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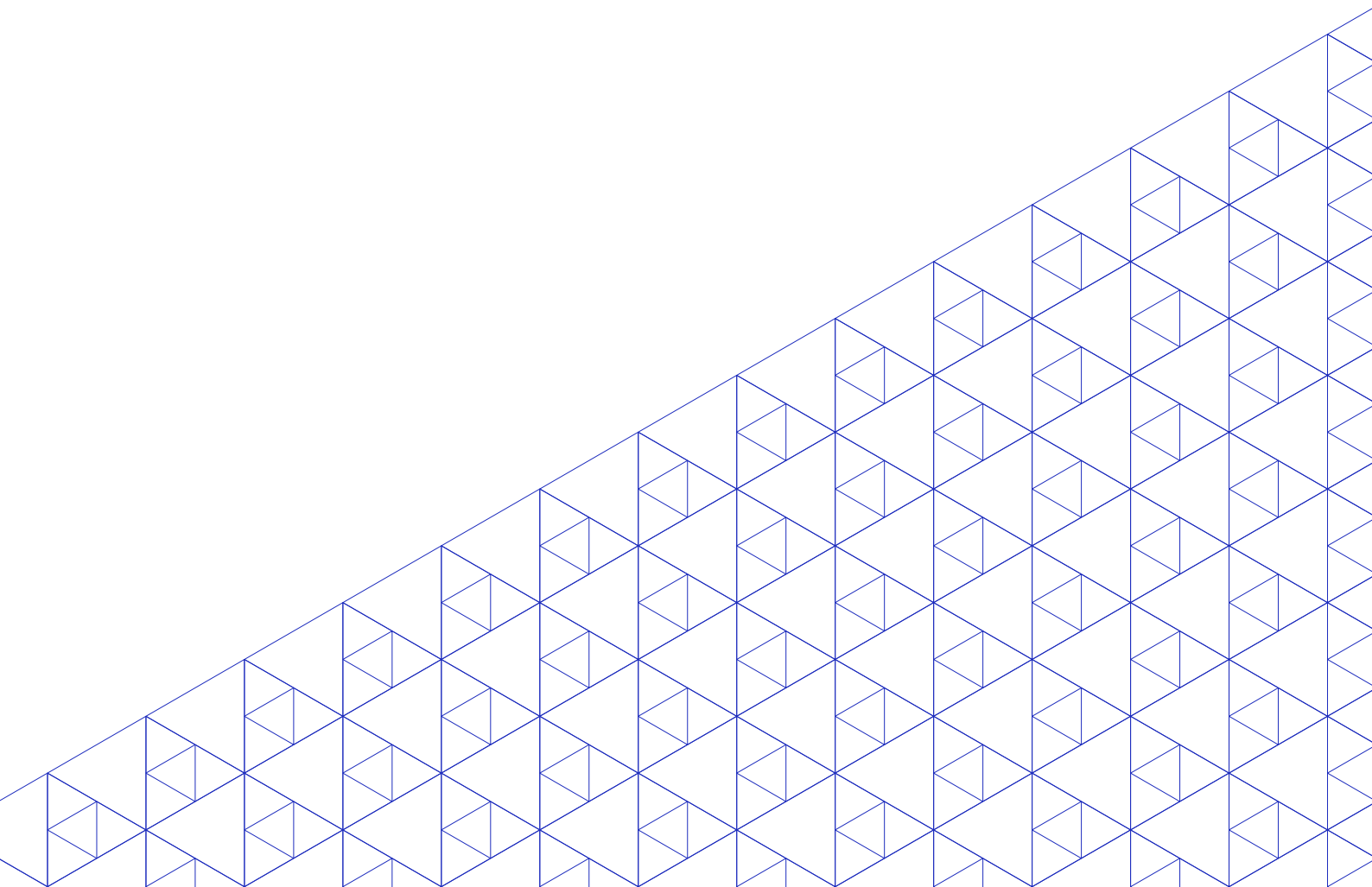
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► **Greening the sector**

Environmental initiatives and tools in the garment sector in Asia

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Abstract

The increasing social and environmental impacts of the textile and garment supply chain are well known and have resulted in the development of an array of initiatives, tools and assessment platforms to enhance the sustainability of the sector. There is a great deal of diversity in these initiatives, including differences in their focus, the actors involved, who the beneficiaries are, the longevity of the activities and how they define and measure success. The paper highlights where there might be gaps in the current offerings of initiatives, and what types of initiatives have alignment with MSMEs knowledge and learning needs, as a way to highlight where future attention in developing new or enhanced initiatives might lie.

