (Chemical Ltd. and Paper Ltd.) have implemented cleaner production to prevent pollution from sources.

*'Government enforcement is very important. For example, cleaner production, not many firms will voluntarily implement it as it costs a lot. For those heavy polluting industries and enterprises, it's very important that government made it mandatory for them.'* – General Manager (Electronics)

### 7.3.2 Economic Incentive

Economic incentive uses markets, price, and other economic variables to provide incentives for enterprises to reduce or eliminate negative impacts on the environment and society (Gupta and Palsule-Desai, 2011). Therefore, economic incentive policies are designed to directly address the financial considerations of enterprises including investment, cost and profitability (King et al., 1994). The implementation of SSCM practices such as eco-design and reverse logistics is usually associated with heavy initial financial investment. For example, in the case of Electronics Ltd., the treatment of e-waste requires special equipment and infrastructure costs. The company also acknowledges that government economic support and preferential tax policies are crucial to the help it offset the high investment costs of reverse logistics implementation, for example, the expenses of developing recycling technologies.

Government economic incentives such as subsidy, tariffs and tax incentives have been favourable tools employed by the Chinese government to affect enterprises' implementation of SSCM practices. According to the local EPB official, environmental fees collected by local government authorities has been used to set up the local environmental protection fund or special foundations that are available as grants and low-interest loans to subsidise industrial pollution control projects at companies that have paid fees. Local enterprises can borrow or be granted up to 80 percent of the fees they paid and use them for environmental management like green projects and training.

*'Government subsidy is particularly important in the context of Chinese economy. Companies that introduce advanced pollution prevention technologies into the processes might gain government support such as priorities in mortgages, tariff and tax reduction, if they indicate the benefits the practice can bring to the local environment.'* – EPB Official (Q city)



Most case companies have benefited from government economic incentives. For example, funding and eco-taxation play an important role in encouraging Chemical Ltd. and its partners to embark on developing and using environmentally friendly materials in the industry chain. Textile Ltd. admits that government subsidy is the main reason why the company is involved in the sustainable procurement of organic cotton. Substantial economic incentives have been provided to support the implementation of plantation-pulp-paper integration projects, which have greatly motivated Paper Ltd. to pursue the green-cycle mode of development in its supply chain.

Although subsidy is an important policy tool employed by the government to support firms' SSCM initiatives, there is also policy bias as not all firms are eligible for applying for these subsidies. As government recognised high-tech firms, Electronics Ltd., Chemical Ltd. and Metal Ltd. have enjoyed enormous government fiscal support.

*'In 2010, our company was recognised as a private technology enterprise by the Science and Technology Department of Guangdong Province, and as a high-tech enterprise in 2011. These are big achievements and they are not only good for the reputation, but also as a high-tech enterprise, you can get benefits such as tax deduction for R&D expenditures and open-bid innovation projects... the company enjoyed a 10% tax discount for three years after obtaining the recognition of high-tech enterprises in 2011, that is, pay the income tax at a rate of 15%.'* – Sustainability Development Director (Chemical)

On the contrary, micro-small enterprises in traditional industries like Plastics Ltd. and Homeware Ltd. claimed that they have received little fiscal support from the government.

*'Government has introduced a range of fiscal, tax, price and government procurement to encourage and support us. For example, subsidies for cleaner production, clean energy, and energy-efficient production facilities. There is also subsidy for WEEE recycling from the local government. However, not all companies can enjoy the same preferential treatment, and in many cases, government incentives can't fully offset the additional operational costs that arise from complying with the new environmental protection law.'* – General Manager (Electronics)

### 7.3.3 Knowledge Building

Sustainability knowledge serves as a foundation for sustainable development (Shin et al., 2008), however, for decades, there has been very limited public knowledge of sustainability and the Chinese society is not sufficiently cognisant of the long-term environmental and social impact of economic activities in China. Particularly, industries often lack the necessary knowledge and skills to move forward in the development and implementation of SSCM practices. For instance, the lack of

knowledge on textile recycling technologies has become one of the main barriers to the implementation of reverse logistics in the textile supply chain in China.

Knowledge building is undertaken by the Chinese government to provide the base of scientific and technical knowledge required to develop and implement innovative practices for sustainability. In China the central and local governments have supported sustainable development research by establishing several institutes for the purpose of facilitating R&D of green and innovative products. The government supports environmental research activities and invests in research around sustainability development. For example, under the 'Made in China 2025' plan, the Chinese government has been pushing knowledge building in green technologies in high-tech and strategic industries such as electronics and new materials. To keep in line with its macro-development policy objectives of increasing energy efficiency, energy conservation and emission reduction, those industries have been fostered and heavily subsidised by the government. The government role in sustainability knowledge building has also been supplemented by support from other institutions like higher education, NGOs and industrial associations which have collaborated with local industries to establish research centres to support local businesses with their sustainability initiatives.

*'Government has been very supportive in providing technological inputs into the rare material recycling research and the development of new materials for green energy. Our company is the state certified national enterprise technology centre and post-doctoral R&D centre. We have established collaboration with the China National Rare Metals Engineering Research Centre and the national certificated materials characterisation laboratory (CNAS LAB) for the R&D of new technology and products to support the development of renewable energy industry.'* – Production Manager (Metal)

### 7.3.4 Knowledge Deployment

Knowledge deployment aims to disseminate new knowledge to individuals and organisations by means of education (King et al., 1994). In China, the general provision of sustainability knowledge to the population is largely carried out by government entities, which have been actively producing more scientific knowledge of environmental management.

In light of the visible growing public interests on environmental and social issues as well as the ineffective sustainability policy implementation, Chinese authorities have been increasingly building sustainability knowledge in the society by providing impressive amount of data, information and supportive opinion on specific sustainability issues. For instance, the Environmental Protection Law (Article 11) stipulates that:

*'Competent departments of environmental protection administration under the State Council and governments of provinces, autonomous regions and municipalities directly under the central government shall regularly issue bulletins on environmental situations.'* – Environment Protection Law (2015)

Similar provisions appear in China's sectoral laws, such as the Air Pollution Prevention and Control Law and the Water Pollution Prevention and Control Law. In line with these requirements, MEE and local EPBs have provided environmental policy information in a variety of forms, such as the State of the Environment Reports, bulletins, brochures, and news releases.

*'The local government helps enterprises to forge a strong support network with environmental officials and regional planners through training, sharing corporate environmental, health and safety (EHS) practices, and community education. For example, the local government has provided technical expertise to help enterprises that are willing to introduce advanced pollution prevention technology into operations.'* – EPB Official (Q city)

The central and local governments have also been actively expanding their communication channels to assist the sustainability knowledge building and deployment in public, for example, by holding forums and conferences that involve the participation of enterprises. New media based on the Internet such as government official Weibo (microblog) not only provides an effective way of disseminating sustainability knowledge but also gives voices to people in the context of rising environmental concern from networked citizens. More than ever before, sustainability knowledge can be shared among the public with ease – and sustainability-related issues have become a key area of concern. Beyond the provision of sustainability knowledge to the public, sustainability development has become a main theme in school education in many cities in China. The local government has established research institutions in several areas of environmental management in collaboration with environmental protection corporations and higher education, for example, the Guangzhou Research Institute of Environmental Protection and the Institute of Energy Research under the NDRC.

*'Efforts are also made by the local government and associations to building sustainability knowledge among people and enterprises through media publicity. In the pursuit of "National Civilised City" (WenMing Chenshi), the local government has been promoting the concept of green, sustainability, and social harmony, for example, in industries, schools and other public areas.'* – General Manager (Electronics)

### 7.3.5 Innovation Directive

The Chinese government has provided a series of top-down directives for stimulating sustainability innovation and diffusion in industries. Particularly, environmental SSCM practices such as cleaner production, life cycle assessments, and eco-design are innovative in nature and they have been increasingly promoted by the government. These sustainable practices tend to go beyond the individual firm and include the whole supply chain. Companies are required or encouraged to develop and implement these practices to alter their structures or operations in ways that affect their sustainability performance. For instance, both Chemical Ltd. and Paper Ltd. have been required to use clean production technologies in their processes wherever they can be applied, which to a large extent drives green innovations in these companies and their supply chains.

Innovation directives provide incentives for industrial transformation towards green and advanced product chain. These policies are particularly effective for technology-oriented industries like chemical which has invested a lot of resources in R&D activities presumed to lead to green innovation as many of its downstream industries have been required by the government to use new environmentally friendly materials.

*'One of the most important dimensions of our sustainability strategy is innovation – focusing on technology and new product research and development. Our company is recognised as one of the first batch of key innovation-oriented fast-growing private enterprises by the Guangdong Government. Government promotes green innovations by giving priorities to innovative products in the government procurement. As new materials, our products are listed by the local government as the preferred green plastic building materials in industries. This greatly enhances our enthusiasm of developing green and innovative products that will support the green transformation of downstream strategic emerging industries like new materials.'* – Production Manager (Chemical)

*'The government encourages technology upgrading and product innovation to control the environmental impacts of the paper product life cycle from paper manufacturing, printing, usage and other processes. Government supports us to work with research institutes like universities and Chinese Academy of Sciences, to seek cutting-edge papermaking technologies. Last year, the research cooperation of "Application of Graphene in Papermaking" successfully acquired a CNY 3 million project grant of technologically innovative R&D special funds from the local government.'* – Chief Administration Officer (Paper)

### 7.3.6 Mobilisation

Mobilisation actions are employed by the Chinese government to encourage organisations and the general public to think in a particular way with respect to sustainability. The main institutional instruments employed by the Chinese government for sustainability mobilisation are promotional awareness campaigns and building sustainability models.

In order to make the sustainability concept more understandable and accessible to the general public, the local government has created a good mobilisation environment via newspapers, radio, TV and internet, as well as publicity campaigns in the form of feature programs, publicity week on sustainable development, and expert interpretation. Electronics Ltd. reported:

*'Government efforts in raising public awareness on environmental protection are very important for the implementation of sustainable supply chain. This not only helps us to educate our own employees better, but also make it easier to manage our suppliers as they would understand it better the importance of complying with the environment requirements.'* —Sales Manager (Electronics)

The Chinese government has been increasingly using advocacy and education to promote green consumption in the society. The 16<sup>th</sup> Article of the Clean Production Promotion Law (2002) stipulates that all levels of government should encourage the public to purchase and to use resource conservative products (Qiao and Wang, 2011). Green events are held in major cities, which are built around trade expositions, seminars, publications, and opportunities to provide the interested public and enterprises with information and hands-on experience of green technologies and products.

Encouragingly, with the increasing participation of the public including non-government organisations (NGOs), enterprises and networked citizens who have recognised the need for more open and responsive approaches to sustainability, green campaign is gaining momentum in China. These campaigns have built on the efforts of citizen-science like those advanced by the environmental NGO – the Institute of Public & Environmental Affairs (IPE) which dedicated itself to the collection and analysis of publicly available corporate environmental data with the aim of expanding environmental information disclosure and promoting widespread public participation in environmental governance.

The Chinese government has been trying to harness these emerging forms of grassroots public engagement and open information, particularly in the new media era, to help address its environmental woes. There has been a stronger government commitment to transparency and the full public participation in environmental policy decision-making, which opens channels for citizens to express their own visions of an 'Ecological Civilization'. For a long time, the MEE has operated a hotline for citizens to phone in tip-offs about pollution incidents and environmental infractions. Now China's

environment authorities have begun to use microblog accounts at many different levels – in many cases to complement this approach, by engaging in two-way communication and listening to public opinion.

In addition, there has been a flourishing initiative by the Chinese government to produce duplicable and scalable models for nationwide sustainable development. For example, promoting successful models, building incubator bases, launching pilot zones and experimental projects in environmental protection fields. The ‘National Environmental Model City’ programme is one of such attempts of the local government to mainstream sustainable practices and encourage the participation of local enterprises and individuals.

*‘Government has been trying to improve public awareness of sustainability. On the government official Weibo or WeChat, you will find plenty published articles about topics on Green, Environmental protection and Social harmony. Especially this year, the local government is fighting for the honourable title of the National Civilized City, we receive brochures quite frequently telling us what we can do for the government NCC project. I think it’s very important that we are well informed of the government sustainability initiatives, so that we can educate ourselves a little more, and push to not just be mass production but one step higher quality – part of that is being more sustainable.’ – HR Manager (Textile)*

### 7.3.7 Discussion

The Chinese government has employed a mix of command-and-control regulation, market-based mechanisms and other persuasion and encouragement measures to advance the implementation of SSCM practices in Chinese private enterprises. Based on King’s institutional framework, they are classified as either regulatory or influential interventions – with the former referring to regulation and the latter including economic incentive, knowledge building, knowledge deployment, innovation directive and mobilisation.

Table 7.1 presents a summary of SSCM practices implemented and the government intervention actions applied to each case. Based on these findings, the effectiveness of the six types of government intervention actions are further analysed by considering the key characteristics of each company (i.e. firm size and industrial sector). The following Table 7.4 presents an overview of findings from this analysis.

Table 7.4 Overview of Governmental Intervention Actions in Case Companies (Source: Author)

	Characteristics of Case Companies			Effectiveness of Intervention Actions					
	Size	Industry	SSCM Profiles	Regulation	Economic Incentive	Knowledge Building	Knowledge Deployment	Innovation Directive	Mobilisation
<b>1 Electronics</b>	Large	High-tech	Leader	Strong	Strong	Strong	Moderate	Strong	Moderate
<b>2 Metal</b>	Large	High-tech	Satisfier	Strong	Strong	Moderate	Weak	Strong	Weak
<b>3 Textile</b>	Large	Low-tech	Practitioner	Strong	Moderate	No evidence	No evidence	No evidence	Weak
<b>4 Chemical</b>	Medium	High-tech	Satisfier	Strong	Strong	Moderate	Weak	Moderate	Moderate
<b>5 Paper</b>	Medium	Moderate	Satisfier	Strong	Moderate	Weak	Moderate	Weak	Strong
<b>6 Homeware</b>	Small	Low-tech	Beginner	Strong	Weak	No evidence	Weak	No evidence	No evidence
<b>7 Plastics</b>	Micro	Low-tech	Beginner	Strong	No evidence	No evidence	No evidence	No evidence	No evidence

**No evidence** – No explicit evidence; **Weak** – Little explicit evidence about behaviour change; **Moderate** - Some explicit evidence about behaviour change; **Strong** - Direct evidence about behaviour change (Note: Classification category definitions based on Xu et al. (2016))

As shown in Table 7.4, considering the span of coverage, regulatory intervention (e.g. legislation and standards) is clearly central to driving the implementation of SSCM practices among all case companies despite the firm size and industrial sector. Compared with the strong influence of regulatory intervention, influential intervention actions including economic incentive, knowledge building, knowledge deployment, innovation directive and mobilisation seem to have less power, which is not surprising given that SSCM is a relatively new endeavour in China and the related influential policies have been low-profile (Zhu et al., 2018). Among these influential interventions, economic incentive is particularly powerful in driving advanced SSCM practices such as green purchasing and eco-design.

By comparing the seven case companies, it is identified that the ways in which they perceive and act upon different types government interventions are shaped by the specific circumstances in which they find themselves. Particularly, firm size and industrial environment are greatly associated with the effectiveness of government interventions. This finding is similar to the findings of several empirical SSCM studies such as Holt and Ghobadian (2009) and Tate et al. (2010).

The effectiveness of regulatory and influential interventions and the moderating role of contingency factors on the effectiveness are further discussed in subsection 7.3.7.1. and subsection 7.3.7.2 respectively.

### 7.3.7.1 Effectiveness of Government Interventions

In the current institutional context of China, central regulation by means of coercion remains the main intervention action employed by the Chinese government to engage private enterprises in SSCM initiatives. At least for the time being, command-and-control regulation appeared to be the most effective approach for the Chinese government since the stringent regulation and enforcement has helped to gain a higher degree of environmental performance in China (Wang, 2010; Wang and Chang, 2014). However, as evidenced in this study, regulation is only one of many ways in which government can help tackle sustainability issues in organisations and industries, and in many cases, it is not the most effective or important due to its limitations.

First, regulation is unlikely to elicit more proactive SSCM practices as regulatory compliance can become an end in itself rather than lead to fundamental changes in companies' sustainability attitudes. This is especially the case for SSCM beginners and practitioners which are mainly driven by the compliance to government regulations and standards and have low motivation to be politically active in the implementation of SSCM practices. For example, both Homeware Ltd. and Plastics Ltd. as SSCM



beginners are only satisfied with the compliance with the minimum environmental and social regulations rather than adopt proactive sustainable practices and actively seek for sustainability performance improvement. As it was explained:

*'The penalty for non-compliance so far is still a main driving force to the compulsory adoption of sustainable practices among Chinese private enterprises. Companies are afraid of heavy penalties, for example, they can be forced to shut down due to their irresponsible behaviours to the environment. However, most firms are also concerned that enhanced environmental and social standards can lead to increased production costs. The high costs associated with the implementation of sustainability standards can lead firms to regard the standards as extortion, which do not fit their economic reality, especially those still in the early stage of development and lack resources to devote to proactive environmental and social responsibility initiatives. As a result, they use deceptive strategies, such as double bookkeeping, to maintain economic interests.'* – EPB Official (Q city)

Second, regulation might not be very effective in motivating the adoption of some specific SSCM practices. Traditionally, regulation has been mainly designed to address sustainability issues at corporate level, and therefore it can directly and strongly shape focal firms' own attitudes towards sustainability and drive SSCM practices adopted within the company. However, they tend to have relatively weak and indirect influence on sustainable practices implemented at supply chain level. It is worth to note that regulation might not be the triggering factor for advanced or external SSCM practices because companies that adopt these sophisticated practices are usually proactive in complying with regulations even before they are forced to do so. These companies are usually sustainability satisfiers and leaders that already go significantly beyond legislative compliance to incorporate a wide scope of sustainability initiatives with more involvement of supply chain partners. In addition to regulatory compliance, they tend to show more active responses to government influential interventions by actively seeking for and taking advantage of beneficial government policies to facilitate their SSCM implementation. In this case, it is suggested that other influential policy instruments like economic incentives and innovation directives might be more effective in advancing the implementation of SSCM practices among these sustainability satisfiers and leaders. For instance, in the case of Chemical Ltd., the company as a sustainability satisfier not only ensures its own compliance of environmental regulations within the company, but also extends it to its upstream supply chain in response to government's call for enterprise green procurement, as reported:

*'While selecting suppliers, environmental credit rating result assessed and published by the local EPB is a very important factor for qualification.'* – Production Manager (Chemical)

Third, regulation in China has generally reflected a strong, confrontational and standard-forcing situation, whereas the hierarchical government administrative structure demonstrates the need for a less generic and more context-specific approach to achieve sustainable development goals. As was discussed in Chapter 2, the Chinese government is characterised by hierarchical bureaucracy, that is, the central government sets the targets and standards while local governments can be flexible on means of achieving them. For example, the centre has announced a number of binding environmental targets which have been written into local cadres' responsibility contracts and become important criteria in cadre promotion decisions. The intent of the allocation of environmental targets was to incentivize officials at each layer of government administration to fulfil the central's environmental mandates. Indeed, the target-based approach has delivered on desirable policy outcomes. However, in response to top-down targets, the local government's implementation and enforcement of regulations is often characterised by a 'one size fits all' approach. For instance, in order to cope with the top-down environmental inspections, the local government has conducted extreme enforcement of regulations. According to the local EPB official, in the previous environmental inspections, despite industry and severity of the problems, they had to shut down all production and businesses that breach their standards. This 'all shut down' method seems to be the strict enforcement of regulations, but in fact, it reflects the lack of regular inspections that has led the accumulation of environmental issues over the long term. To facilitate better policy implementation, local governments should seek for differentiated and tailored policies by adopting a concerted and multi-faceted approach to address sustainability issues in the local area.

To sum up, government institutional influence is a ubiquitous and essential component of any effort to understand and explain the implementation of SSCM practices that cross organisational and firm boundaries. Generally, there are two types of institutional interventions – regulatory intervention that forces the conformity with the rules and standards, and influential interventions which can affect the attitudes and behaviours of those governed without forcing them (Henriksen and Andersen, 2004).