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Acronyms

EU	European Union
GHG	greenhouse gas
GOTS	Global Organic Textile Standard
MSMEs	micro-, small- and medium-sized enterprises
PaCT	Partnership for Cleaner Textile
SDG	Sustainable Development Goal
SME	small- and medium-sized enterprise
STWI	Sweden Textile Water Initiative
ZDHC	Zero Discharge of Hazardous Chemicals

Executive Summary

The increasing social and environmental impacts of the textile and garment supply chain are well known and have resulted in the development of an array of initiatives, tools and assessment platforms to enhance the sustainability of the sector.

There is a great deal of diversity in these initiatives, including differences in their focus, the actors involved, who the beneficiaries are, the longevity of the activities and how they define and measure success. For many stakeholders in Asia the number and diversity of initiatives is confusing.

This paper has two aims: first, to analyse an illustrative group of these initiatives in terms geographic and sectoral coverage, target participants, operating model, method of intervention, scale, success and replicability, with the aim of identifying where and how these initiatives can and are enhancing environmental sustainability in the garment sector, and to identify if and where any gaps exist in initiatives offerings. The second aim is to investigate the coverage and reach of environmental initiatives to micro-, small- and medium-sized enterprises (MSMEs) in the sector. Sectoral commentary suggests that smaller firms are a “blind spot” in achieving enhanced sustainability; therefore, this paper also seeks to examine the overlap of these initiatives with the innovation drivers in MSMEs. The sustainability challenges facing smaller firms are similar to all firms, yet because of their smaller size (and correspondingly smaller human and financial capital resources) and peripheral position in the supply chain (with less access to knowledge and know-how), these challenges are more difficult to overcome.

The analysis in this paper found three high-level operating models across these environmental sustainability initiatives:

1. Performance standards – usually found with certification and sometimes capacity-building activities;
2. Programme offer – a time-limited programme of activities, usually including brand-level dialogue and tool/advice development, factory-level auditing and engagement activities, policy system analysis and advocacy, and access to finance for sustainability investments; and
3. Social Dialogue, knowledge sharing and advocacy – these initiatives focus on social dialogue and knowledge-sharing activities up and down the supply chain. They are usually linked with wider sustainability goals, such as the Sustainable Development Goals, and the contextualizing of these goals for the textile and garment sector. These initiatives usually have a strong role for multistakeholder dialogue.

When analysing how these initiatives overlap with barriers and enablers for eco-innovation in MSMEs, the following barriers to the uptake of eco-innovations are found:

- Lack of awareness about environmental issues and their impacts, including social impacts;
- Lack of awareness of options for eco-innovation, and how eco-innovation could be integrated into strategic business planning activities and contribute to competitiveness and productivity;
- Lack of awareness of responsibilities in complying with environmental legislation, and know-how in investing in moving beyond mere compliance;
- Lack of access to knowledge and skills transfer networks – seeing how best practice is implemented in other businesses and the capacity to adapt and adopt;
- Communication gaps in supply chains;
- Barriers in accessing finance;
- Poor infrastructure availability, for example, access to water systems and waste water filtration systems.

None of the initiatives analysed in this study specifically focus on MSMEs, and while none of the three operational models seek to exclude MSMEs, there are a number of features in each of the models that can potentially limit uptake by these firms:

- Concerning the **performance standards** model, MSMEs tend to lack the required level of internal absorptive capacity to bring in, integrate and use the performance standards in a way that develops the environmental sustainability of the firm.
- Concerning the **programme offer** model, if an MSME is within the target group for the initiative the MSME will likely benefit from the programme offer model, because these programmes provide a mix of capacity building, auditing and improvement advice, access to finance and advocacy to policymakers to address other non-market barriers. However, because of the resource intensity of these initiatives only a relatively small number of firms can benefit, and therefore they are not offered on a scale to deliver widespread, system-level change.
- Concerning the **social dialogue, knowledge sharing and advocacy** model, while it is useful for sharing “best practices”, the limitations can be found in who is included in the dialogue and what is considered to be “best practice”.