In China, regulation remains an essential instrument of institutional intervention which is absolutely required for engaging Chinese private enterprises in SSCM implementation, for example, by forcing companies to adopt minimum environmental standards (e.g. emission standards and pollution discharge permits) and mandating levels of environmental taxes. However, regulatory intervention has only been partly successful in driving SSCM among Chinese private enterprises due to the above-mentioned limitations. Frustration has been voiced by both the regulated industries and government authorities about the effectiveness of traditional regulatory approach. The Chinese government has

realised that innovative policy initiatives need to be developed to drive companies' spontaneous sustainable behaviours beyond the basic compliance with sustainability regulation. It is increasingly being recognised that sustainability issues in supply chains can better be managed through influential interventions such as market-based approaches that enable flexible usage of government power and resources to address targeted companies and industries. As a complement to the traditional regulatory channel, these influential intervention actions are 'soft' (i.e. voluntary and flexible) and innovative in nature. Excellent examples of such influential interventions include green public procurement, green financing, extended producer responsibility and subsidised certain technologies and products (e.g. new energy and green materials). However, influential interventions and related policies are still under-developed and utilised by the Chinese government as they are not always considered essential by the government authorities.

It is worth noting that there is a certain level of interaction and integration between regulatory and influential intervention actions – both can be applied jointly in pursuit of a common goal of SSCM. As evidenced in the cases, some SSCM initiatives are a collective effect of different interventions. For example, cleaner production is mandatory for some enterprises under legislation (e.g. the Cleaner Production Promotion Law) but the local government has also promoted the implementation through knowledge deployment which has greatly improved companies' managerial knowledge (e.g. providing talent and technological input to enterprises) as well as subsidies that support the R&D activities and technical upgrading. This is similar to the proposition of King et al. (1994) that all six types of institutional interventions can be used to stimulate innovation on their own, but they might be more effective in conjunction with each other. Therefore, government authorities should not only pursue a rigid regulative enforcement strategy, instead, a mix of regulatory and influential interventions might better help enterprise achieve desired sustainability performance.

### 7.3.7.2 Government Interventions, SSCM Profiles and Contingency Factors

As was discussed in Section 7.2, companies' attitudes and responses to government regulatory intervention are associated with their SSCM profiles. In general, SSCM beginners and practitioners are driven mainly by the compliance with government regulations. On the other hand, SSCM satisfiers and leaders tend to go beyond the legal compliance and they are willing to implement more advanced SSCM practices of their own accord. This means that the effectiveness of government interventions actions can vary in companies with different SSCM profiles due to the moderating role of contingency factors including firm size and industry.

The results showed that the investigated companies have presented varied responses towards government interventions due to the industrial influence, capability and will to act. As was shown in Table 7.4, the same intervention action can be more effective for some companies than others depending on the size and industry. More specifically, micro-small and low-tech companies (i.e. SSCM beginners and practitioners) are satisfied with the compliance with the minimum sustainability standards and lack motivations to be persuaded by influential interventions to adopt more proactive SSCM practices. In contrast, medium-large enterprises in high-tech industries (i.e. SSCM satisfiers and leaders) are more propelled by the influential intervention policies and have emerged as key players in the SSCM movement in China.

In addition to firm size and industry, it was found that the relationship between enterprises and the government also plays a significant role in determining firms' responses to government interventions. That is, companies that establish cooperative relationships with the government are more likely to respond to influential interventions as a positive relationship can help companies gain access to and benefit from government policies such as fiscal support and innovation directives. The influences of these three contingency factors are illustrated below.

### 1) Size

There are key differences between micro-small enterprises and medium-large enterprises in their responses to government interventions and the level of legal compliance. Legislation remains the key driver to engage micro-small enterprises in SSCM initiatives, which is same as the finding of other authors like Zhang et al. (2009). The findings also indicate that smaller firms are much less responsive to government influential policies. The reasons for these are threefold.

First, small firms and large firms have not been affected evenly by government regulations and policies. For years, government policies have been biased towards large firms, for instance, when it comes to green investment, bank loans, and subsidies. This was confirmed by the local government authority:

*'Conventional regulatory and compliance assurance approaches are mainly developed for large enterprises, which is also the case of the recent policies that promote voluntary environmental practices, e.g. green funds and subsidies. This limits the effectiveness of the policy implementation for smaller enterprises. Indeed, the local government has been trying to pay more attention and provide more appropriate and balanced support but there are too many of SMEs and it's difficult to cover all.'*

– EPB Official (Q city)

*'Government doesn't have enough support for small private enterprises like us. Government funds are mostly for big enterprises. We haven't heard anything that we can apply for. Even if there is something, the applications process is too troublesome. Some subsidies might have low threshold, but it's always a tedious process with all kinds of obstacles. Wait half a year or a year until you get the subsidy, then you realise that the best timing for your business has gone. In addition, the money you get from the subsidy program might be even less than what you spend in the application process. Application, review, disbursement of funds, invoices, auditing, all these required additional costs. It's very likely that when you get the funds, you can't make ends meet. It's not worth it.'* – Owner (Plastics)

Second, facing the recently strengthened environmental regulations and supervisions, micro-small firms are more pressured to focus on the pursuit of legal compliance rather than actively responding to other influential policies.

*'Ensuring micro-small enterprises' compliance with environmental regulations has always been a substantial challenge, but we recently enhanced supervision on small firms.'* – EPB Official (Q city)

*'In the backdrop of the central government's promotion of de-capacity and supply-side reform, tens of thousands of factories have been forced to shut down, most of them are small firms in manufacturing industries. We are the targets. Factories are inspected by environmental bureau officials much more frequently. As a result of these inspections, factories have been hit with huge fines and criminal offenses due to emissions. In this difficult time, small firms are already struggling to comply with the legislation, let alone caring about the other non-compulsory policies'* – Vice Manager (Plastics)

Third, as was discussed in Section 7.2.5.3, some disadvantages, such as relatively weak managerial skills, lack of sustainability knowledge and resources, and insufficient financial capability, have been observed in micro-small firms (Homeware Ltd. and Plastics Ltd.), which to some extent help explain why these companies are only satisfied with regulatory compliance and their inaction towards government influential interventions. For example, the lack of human resources and communication with the government has been a big obstacle for micro-small companies like Plastics Ltd. to react to government influential policies such as subsidy. On the other hand, medium-large companies like Chemical Ltd. have the manpower and dedicated staff which can effectively communicate with government authorities regarding sustainability policies and regulations. This is in line with the proposal of Zhu et al. (2018) that larger firms have higher awareness of regulations and policies due to their capabilities and resources that allow them to acquire knowledge and information from the government.

*'Government policies are made for large firms. So far, we haven't heard anything (preferential policies) applicable to us. Even if there is anything that we can apply, we don't have anyone that can do it in the company.'* – Vice Manager (Plastics)

## 2) Industry

Companies in different industries have shown varied responses towards regulatory intervention. Although traditional command-and-control regulation exerts strong pressures among all industries, there are differences in terms of scope and strength in different industries due to industry-specific regulations that target at specific sustainability issues in each sector. This means that companies in some certain sectors can face more stringent regulation and supervision than others and therefore they need to implement more proactive SSCM practices in response to these industry-specific regulations. For example, in the case of Electronics Ltd., apart from general environmental regulations, the company must comply with special legislations that address environmental issues in the electronics supply chain, e.g. regulation on management of the recycling and disposal of e-waste. Metal Ltd. also faces strict regulations that are enacted by the Chinese government to control the utilisation of rare metal resources in the industry.

When it comes to government influential interventions, companies in high-tech industries have shown more positive responses compared with traditional low-tech industries.

*'Companies in high-tech industries are more active in the green product design and green supply chain processes. It's easier to communicate with them regarding government policies like green purchasing and they are more responsive.'* – EPB Official (Q city)

The Chinese government has provided massive support to high-tech sectors to facilitate their implementation of SSCM practices. As was discussed in Chapter 2, the Chinese government has initiated a series of policies such as the '863 Program' and '973 Program' that promote green product R&D and technological innovations in high-tech industries such as new materials, next-generation information technology and electronics.

*'The government does pay more attention to some key sectors like new materials and electronics. The reasons for targeting high-tech relate directly to their extraordinary contributions to both economic and environmental performance – they are more likely to lead to green innovations, less dependent on scarce natural resources and generate less environmental impacts.'* – EPB Official (Q city)

For instance, the direct fiscal support provided by the local government in many cases selects technologies or sectors to be targeted. Both Electronics Ltd. and Chemical Ltd. have been singled out by the government as 'target' industries and therefore are eligible to enjoy benefits such as state-owned banks' loans and extend credit. These companies in turn are more willing to seek for these policies to facilitate their SSCM implementation.

Government influential intervention policies are largely innovation-oriented and set a relatively high bar for companies' technology and innovation capability. In Chemical Ltd. and Metal Ltd., the huge benefits gained from the preferential policies (e.g. subsidies, collaborative R&D programmes and government procurement priority) are largely attributed to the innovative and high-tech nature of their products.

### 3) *Government-corporation Relationship*

Government-corporation relationship ('Zhengqi Guanxi') plays an important role in the effective implementation of government regulatory and influential interventions. Chemical Ltd. has established good relationships with important government authorities like local EPB, which leads to a high level of sustainability awareness and better understanding of government policies. Both Chemical Ltd. and Paper Ltd. have confirmed that in order to maintain quality relations with the government, they feel pressured to adopt some SSCM practices although they are not mandatory according to the regulations. This finding is in line with Huang and Zhao (2016) which find that private entrepreneurs have political connections tend to take more society-oriented and customer-oriented responsibilities (e.g. donations) than the ones without political connections.

As was discussed in Chapter 2, in China, the central government sets the basic principles and general regulatory framework, while local governments are major promoters with high flexibility in directing local policies. The central gives power to local governments and allows them to use its own means and resources available in the locality to deal with the social and environmental issues or incidents. Therefore, the local government plays an important role in driving the implementation of SSCM practices in local industries. Apart from adopting SSCM practices for purely legislative motives, Chinese private enterprises are driven by the need of building good relationships with the local government as it helps private entrepreneurs gain trust and reputation and enhance the political status. This was emphasised in all the cases, for example:

*'Building good relationships is beneficial when dealing with government-enterprise affairs and make it easier to carry out business in the local social environment.'*—General Manager (Electronics)

Personal relationships with local government officials drive companies' responses to the government's call for the implementation of SSCM practices and contribute to the effectiveness of communication and satisfaction, as was the case of Chemical Ltd. – the owner meets local government officials and routinely maintains contact with government authorities. For instance, when the local government encouraged companies to fulfil their social responsibility, Chemical Ltd. proposed their corporate philanthropy activities (e.g. donation) to government officials, which not only helped government officials to gain political achievements but also the company gained trust in the relationship by satisfying the government. By exchanging benefits with the government, the company has established a 'win-win' relationship with government which has greatly facilitated the process of SSCM implementation and contributed to the effectiveness of SSCM policy interventions in the company.

*'We satisfy the government by coordinating with them and at the mean time they will promote us and help in our business. Whereas government officials gain a political advantage from sustainable practices, we need government policy to support us.'* – Planning Manager (Chemical)

Electronics Ltd. also gained enormous benefits by establishing social networks with local government officials, for example, obtaining knowledge, information and support from the government and getting more politically influential. The General Manager at Electronics Ltd. said that they would implement sustainable practices on issues deemed politically important by the Chinese government as the company tries to raise its standing by cultivating its relationship with the government. The interviewee also implied that their sustainability orientation needed to relate to government policies and current political issues.

*'Having a quality relationship with government is important, whether at an individual level or a corporate level, it will only do you good if you want to benefit from preferential policy. For example, government funds are to some extent allocated on the basis of political connections. It's important to maintain a good relationship with government by helping local government solve the employment issue. We will also donate when government asks us to do so. It provides opportunities and improves the access to bank loans and funding provided by the government.'* – General Manager (Electronics)

In the case of Paper Ltd., the company's social practices like charitable donations have earned political rewards and facilitated the political participation of the owner. As a member of the Communist Party of China as well as the head of a local business association, the relation to the local government has positively influenced the company's sustainability strategy. As it was revealed:



*'Gaining a political tie makes us in a much better position than other private enterprises when it comes to implementing SSCM practices according to the government's policies, as we are more informed on such matters which in turn can positively affect our sustainability approach. In the meantime, we are also subject to the pressures from other members in the institutions to adopt sustainability initiatives, for example, making charitable donations.'* – Chief of Administration (Paper)

## 7.4 Chapter Summary

Based on the findings of within-case analysis in the previous chapter, this chapter was designed to draw out patterns in the cases. King's institutional framework and contingency theory have been applied to enable theoretical triangulation and develop different perspectives of SSCM implementation in the policy context of China. The analysis of the seven cases contributed to the identification of four SSCM profiles and six types of government intervention actions. The rationales behind the companies' varied levels of SSCM implementation and responses to different types of institutional intervention actions are analysed through the lens of contingency theory.

The findings of the cross-case analysis provide insights about the how and why Chinese private enterprises implement SSCM practices under government regulation and policy intervention. Seven cases have shown different implementation levels of SSCM practices and responses to government interventions. All seven cases are strongly influenced by regulatory intervention, but they are generally less responsive to influential interventions.

Contingency analysis assists to explain the different SSCM implementation levels and the effectiveness of the two different types of government interventions. Firm size and industry are two common contingency factors mostly discussed in the SSCM literature, and it is confirmed by the cross-case analysis. It is surprising to identify the significance of government-corporate relationship in affecting companies' attitudes and responses towards government interventions. Relationship is arguably a critical factor for both the government and Chinese private companies to communicate with each other in relation to the effective implementation of government regulations and policies.

The next chapter will review and summarise the previous chapters and particularly focus on the generation of research contributions.

# Chapter 8

## Conclusions

### 8.1 Introduction

The fundamental goal of this thesis is to create and develop knowledge on SSCM by exploring the implementation of SSCM practices among Chinese private enterprises in the institutional context of government policy and regulatory interventions.

The FMA framework of Checkland and Holwell (1998) was used as a guide for the overall structure of this thesis. More specifically, the area of concern (A) was introduced in Chapter 1 and further explained in Chapter 2 and 3 where some key knowledge gaps were identified through structured reviews of relevant government regulations, policy as well as sustainability, SCM and SSCM literature. The framework of ideas (F) was depicted in Chapters 2, 3 and 4, followed by the methodology (M) in Chapter 5. Within-case analysis and cross-case analysis were conducted in Chapters 6 and 7 respectively, in order to reflect the research findings and the knowledge gained in the study.

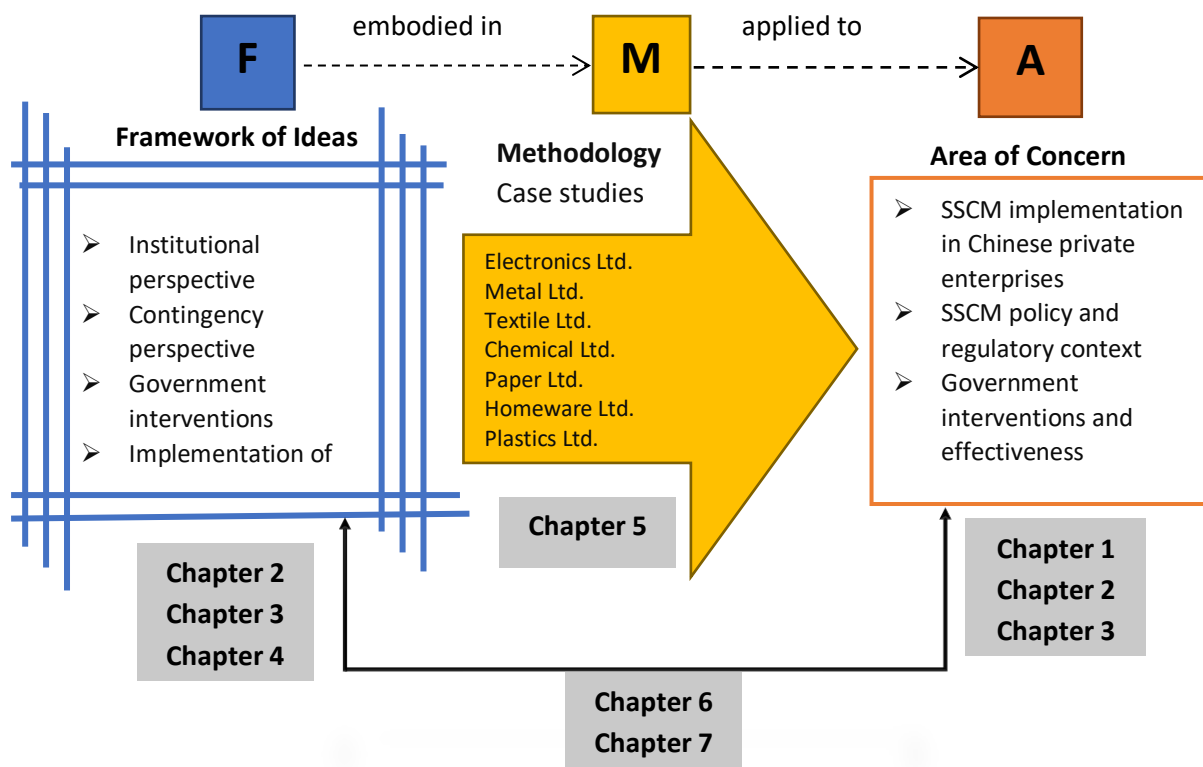


Figure 8.1 FMA Research Schema (Checkland and Holwell, 1998)

The development of theory requires rich description of the examined phenomenon by collecting and analysing qualitative data (Mintzberg, 1979). Through in-depth case studies of seven Chinese private enterprises, SSCM practices were investigated in this chosen context, and key emergent themes within the findings were analysed through the institutional and contingency perspectives in order to answer the research questions.

This chapter is designed to review and summarise the previous chapters, and therefore to particularly focus on the generation of original contributions for both research and practice. Guided by the FMA framework (Figure 8.1), a brief summary of this research is presented in Section 8.2 to map the research questions onto the thesis chapters and align them with the research findings. This is followed by discussions of contributions of this research in Section 8.3 and an examination of research limitations and implications for future research in Section 8.4.

## 8.2 Overview of the Research

As outlined in Chapter 1, the research explores the implementation of SSCM practices in Chinese private enterprises in the unique policy context in China. Two major research questions were raised, which were broken down into four sub-research questions to elaborate the objective of the research more explicitly. The research questions commence by broadly seeking evidence of SSCM practices implemented by Chinese private enterprises as well as institutional interventions applied by the Chinese government in the implementation process, and then focus on the roles that contingency factors play in understanding the different levels of SSCM implementation and the effectiveness of government interventions.

**RQ1:** How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?

Sub-RQ1: What are the implementation levels of SSCM practices?

Sub-RQ2: How is the implementation of SSCM practices influenced by contingency factors?

**RQ2:** How do government interventions influence the implementation of SSCM practices among Chinese private enterprises?

Sub-RQ3: What is the effectiveness of regulatory and influential government interventions?

Sub-RQ4: How is the effectiveness of government interventions moderated by contingency factors?

## Chapter 8: Conclusions

While all the chapters were designed to answer the research questions, Chapters 2, 3, 6 and 7 show a stronger focus on addressing these questions. Table 8.1 below presents the specific research questions and the relationships to each chapter. Table 8.1 is extended further in Table 8.2 to link the research findings to the research questions.

As stated, the research has been guided by Checkland's FMA framework (Checkland and Holwell, 1998). The main content of the chapters relating to the FMA framework is elaborated in the following subsections.