Sector-based initiatives have an important role to play in coordinating sustainability activities across the textile and garment sector. These initiatives represent a form of sectoral governance mechanisms – setting out what is good practice and how to achieve these practices. However, there are limits to these mechanisms – each of the three types of operating model has, by design, limitations to its reach, coverage and focus, and this is before implementation metrics are considered, of which there are minimal data available in the public domain. Focus on and coverage geared towards enhancing the environmental sustainability of MSMEs in the garment sector is a clear gap – as well as an opportunity and direction for future work.

► Introduction

0.1. Purpose of this paper

As one of the most globalized supply chains, the textile and garment sector is facing challenges in ensuring social and environmental sustainability. In response to these challenges and in recognition of the complex and multi-faceted drivers of and solutions to these issues (Beyers and Heinrichs 2020), many multi-stakeholder initiatives, tools and assessment platforms have been developed and implemented throughout the supply chain. There is a great deal of diversity in these initiatives, including differences in their focus, the actors involved, who the beneficiaries are, the longevity of the activities and how they define and measure success. For many stakeholders the number and diversity of initiatives is confusing. This paper aims to map those initiatives that specifically incorporate environmental sustainability and analyse their coverage across the sector.

Environmental initiatives play an important role in helping garment sector firms to become more environmentally sustainable in their production and consumption activities. Reducing carbon emissions is an obvious target, with key sector stakeholders committing to reducing greenhouse gas emissions by 30 per cent by 2030 and to be net-zero by 2050 (from a 2015 baseline) through the United Nations Framework Convention on Climate Change's Fashion Industry Charter for Climate Action. But other targets, including reducing water usage and water pollution and reducing chemical intensity and pesticide use across the supply chain, are also critical in enhancing the environmental sustainability of the sector. Such system-level changes across the supply chain require collaborative and cooperative activities and partnerships across the sector. Individual firms will find it difficult to act alone; therefore, initiatives that provide opportunities for dialogue, knowledge creation and sharing, and collective action are important tools in achieving sustainability.

The *Pulse of the Fashion Industry* reports by the Global Fashion Agenda, the Boston Consulting Group and the Sustainable Apparel Coalition (SAC) represents one of the few data sources from a sector initiative to use performance metrics – the SAC Higg Index – to track improvements in the sustainability of participant firms (GFA, BCG and SAC 2017; 2018; 2019). For the three years that the report is available – 2017, 2018 and 2019 – a Pulse score was calculated¹ for the sector out of 100 based on measurements and tracking the sustainability management and target setting of the global fashion industry on key environmental and social impact areas. The 2017 score was 32; 2018 – 38; and 2019 – 42 out of 100. While these scores showcase improved sustainability across the sector in recent years, the overall scores depict an industry that remains largely unsustainable and in need of large-scale change.

The motivation and ability to act on environmental sustainability is not evenly distributed across the sector. The Pulse reports have highlighted the continuing poor performance of smaller firms with regard to sustainability criteria. Analysis from these reports shows that the size of the firm, and not the price point at which it operates in the market, is a significant determinant of performance and improvement in sustainability (GFA, BCG and SAC 2019). This intransigency of smaller firms' lower performance in environmental sustainability is referred to a "blind spot" for the sector in achieving enhanced sustainability.

Micro-, small- and medium-sized enterprises (MSMEs) make up the majority for firms within the supply chain and a significant proportion of employment in the sector. These firms are not often at the core of the supply chain but rather the periphery – existing through sub-contracting relationships with the larger firms (Merk 2014).

¹ Based on the SAC Higg Brand and Retail Module data plus survey data and expert interview analysis.

The sustainability challenges in these firm are similar to all firms in the supply chain, yet because of their smaller size (and correspondingly smaller human and financial capital resources) and position in the supply chain (periphery, with less access to knowledge and know-how), these challenges are more difficult to overcome. Therefore, a second aim of this paper is to provide further evidence of the sustainability challenges facing MSMEs and to analyse the existing set of supply chain initiatives with an environmental focus to assess their coverage and applicability to MSMEs.

The paper highlights where there might be gaps in the current offerings of initiatives, and what types of initiatives have alignment with MSMEs knowledge and learning needs, as a way to highlight where future attention in developing new or enhanced initiatives might lie.