Table 8.1 Alignment of Research Questions and Chapters

Research Questions		Chapter 2: Policy and Regulatory Context for SSCM in China	Chapter3: Literature Review	Chapter 6: Within-case Analysis	Chapter 7: Cross-case Analysis
<b>RQ1:</b> How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?	<b>Sub-RQ1:</b> What are the implementation levels of SSCM practices?	N/A	<ul style="list-style-type: none"> <li>➤ Describes sustainability dimensions</li> <li>➤ Classifies different types of SSCM practices in the literature</li> </ul>	Provides evidence about specific SSCM practices implemented by case companies	<ul style="list-style-type: none"> <li>➤ Identifies key SSCM practices, similarities and differences</li> <li>➤ Identifies the implementation levels of SSCM practices</li> <li>➤ Classifies four types of SSCM profiles</li> </ul>
	<b>Sub-RQ2:</b> How is the implementation of SSCM practices influenced by contingency factors?	N/A	<ul style="list-style-type: none"> <li>➤ Identifies key contingency factors in SSCM literature</li> </ul>	N/A	<ul style="list-style-type: none"> <li>➤ Explains the influence of contingency factors (i.e. firm size and industry) on the implementation of SSCM practices</li> </ul>
<b>RQ2:</b> How do government interventions influence the implementation of SSCM practices among Chinese private enterprises?	<b>Sub-RQ3:</b> What is the effectiveness of regulatory and influential government interventions?	Explains governmental settings and the policy context	N/A	Presents evidence about government intervention actions applied in each case	<ul style="list-style-type: none"> <li>➤ Identifies six types of government intervention actions</li> <li>➤ Examines the effectiveness of regulatory vs. influential government interventions</li> </ul>
	<b>Sub-RQ4:</b> How is the effectiveness of government interventions moderated by contingency factors?	N/A	<ul style="list-style-type: none"> <li>➤ Explains the moderating role of contingency factors</li> </ul>	N/A	<ul style="list-style-type: none"> <li>➤ Identifies three most significant contingency factors including firm size, industry and government-corporate relationships</li> <li>➤ Examines how these contingency factors influence the effectiveness of government interventions</li> </ul>

### 8.2.1 Area of Concern

The area of concern of this thesis is related to the limited understanding about SSCM in China, which is in practice manifested as Chinese private companies' general lack of positive attitudes towards and poor engagement in SSCM implementation (Zhu and Geng, 2013; Qi and Miller, 2011). These empirical concerns have encouraged the researcher to explore the situation further. Whilst Chapter 3 has identified the research gaps, this research intends to contribute to body of knowledge by enriching contextual understanding and examining government institutional influence on the implementation of SSCM practices in industries. The developed knowledge may potentially be applied to other emerging economies.

The area of concern was originally developed during the early pilot stage of this research – starting with a literature review of the broad SSCM studies (See Chapter 3). It was found that, generally, research on SSCM in relation to enterprises in emerging economies is limited as the large body of literature has focused on enterprises in Western countries (Jia et al., 2018). Insights and assumptions gained from the Western literature are not necessarily suitable to be applied to emerging economies due to the fundamental differences in the economic, social and political context (Zhu et al., 2017; Silvestre, 2015). Therefore, authors like Zhou et al. (2016) have called for the need to consider the role of institutional environment in which enterprises operate, especially those in developing countries like China which have been undergoing continuous and profound institutional changes. Therefore, in later stage, the researcher examined the SSCM policy background in order to understand the Chinese institutional context (See Chapter 2).

A systematic literature review of SSCM research in China was conducted thereafter to understand the status of SSCM studies in the China context (see Chapter 3 Section 3.6). A few key research gaps were identified which encouraged the design of this research.

- 1) The extant China SSCM literature has focused mainly on environmental aspect of sustainability, while social sustainability received much less attention in the literature. Therefore, this research was designed to fill this research gap by adopting a holistic approach that captures all three dimensions of sustainability in SSCM.
- 2) Most of the SSCM studies in the context of China are survey driven. Considering that China is at relatively early stage of SSCM implementation, an exploratory case study method was employed in this thesis to provide deeper insights into the phenomena of SSCM implementation in a complicated institutional context of China.

- 3) Whilst the role of the government in promoting SSCM in China has been widely recognised by authors such as Kuei et al. (2015), Zhu and Sarkis (2006) and Zhu et al. (2011), more research is needed to explicitly examine such role and gain a deeper understanding of its impact on SSCM.
- 4) Previous studies tend to focus on SOEs. Given the significant role of the expanding Chinese private sector in the rapid economy growth and sustainable development in China (Lardy, 2014), there is a clear need to understand their implementation of SSCM practices under the influence of the Chinese government interventions.

In addition to the role of extant literature in identifying research gaps, the research was also propelled by empirical concerns. Empirical outcomes of the early pilot study revealed that Chinese companies' implementation of SSCM practices is largely driven by government interventions (both centrally and locally) and government institutional pressures seem to be a much more significant contingency factor compared with 'other' contingency factors. As a result, the dominant role of institutional factors (including regulations and policies) has in turn led to the re-conceptualisation of the 'other' contingency factors as moderating factors acting on government institutional pressures.

The key research question is therefore raised: how does the Chinese government intervene in the implementation of SSCM practices amongst private enterprises in China, and how effective are these intervention actions? Current and possible future role of government policy and regulation and its implementation in promoting SSCM can be evaluated based on such information though, remarkably, little work has yet been done in this field. The institutional framework developed by King et al. (1994) introduced a way of exploring institutional influence with a focus on policy perspective, which has been used to guide the design of the theoretical framework of this research and drive the exploration of the role of the Chinese government in SSCM implementation.

### 8.2.2 Framework of Ideas

Guided by the proposed research questions, Chapter 2 provides a discussion of the government setting and policy context in relation to SSCM implementation in China. In addition, the state of SSCM studies was examined in Chapter 3 to characterise the research and identify the potential research gaps. The knowledge gained from Chapter 2 and 3 has assisted the construction of the framework of ideas (F) of this research by indicating direct connections with the area of concern (A). The employment of institutional and contingency perspectives was examined in Chapter 4 to establish the theoretical framework. Institutional perspective offers a framework to interpret the government influence and intervention and contingency perspective provides an explanation to the varied SSCM implementation levels and the effectiveness of different intervention actions. The way in which the

two perspectives work together has been demonstrated in Chapter 4 and the theoretical contributions are discussed later in this chapter.

### 8.2.3 Methodology

The design of research methodology (M) was directly influenced by the established theoretical framework (F) to be applied to the given problematic situation (A). The previous discussions revealed the need to gain a deep understanding of companies' implementation of SSCM practices and their responses to government interventions. This has led to the choice of a multiple case study as the research method, as it can generate insights and alleviate bias through cross-case analysis (Yin, 2014). Compared with other types of research methods, the flexibility of case study allows it to be conducted in situations with soft boundaries to collect detailed data. This is particularly suitable for exploratory studies that require in-depth data to understand the investigated phenomena and support theory development, as is the case of this study.

Based on the above principles, the empirical design of this thesis has selected seven Chinese private enterprises from different industries in Guangdong province. Semi-structured interviews were conducted with participants from the case companies and government personnel to provide in-depth information. Secondary data was collected from document analysis to support the primary data. Within-case and cross-case analysis was conducted to generate research findings with contributions being identified.

The application of theoretical framework (F) and the methodology (M) in the concerned areas (A) was demonstrated in the discussions in Chapters 6 and 7, where the findings are discussed, leading to the generation of research contributions.

## 8.3 Thesis Contributions

Essentially, this thesis makes four novel contributions to the field of SSCM, categories into two areas: theoretical and practical.

The theoretical contributions include:

- 1) *It focuses on the engagement of private enterprises in SSCM in the context of a developing country with unique and challenging institutional environments, which is an under-developed area in general;*



- 2) *It develops a theoretical framework that consists of both institutional and contingency perspectives, which introduces a new approach to investigate government institutional influence and contingent influence on firms' implementation of SSCM practices.*

The practical contributions include managerial and policy recommendations for:

- 3) *Private enterprises and enterprise management;*
- 4) *The Chinese government.*

### 8.3.1 Contributions to Theory

**Contribution One:** *This thesis contributes to the emerging area of SSCM in China, by taking a significant step forward in understanding how SSCM practices are implemented in the context of Chinese private enterprises in a developing country.*

Although the implementation of SSCM practices has been widely discussed in the literature, SSCM in the context of China has been under-researched with inadequate empirical studies – with only 30 empirical papers being identified by the systematic literature review conducted by 2017.

Furthermore, despite the prominent role of Chinese private enterprises in the sustainable development in China (Tsui et al., 2017), private sector has long been neglected in the SSCM literature (Qi and Miller, 2011). At the time of the research, there has been only one theoretical study – Qi and Miller (2011), where the authors focused on Chinese private enterprises and constructed a theoretical framework to examine their adoption of SSCM practices. It proposed that human-centred codes of conduct (e.g. humanism and philanthropy) and the engagement of stakeholders in decision-making can facilitate the transition of networks of Chinese supplier companies to sustainable supply chains. It further identified government policy bias as one of the challenges for such transition by arguing that Chinese government policy initiatives to support sustainable practices have focused mainly on SOEs due to their political and economic influence in policy formation.

To the best of the researcher's knowledge, this thesis is the only empirical study to date in the China SSCM literature that focuses exclusively on Chinese private enterprises, thus allowing for a greater depth of understanding about the implementation of SSCM practices in the context of Chinese private sector. This study is unique in its detailed analysis of the specific SSCM practices that cover all three dimensions of sustainability; and it fills one of the key research gaps that most of the China SSCM studies have focused exclusively on the environmental dimension of sustainability (Zhu et al., 2012c; Zhu et al., 2013c; Zhu et al., 2012a).

The findings from this study led to the identification of four types of SSCM profiles that represent a spectrum of SSCM implementation levels from low to high. Prior studies have contributed to the identification and categorisation of different sustainability profiles, for example, Baumgartner and Ebner (2010) develop a four-level corporate sustainability maturity model, however, it focuses only on sustainable practices within the organisational boundary. Although some authors have attempted to develop sustainability maturity levels from a supply chain perspective (e.g. Huq et al. (2016) and Srari et al. (2013)), these studies have adopted a narrow scope that focuses either on social or environmental aspect of sustainability. This study adds to the extant literature by re-conceptualising SSCM profiles with enhanced characterisation, e.g. the extension of sustainable practices to the supply chain and the incorporation of all three TBL dimensions. In addition, the new definitions of SSCM profiles have captured companies' different responses to government regulatory interventions, e.g. the varied scope and depth of sustainability legal compliance, leading to better understanding of government institutional influence in SSCM.

***Contribution Two:*** *The proposed theoretical framework combines key concepts borrowed from institutional theory and contingency theory, which enriches understanding of government institutional influence in SSCM as well as the effectiveness of government interventions by conceptualising the moderating role of contingency factors.*

SSCM researchers have called for theory development and empirical evidence explanation in light of established organisation and management theories (Touboulic and Walker, 2015). The theoretical framework proposed in this study provides a novel way to explore the influence of government interventions on the implementation of SSCM practices from both institutional and contingency perspectives. By adopting a combination of these two lenses, this study allows the researchers to capture the complexity and the richness of the issues investigated. The way in which the two theoretical lenses work together has been elaborated in Chapter 4, and it is further demonstrated in the case analysis in Chapter 7.

Institutional theory and contingency theory are considered as two competing and conflicting theories by early theorists such as Donaldson (2001) because they address different forms of 'fit' and focus on different types of synergy between organisational design and the environment. In the extant SSCM literature, these two theories often have been used separately to illustrate different reasons for organisations' adoption and implementation of SSCM practices (Morali and Searcy, 2013).

From an institutional perspective, institutional pressures can lead to coercive, normative and mimetic isomorphisms that drive the diffusion of organisational practices (DiMaggio and Powell, 1983). Contingency perspective suggests that organisations are driven to pursue practices that match the

internal and external context so as to achieve desired organisational performance (Sousa and Voss, 2008; Voss, 2005). In previous SSCM studies, government institutional pressures are commonly considered as contingency factors – representing the external environment of an organisation – to drive SSCM implementation (e.g. Sarkis (2012), Locke et al. (2013) and Wan Ahmad et al. (2016)). This thesis challenges this conventional view and proposes that institutional regulation and policy factors should be separated from ‘other’ contingency factors (e.g. size and industry) given their significant role in driving SSCM implementation in China, and the latter can be reconceptualised as moderating factors acting on the relationships between government institutional pressures and SSCM implementation. This is because government interventions can significantly influence SSCM implementation in a transition economy like China, but companies’ SSCM implementation levels and their responses to different types of interventions are contingent upon the specific environment in which they operate.

Exploring the implementation of SSCM practices from an institutional perspective (particularly the Chinese government) adds an invaluable dimension to the explanation. Although institutional influence has been widely examined in the literature (Chu et al., 2017; Glover et al., 2014; Zhu, 2016; Zhu et al., 2013a), little attention has been given to the significant institutional role taken on by the government and the influence of possible government interventions in SSCM (Vermeulen and Kok, 2012; Heydari et al., 2017). Scholars have called for the consideration of institutional environment in SCM studies, especially in developing countries where fundamental institutional changes are happening (Zhou et al., 2016). This research responds to this call and contributes to the studied area by focusing on the institutional policy and regulatory environment of China – the biggest developing country in the world. Chapter 2 analyses the unique policy and regulatory context and characteristics of China regarding sustainable development, which deepens understanding of the essential institutional foundation for SSCM implementation in China. It is the first review (to the best of the researcher’s knowledge) that systematically examines institutional environment with a focus on SSCM regulations and policies in the context of a developing country.

Particularly, King’s policy-specific institutional framework (King et al., 1994), for the first time, is employed in the studied area to systematically investigate government interventions in SSCM implementation in China. Although King’s framework was initially devised and employed in the context of policy formulation for IT innovation (e.g. Brown and Thompson, 2011), it has been a very useful theoretical framework for analysing the empirical data on the government interventions in this study. The institutional analysis in this research is fine-grained by identifying the particular policies and regulations that were not previously explored in SSCM literature (e.g. Vermeulen and Kok, 2012).

In addition to confirming the six types of government intervention actions proposed in King’s model – the research also further explores the effectiveness of government interventions in the light of contingency perspective by considering companies’ SSCM profiles and characteristics including size and industrial sector. The findings indicate that although both regulatory and influential interventions can shape companies’ sustainability behaviours, the scope and strength of these two types of interventions and companies’ responses to them are moderated by contingency factors including firm size, industry and the relationship between government authorities and organisations.

As shown in Figure 8.2, the research has demonstrated that institutional and contingency perspectives complement each other for a better understanding of the influence of government institutional interventions on companies’ sustainability behaviour. This is in line of the notion of Donaldson (2008a) and Donaldson (2008b) which suggests that a sound and fully comprehensive organisational design should supplement institutional analysis with contingency factors in order to maximise both external legitimacy support and internal organisational effectiveness.

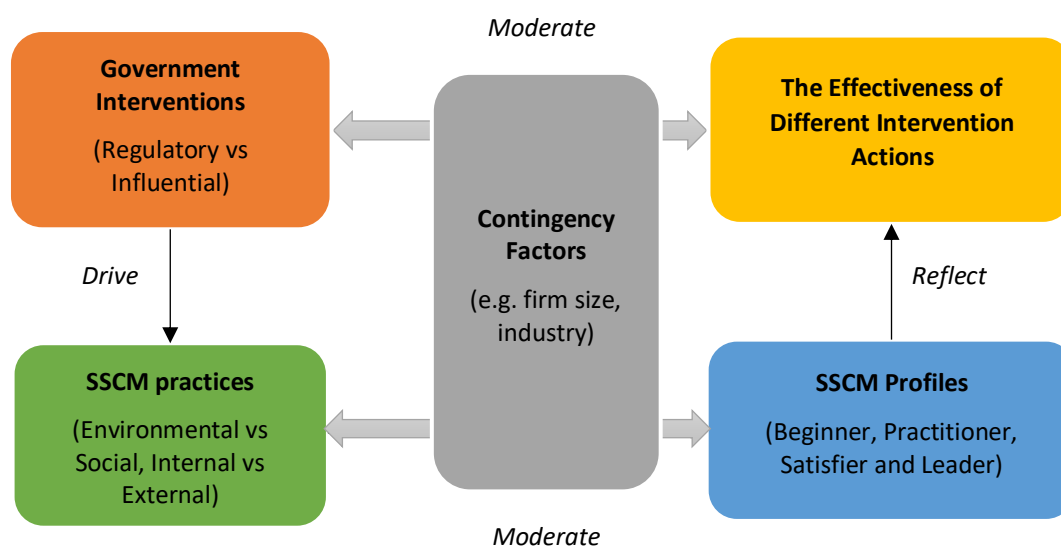


Figure 8.2 The Implementation of SSCM Practices from Institutional and Contingency Perspectives

### 8.3.2 Contributions to Practice

**Contribution Three:** Managerial implications for Chinese private enterprises.

First, the study provides insights on the key legislations and policies with regard to SSCM implementation which may help private enterprises operating in China develop a critical understanding of the Chinese institutional environment so as to be able to develop sustainability strategies and implement SSCM practices that are more aligned with the context. By understanding

the nature of government institutional pressures exerted by relevant government authorities, managers can more effectively implement SSCM practices and improve the sustainability performance of the company and the supply chain. For example, by being aware of the strengthened enforcement of regulations on prominent environmental issues, managers of focal firms can better prioritise their sustainable practices along the supply chain to ensure the compliance; and by understanding the relevant sustainability policies, they will be better equipped to engage in these policies to pursue improved performance.

Furthermore, the analysis using the combination of institutional and contingency theories highlighted the need for companies to consider both institutional pressures and contingency factors concurrently to chart a course of action towards improved sustainability performance. Managers will have to resolve the possible inconsistencies between the two different forms of 'fit' proposed by the two theoretical perspectives through a thorough understanding and careful consideration of both the contingencies of the specific operating context of the firms (e.g. firm size and industry) and the external institutional environment. If contingency fit is not aligned with institutional sustainability requirements, firms may need to balance internal organisational effectiveness with the need for external legitimacy. The empirical evidence shows that companies might face organisational conflicts between the need for response to government institutional pressures of maintaining legitimacy and the constraints brought by contingency factors with the implications of forfeiting internal organisational effectiveness. For example, the lack of resources (e.g. human, financial and knowledge capital) has been identified as the main barrier for micro-small enterprises to comply with sustainability regulations. In this case, micro-small firms need to employ more resources (e.g. in education and training) to improve their sustainability capability so as to ensure the environmental and social sustainability compliance, although it means that there might be reduced production capability due to less resources dedicated to it.

Third, government-corporation relationship has been identified as the key for Chinese private enterprises to have access to and gain policy benefits such as obtaining knowledge, information and support from the government and becoming more politically influential. In the case of Chemical Ltd. and Electronics Ltd., a good relationship with the local government has enabled them to enjoy preferential policies that assisted their SSCM implementation. On the contrary, companies that do not have close connections with local authorities like Plastics Ltd. have serious disadvantages in gaining benefits from preferential policies like bank loans and subsidies to support SSCM implementation. The findings suggest that managers of Chinese private enterprises can interact with local government authorities to facilitate their access to government preferential policies.

***Contribution Four: Policy implications for the Chinese government.***

With the appreciation of the key role of the Chinese government in promoting SSCM, this study makes a novel policy contribution by thoroughly examining the unique sustainability policy and regulatory setting in China. The review of the current Chinese institutional context has revealed several implementation challenges posed by the governance system (See Chapter 2, Section 2.2.3). The empirical evidence also suggests that there are a number of problems arising from the current institutional system. Investigated companies have identified challenges in their understanding of and responses to the regulations and policies, for example, the over-complicated environmental tax and fee systems levied on them, poor dissemination of information from government to industries, the huge additional costs arising from complying with the environmental and social laws, and the policy bias towards large and high-tech firms. It is suggested that the government at all levels should provide a 'level playing field', and policies need to be made more transparent and equitable in its application across all firms and industries.

As explained in Chapter 7, a mix of regulations, market-based mechanisms (e.g. subsidies and green public procurement) and other encouragement measures (e.g. knowledge building and mobilisation) have been applied by the Chinese government to promote SSCM. So far, the strongest driving force for SSCM in China is still the compulsory motive which represents the conventional government regulations. Influential interventions including economic incentive, knowledge building, knowledge deployment, innovation directive and mobilisation have less powder given that SSCM is a relatively new endeavour in China and the related influential policies have been low-profile. Although the regulator approach is essential in driving SSCM implementation in China, it is not always the most effective – especially when it comes to the promotion of voluntary and pro-active SSCM practices at supply chain level (e.g. sustainable supplier development). It is suggested that policy makers will need to adopt an innovative strategy in policy design, particularly from the perspective of marketisation.