0.2. Just Transition Toolkit

This paper has been produced as part of the Just Transition Toolkit of the ILO Decent Work in the Garment Supply Chains in Asia project². The Just Transition Toolkit focuses on enhancing the environmental sustainability of the garment supply chain. The Toolkit is built from inputs from constituents, including a mix of knowledge creation, knowledge diffusion and capacity-building activities for key sector actors with the aim of developing an evidence base for how environmental sustainability and the adoption of more sustainable practices in the textile and garment supply chain enhance decent work in the sector.

The Just Transition in the Textiles and Garment Supply Chain Toolkit consists of reports, briefs, highlights, videos, and infographics that provide specific advice for industry stakeholders to address gaps and weaknesses in national environmental regulation on country-specific levels, relevant guidance and support to help manufacturers understand and apply environment and decent work principles, and information on eco-innovation and greener production in the garment industry.

We use the term “textile and garment sector” as we are specifically interested in garment production and therefore the textiles manufactured as inputs into these garments. Textiles are manufactured for other purposes, including furniture, automotive accessories and household decoration. While environmental impacts of the production of these textiles might be similar to textiles produced for garments, these textiles are not the focus on our work in this project.

The Decent Work in the Garment Supply Chains in Asia project is a regional project with coverage of all countries across the Asian region, but activities focus on four target countries: Bangladesh, Cambodia, Indonesia and Viet Nam.

0.3. Methodology

This paper was developed through two activities: (i) desktop-based identification and documentation; and (ii) review of existing and planned environment advisory tools, activities and initiatives.

The first stage of the methodology identified existing and planned environmental tools, initiatives and activities in the textile and garment sector in Asia. Initiatives were identified using internet searches, information from previous ILO and other UN agency activities in the sector, and advice from industry stakeholders. Both current and past initiatives were identified. Past initiatives offer important information about operating models and success and impact. The result of these searches was a long list of 35 initiatives.

² Funded by the Swedish International Development Cooperation Agency (Sida)

From this long list, 17 initiatives were selected for further analysis. The selection criteria for this shorter list include: (i) strong environmental focus; and/or (ii) geographical coverage across the region or in one of the four focus countries.

A comparative analysis framework was developed to further analyse the 17 selected initiatives. This framework included the following categories:

- General
 - Country
 - Sector/industry
 - Sustainability areas covered (such as, energy, water, chemicals, etc.)
 - Non-sustainability areas covered (such as, labour standards, gender, productivity)
 - Years in existence
 - Owner/administrator
 - Weblink/reference
- Form and implementation (picked from list)
 - Online/spreadsheet/document/other
 - Guidance/guidance + advisory/guidance + advisory+ support
 - Compliance/accredited/voluntary
- Success criteria
 - Easily expanded (into other sustainability areas/countries/sectors)
 - Uptake
- Number of organizations
- Number of countries
 - Measurement and reporting
- Evaluation of impact
- Rating system
 - Regulation/policy/government standards (picked from list)
- Includes or references government regulations/minimum standards
- Monitored/administered by government agency

The second aim of the paper is to review barriers and enablers to the uptake of eco-innovations by MSMEs in the sector. Eco-innovations are innovations that have environmental impact. Innovations need to make sense and productivity gains can be part of the benefits (for example, less chemical processing, faster production), but reduced environmental impact is the aim. Different from the much used term of “cleaner production”, eco-innovations have different barriers and enablers that are separate from those that drive productivity gains, and are worthy of focus in and of themselves, not only in relation to productivity gains but chiefly as part of the application of the ILO Just Transition guidelines³.

³ Just Transition Guidelines

A literature review was undertaken to identify barriers and enablers to eco-innovation in MSMEs. Internet searches for reports and other grey literature, and searches of peer reviewed journal papers using the SCOPUS database identified a range of papers and reports covering these topics.

0.4. Structure of the paper

Section 1, in addition to this introduction and the methodology, includes background context on the environmental impacts of production activities in the textile and garment supply chain. The following section covers the comparative analysis of the shortlisted initiatives. Then, the next section summarizes the results of the literature review on eco-innovation barriers in MSMEs in the sector, and discusses the interaction of environmental initiatives in the sector with enablers for eco-innovation in MSMEs. The final section highlights conclusions and implications of this paper to future activities related to environmental sustainability and decent work in textile and garment supply chains in Asia.