Empirical evidence emerging from the cases depicts a scenario where government authorities can more effectively implement sustainability regulations and policies by adopting a more aptly pragmatic approach. The findings indicate that SSCM beginners and practitioners are characterised by small size in low-tech, and they are satisfied with compliance with mandatory laws; while SSCM satisfiers and leaders are usually large firms in high-tech industries which are more responsive to influential policies. Given companies' different responses to regulatory and influential interventions depending on their circumstances, it is suggested that while formulating and implementing relevant regulations and policies, the Chinese government – both central and local – need to take into account the moderating effects of contingency factors (e.g. firm size and industrial sector) on both mandatory and advisory

policies in order to reinforce policy adoption and implementation. For instance, understand that because of the lack of financial capability and sustainability knowledge in small firms, government can set up special grants or funding and provide education programmes for SMEs to encourage and support their engagement in SSCM initiatives.

However, given the complex institutional composition and dynamics in China, governments at all levels should not just be satisfied with which approach is more effective, as any approach requires a certain level of institutional guarantees. The choice of policy instruments by local government should consider the local situation such as institutional culture and socio-economic development level in the area.

### 8.3.3 Summary of Contributions

The findings of this PhD thesis elaborate the unique context of SSCM implementation in Chinese private enterprises, and to a broader extent contribute to the body of knowledge to better understand SSCM in developing countries. Selected findings of this PhD thesis have been presented and published in the following peer reviewed international conference paper:

- Tan, X., Bell, M., and Brown, D., 2018. The Adoption and Implementation of Sustainable Supply Chain Practices in Chinese Private Enterprises: A Combined Institutional and Contingency Perspective in A Policy Setting. Proceedings of the 25th EurOMA Conference, 24<sup>th</sup> -26<sup>th</sup> June 2018, Budapest, Hungary.

The following Table 8.2 highlights the alignment between the main research questions and research findings.

Table 8.2 Summary of Research Findings in Relation to Research Questions

Research Questions	Research Findings
<p><b>RQ1:</b> How are SSCM practices implemented amongst Chinese private enterprises of different sizes and sectors?</p>	<ol style="list-style-type: none"> <li>1) The focus on different types of SSCM practices (e.g. environmental vs social, internal vs external) varies – firm size and industry influence the priority that is given to each;</li> <li>2) Investigated companies present different SSCM profiles: beginner, practitioner, satisfier and leader, which represent different implementation levels of SSCM practices;</li> <li>3) SSCM beginners and practitioners prioritise sustainable practices within the organisational boundary to ensure the compliance with regulations, and satisfiers and leaders go beyond legal compliance and voluntarily extend sustainable practices to supply chains to realise more sustainability performance gains.</li> </ol>
<p><b>RQ2:</b> How do government interventions influence the implementation of SSCM practices among Chinese private enterprises?</p>	<ol style="list-style-type: none"> <li>1) All six types of intervention actions from King et al.'s (1994) framework are found in the cases: regulation, economic incentive, knowledge building, knowledge deployment, innovation directive, mobilisation;</li> <li>2) The six types can be classified into either regulatory intervention or influential interventions – the former forces the conformity with the rules and standards while the latter affect the attitudes and behaviours of those governed without forcing them;</li> <li>3) Regulatory and influential interventions have shown different effectiveness on case companies which is strongly associated with companies' SSCM profiles;</li> <li>4) The effectiveness of regulatory and influential interventions is moderated by contingency factors including firm size, industry and government-corporate relationship.</li> </ol>

## 8.4 Research Limitations and Opportunities for Future Research

The limitations of this thesis can be illustrated in several ways.

- 1) All seven cases are chosen from a single province to ensure the conformity of the policy and regulatory context, which makes the findings context dependent. Since geographic characteristics can be identified as contingency factors (Sousa and Voss, 2008), this element could limit the generalisability of the findings. Future studies can explore the region-dimension as a contingency factor in the implementation of SSCM practices.
- 2) Although document analysis has been proven to be sufficient for the analysis of the policy and regulatory context in this research, it would be preferable to include more interview participants



from government officials. Due to the limited access, this research only conducted interviews with three anonymous government officials. Future research can obtain more first-hand data to deepen the understanding of the government setting and policy environment.

- 3) The research has adopted a focal firm perspective. Future research could investigate multi-tier supply chain by considering the influence of supply chain structure – similar to Awaysheh and Klassen (2010) – and embrace the perspective of more supply chain stakeholders. This could also help to improve the investigation regarding the development of external SSCM practices and our understanding of how government interventions are disseminated along the supply chain.
- 4) DiMaggio and Powell (1983) propose three types of institutional isomorphisms, i.e. coercive, mimetic and normative. However, given the amount of the work and quality of the work around policy interventions, this thesis has only focused on the coercive isomorphism – the institutional influence exerted by the government. The exploration of other institutional factors could form an important part of future work.
- 5) The analysis did not involve the longitudinal study of the evolution and dynamics of the policy and regulatory context as well as its influence on Chinese private enterprises over time. Rapid evolution in the policy environment may mean that findings of past studies do not reflect future policy environment. This could be an interesting area for future research, in line with the study performed by Wang (2010).
- 6) The study did not examine the relationships between SSCM practices implemented at firm level and supply chain level. We can assume that widespread sustainable practices at the individual firm level (mainly driven by regulation), in turn, will likely strengthen the overall supply chain sustainability performance. As a result of the regulatory pressures on corporate sustainability initiatives, on the one hand, corporations might initiate attempts to influence their suppliers to adopt sustainable practices; on the other hand, corporations may better fulfil the sustainability requirements from their buyers. This scenario suggests that internal sustainability initiatives might yield positive results in SCM context and facilitate the integration of sustainability into upstream and downstream supply chains. Further study can be conducted to validate this assumption by investigating potential linkages between the firm-level corporate sustainability initiatives and supply chain sustainability performance. For example, does the implementation of sustainable practices at the firm level influence company's capability of extending these practices across the supply chain? If yes, how.

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# Appendix I Guiding Interview Questions (First Fieldwork - Pilot)

## Part A: Participants Interview Questions (Supplier Companies)

### 1. General

- Describe the purpose of the interview and the research including the need to keep the confidentiality of the responder and anonymity if asked (i.e. interviewee will not be named).
- Confirm interviewee name, role and responsibilities within the firm, including interviewee background and experience.
- Ask for the sourcing relationships (and supply chain level) with western companies.
- Ask about the contact details of western buyers.

### 2. Opening Question

- What pressures are in place or felt by you to operate in a more sustainable way?

### 3. Contingency Factors

This part includes questions pertaining to the contingency factors that might influence supplier's adoption of sustainable practices.

#### *Institutional Pressures*

- Can you please comment on how important you feel the following stakeholders are: a. western buyers, b. employees, c. government, d. owners/stockholders, e. NGOs, and f. local community, community at large, g. media, h. domestic consumers?
- What are the requirements of these stakeholders?
- What impact (if any) do these stakeholders have on your firm's adoption of sustainable practices?

#### *Company Characteristics*

- How many employees are there in your company?
- Can you please identify which type of ownership your company belongs to? (a) state-owned; (b) joint venture; (c) FDI; (d) privately-owned
- What is the attitude of the owner/CEO towards sustainability?
- What is your company's sustainability strategy?

- Can you please comment on your company's sustainable management capabilities?  
Probe: the level of compliance, collaboration, innovation
- What impact (if any) do these factors have on your firm's adoption of sustainable practices?

#### ***Industry Characteristics***

- Can you please describe your firm's operations and products (or services)?
- What do you consider as the most significant sustainability issues in this industry?
- Can you describe the level of environmental risks in the industry?
- What impact (if any) do these factors have on your firm's adoption of sustainable practices?

#### ***Supply Chain Characteristics***

- Which countries are the buying companies usually from?
- Specific buyers (size, names etc.)?
- Do you think the geographical distance has any impact on the buyer-supplier relationship?
- Can you please comment on your firm's bargaining power?
- What impact (if any) do these factors have on your firm's adoption of sustainable practices?

#### ***National Institutional Context***

- Do you think that the following factors have any impact on your firm's adoption of sustainable practices: culture, government policy and regulations, government support?
- What impact (if any) do these factors have on your firm's adoption of sustainable practices?
- What is the level of the socio-economic development in Guangdong province?

#### **Other**

- Any other factors you think are relevant to your company?
- Can you please comment on the level of impact of these factors?
- What are the costs to implement sustainable practices? Who covers the costs?

#### **4. Buyers' Sustainability Strategy and Governance Mechanisms**

- Can you please comment on how is your relationship with buyers? (Probe: trust, collaboration, arm's length, transactional etc.)
- Can you please comment on how buyers manage sustainability-related issues in your company? (Probe: compliance-based, collaboration-based or innovation-based)

- What are the social and environmental standard requirements of the buyers? (Probe: compliance to codes of conduct, auditing, third party certification.)
- What do buyers do to make sure that your company is following their standards?
- What is the relative importance of environmental vs. social issues to the company?

#### **5. Sustainable Practices**

- What does your firm do to make sure that stakeholders' requirements are met?
- Do you have to follow a supplier's codes of conduct?
- If yes, what does your firm do to ensure that it adheres to it? Probe: mock compliance
- What does the stakeholder do to ensure that you adhere to it? Paperwork completion, planned or unplanned visits, motoring techniques, compliance questionnaires?

##### ***Social Practices***

- What are some of the social issues that your firm may encounter?
- How does your firm deal with these issues?
- What type of socially responsible practices does your firm engage in?
- Do you provide CSR training and education courses to your employees?
- What are some outcomes that your firm hopes to achieve by engaging in these activities?
- What do you do to ensure that these actions have the desired outcomes?
- Do any of the following have an impact on what actions your firm engages in: a. company's culture, b. regulatory pressure (buyers, government), c. public relation crisis? – Ask about specific priorities.
- What kind of problems with the implementation of social practices do you currently face? Can you give some examples?
- How much did your company invest on dealing with Social issues in the past? How much do you expect your company to invest in the next five years?

##### ***Environmental Practices***

- What is your firm's environmental mission? Any specific initiatives?
- How does your firm deal with the environmental issues that it encounters?
- What activities has your company carried out to protect the environment? How long it was done?
- Ask about specific priorities.
- Do you provide environmental training and education courses to your employees?

- What kind of problems with the implementation of environmental practices do you currently face? Can you give some examples?
- Does your company manage environmental and social issues in the same way?
- Does your company place more weights on environmental priority than social one?
- How much did your company invest on dealing with environmental issues in the past?
- How much do you expect your company to invest in the next five years?

## 6. Suppliers' Sustainability Performance

### *Environmental - financial Performance*

- What are the annual costs of implementing environmental practices within your company?
- Have the implementation costs increased in the past five years?
- Why do you think the costs have increased/decreased?
- Please comment on any environmental performance improvement that has been achieved as a result of the implementation of the above-mentioned environmental practices.

Probe:

- reduction of water waste
- reduction of solid wastes
- reduction of air emission
- decrease of consumption for hazardous/harmful/toxic materials
- decrease of frequency for environmental accidents
- improvement of company's environmental situation
- improvement of compliance with buyers' environment requirement

### *Social – financial Performance*

- What are the annual costs of implementing social practices within your company?
- Have the implementation costs increased in the past five years?
- Why do you think the costs have increased/decreased?
- Please comment on any social performance improvement that has been achieved as a result of the implementation of the above-mentioned social practices.

Probe:

- increase of employees' wages
- improvement of safety and labor conditions
- increase of employee satisfaction
- increase of community health and safety conditions
- improvement of company's social reputation
- improvement of compliance with buyers' social requirements
- decrease of over-working hours
- reduction of the negative impact of products, services, and activities for both customers and employees
- reduced number of industrial accidents

***Operational/business Performance***

- Please describe the main benefits that have been generated by your sustainability actions and outcomes.

Probe:

- Improved product/service quality
- Increased volume of orders
- Larger customer base
- Increased amount of goods delivered on time
- Improved capacity utilization
- Decrease of inventory levels
- Decrease of employee turnover

***Others***

- Please comment on any other opportunities that have arisen as a result of actively managing sustainability issues.

**7. Impact of Specific Contingency Factors**

- How have some of the recent government policies (e.g. The New Environmental Protection Law, Made in China 2025 scheme) affected your company's sustainability orientation?
- What are the impacts of recent global attention on sustainability post Climate change summit, G20 summit etc.?

**Part B: Participants Interview Questions (Buyer Companies)**

**1. General**

- Describe the purpose of the interview and the research including the need to keep the confidentiality of the responder and anonymity if asked (i.e. interviewee will not be named).
- Confirm interviewee name, role and responsibilities within the firm, including interviewee background and experience.
- Ask for information about the company: name, size, industry, ownership, distribution of suppliers etc.

**2. Operations/Business Strategy**

- What is your company's operational/business strategy (i.e. traditional competitive priorities)?
- How is your operations/business strategy challenged and modified to include environmental and social priorities?

**3. Buyers' Sustainability Strategy**

- Do you consider sustainability as a competitive factor?
- How much weight does your firm place on sustainability as a strategic priority?
- What is your company's strategy of implementing sustainability?
- What is the attitude of the top management towards social sustainability?
- What do you think of the importance of environmental and social priorities?
- What kind of internal environmental/social standards do you have?
- Does your company have a dedicated compliance or sustainability department? Who implements it?
- Is there any collaboration between your company and local government or NGOs?
- What are the sustainability pressures perceived by your company?

**4. Supplier Governance Mechanisms**

- How is sustainability diffused into your supply chain?
- What are the tools for implementing environmental and social sustainability?
- Does your company have its own codes of conduct (CoC) or use third party standards e.g. ISO, SA, WRAP?

## Appendix I Guiding Interview Questions (First Fieldwork - Pilot)

- What do you do to ensure that suppliers are environmentally and socially sustainable?
- What is your company's supplier auditing process? Probe: Who conducts it? The buyer or third party? Is the audit process known in advance? And, if so, why do you not use surprise visits?
- Does your company have a supplier rating system?
- What would you do if you found a supplier was non-compliant?
  - Do you penalise the suppliers for violations?
  - Do you try to develop and improve the supplier?
  - Do you end the relationship or turn a blind eye?
- Can you please comment on your relationships with your suppliers? Probe: trust, collaboration, arm's length, transactional etc.
- Do you provide suppliers with training or education about sustainability? E.g. run workshops, lead supply chain improvement programs.
- Do you offer suppliers any incentives or price assurances to pursue sustainability?

### 5. Contingency Factors

- What are the factors that influence the successful implementation of sustainable practices amongst your Chinese suppliers?
  - Probe:
    - Stakeholder pressures (the intensity of pressures from buyers)
    - Buyer-supplier relationships (supplier power/buyer dependency, buyers' sustainability strategies, distance)
    - Institutional factors (culture, socio-economic development level, government policies and regulations)
    - Corporate characteristics (size, ownership type, sustainability orientation, capability)
    - Industry characteristics (level of risk, visibility, labour intensity, product complexity)
  - Among the above-mentioned factors, what do you think are the most significant ones, and why?
  - Can you please comment on your suppliers' sustainable management capabilities? (Probe: the level of compliance, collaboration, innovation)

# Appendix II Guiding Interview Questions (Second Fieldwork)

## Part A: Company Participants Interview Questions

### 1. Participant & Company Information

- Can you please describe your position in the company and your job responsibilities?
- How do you perceive your role in driving the adoption and implementation of sustainable practices in your company?
- Can you please describe your company and your production?

### 2. Internal: Corporate Governance on Sustainability/CSR Management

- Is there any specific position/function dedicated to managing (environmental and social) sustainability or CSR in the company? If yes, could you please specify?
- What's the attitude of senior management to sustainability development/CSR?
- Does the company provide any training for employees regarding sustainability/CSR?
  - If yes, what is the impact?
  - If no, any problems?

### 3. External: Supply Chain Sustainability Management

- Can you please describe your supply chain (suppliers and customer base)?
- Are there any specific sustainability requirements (environmental and social) from customers? (These requirements may be related to the supplied products or in your business operations.)
  - If yes, can you give me some examples?
  - How do you respond to these requirements?
- What are your general requirements and expectations for suppliers?
- Do you have any specific sustainability requirements (environmental and social) for your suppliers?
  - If yes, can you give me some examples?



- How do you ensure that suppliers comply with these requirements?

#### 4. Adoption and Implementation of SSCM Practices

- What sustainable (environmental and social) practices have been adopted and implemented within your company and along the supply chain? Why do you adopt and implement these practices?
- Can you please describe your company's overall sustainability strategy and sustainable supply chain strategy?

#### 5. Institutional Interventions

- How do you perceive the role of the government and the overall policy environment regarding the adoption and implementation of SSCP in your company?
- How has the policy environment regarding sustainable development changed in past decade?
- What policies and initiatives does the government and any other relevant institutions provide to promote the pursuit of sustainability initiatives in your company?

#### Probe: King's Institutional Factors (situational questions)

##### ➤ Standards:

- What are the environmental and social requirements of the local government? And what would happen if you couldn't meet them?
- How do you evaluate the effects of institutional regulations on the adoption and implementation of SSCP?

##### ➤ Knowledge Building:

- How does government or any other relevant institutions help improve your understandings about sustainability/CSR?

##### ➤ Knowledge Deployment:

- How do you perceive the role of the government, policy, or any other relevant institutions to the dissemination of sustainability/CSR related knowledge (e.g. green technologies, cleaner production)?

##### ➤ Subsidy:

## Appendix II Guiding Interview Questions (Second Fieldwork)

- Does the government provide funding support for the implementation of sustainable practice in your company? (e.g. special grants, tax reduction, rewards etc.)?
- How do you evaluate the effects of government funding support for sustainability initiatives?

### ➤ Innovation Directive

- How do you evaluate the overall government policies to facilitate the green technological innovation in the country and in the industry?

### ➤ Mobilisation:

- How do you perceive the stimulation policies or plans from the government or any other relevant institutions?

## 6. Contingency Factors

- What factors do you think can significantly influence the company's SSCP adoption and implementation?

### **Probe:**

#### ➤ Size:

- Do you think company size have any influence on your firm's SSCP adoption and implementation? If yes, how does it influence?

#### ➤ Industrial sector

- Do you think industrial sector have any influence on your firm's SSCP adoption and implementation? If yes, how does it influence?

#### ➤ Other factors

- What other factors do you think that influence your company's SSCP adoption and implementation? How? (E.g. history, export-orientation, tier in the supply chain)?

## **Part B: Authorities Interview Questions**

### 1. Background Information of Institution

- What is your position? How long have you served in the institution?

## Appendix II Guiding Interview Questions (Second Fieldwork)

- What are the key activities of the institution?
- What is the institutional strategy to guide the employment of the key activities?

### 2. Views of Sustainability Policy Initiatives

- What are the most significant sustainability issues?
- Are there any institutional frameworks in place to regulate sustainability issues? If yes, what are they? And how do they work?
- How have the regulations and policies changed since 2000?
- What are the institutional objectives to sustainable development?
- How does the institution regulate the environmental and social issues in private enterprises? Is it different from SOEs?
- What are the key issues in promoting sustainability initiatives among private enterprises? Why?
- What would the institution do to improve the adoption and implementation of sustainable practices?

## Appendix III Definition of Private Enterprises in China

The structure of enterprises' ownership in China has experienced very complex transformation since 1978 when China started the transition from planned economy to Chinese characterised socialist market economy (Lardy, 2014). Some previous studies have been conducted based on a simple classification of state and non-state sector, where non-state was used as a proxy for the private sector in a broad sense (Jefferson and Rawski, 1994). However, Chinese companies cannot always be simply divided into state owned and private companies. Due to the complex nature of Chinese socio-economic transformation, there have always been some hybrid forms of ownership which do not fall into either the state or private category, including mixed collective ownership, cooperatives and joint ownership enterprises (Lardy, 2014; Wang, 2005). Depending on the contributors of capital and the distribution of share ownership in the corporations, Chinese enterprises can be divided into the following seven broad types (Table III-1).

*Table III-1 Classification of Chinese Companies (Lardy, 2014)*

<b>Company Type</b>	<b>Asset Ownership</b>
State-owned enterprise (国有企业)	Owned by the state
Collective enterprise (集体企业)	Ownership shared by employees and other economic entities
Share cooperative enterprise (股份合作企业)	Shareholders are employees of enterprises; initial start-up using some public funds
Joint enterprise (联营企业)	Jointly invested by two or more enterprise legal persons or public institutions of the same or different forms of ownership
Limited liability corporation (有限责任公司)	Ownership based on capital contribution
Shareholding limited corporation (股份有限公司)	Ownership based on shareholdings
Private enterprise (私营企业)	Enterprise established by a natural person or majority owned by a natural person