0.5. Background context

Environmental impacts of the textile and garment supply chain Asia accounts for some 60 per cent of global exports of garments, textiles and footwear. The industry has rapidly grown over the past two decades, employing more than 40 million workers, with the majority being women in many countries (Sharpe 2017). Environmental impacts are concentrated at certain points in the supply chain, particularly in four areas:

- weaving, dyeing and finishing processes in textile manufacturing;
- energy use throughout the supply chain, but concentrated in textile manufacturing and to a lesser extent garment assembly;
- textile waste associated with garment assembly; and
- transport emissions throughout the supply chain as materials and then final products are shipped globally.

The most significant impacts, however, are within the first two areas, with the main impacts stemming from the use intensity of water resources; chemical use, including toxic chemicals; waste water discharges and lack of treatment processes; and energy use and the carbon intensity of electricity.

Textile manufacturing is very water- and chemical-intensive. The growth and sustainability of the sector is highly dependent on how resources are managed. The textile industry in general has an enormous water footprint, ranging from agricultural water consumption for cotton farming, to water consumption in textile printing, dyeing and finishing. The sector is one of the largest users of fresh water in the world, consuming an estimated 79 billion cubic meters of fresh water annually across the entire value chain (United Kingdom 2019). As the textile production is located in some countries that already have insecure water suppliers, a water crisis is forecast in textile producing countries, including in Bangladesh, Cambodia, India, Indonesia and Viet Nam.

The sector is also responsible for severe water pollution by discharging large volumes of wastewater containing hazardous substances into rivers and watercourses without appropriate treatment. It is reported that 20 per cent of industrial water pollution globally is attributable to the dyeing and treatment of textiles (EMF 2017).

The **carbon footprint** from the sector is also significant, accounting for 6–8 per cent of total global emissions (Niinimäki et al. 2020). In 2015 this equated to emissions of 1.7 billion tonnes of carbon dioxide (United Kingdom 2019), which is more than all international flights and maritime shipping combined (Sumner 2019). The numbers are not surprising given the fact that over 60 per cent of textiles are used in the apparel industry and a large proportion of apparel manufacturing occurs in China and India. India, in particular, relies heavily on hard coal and natural gas for electricity and heat production, sharply increasing the carbon

footprint of each apparel product. Switching to renewable energy, such as solar, hydro or wind power, can significantly change carbon dioxide emissions and improve sustainability linked to textile production.

Moreover, the increase of fast fashion has stimulated demand for fast, cheap and low-quality goods. Both the growing volume of garment production and how these garments are used and disposed of have increased the climate change impacts from the sector. Between 2005 to 2016, the climate impact of various production stages in the apparel sector increased by 35 per cent, and is projected to continue to increase under a business-as-usual scenario (Quantis 2018).

► 1 Analysis of environmental initiatives

There exist a multitude of initiatives by governments, the private sector, civil society and international organizations designed to improve social and environmental standards in the garment value chain (Sharpe 2017).

In the process of identifying environmental initiatives for this study, 35 such initiatives were identified. Initiatives include tools, standards, capacity-building programmes, audits, awareness-raising activities, or a combination of some or all of these activities. In some cases, environmental sustainability was the sole focus, but most often environmental issues were addressed alongside social sustainability issues, particularly labour standards. The 35 identified initiatives include both current and past projects. Past projects, although no longer operating, can still provide opportunities for profiling different operating models, and for learning about impact and change target beneficiaries in the past. Analyses of past projects can also highlight the evolution of initiatives – so where a first generation of initiatives might be focus on awareness raising, later generation initiatives can focus on pilot projects and proving business cases.

From this long list, a shortened list of 17 initiatives was selected for further analysis. These initiatives are listed in table 1 below along with some basic characteristics. The selection criteria in creating the short list were:

1. identifying initiatives that had a substantial focus on environmental sustainability (including the development of specific tools and know-how within the sector for environmental sustainability);
2. coverage across the region and the four focus countries; and
3. selecting a range of initiatives that offered the possibility for a comparative analysis of a range of activities (including tool development, standard settings, capacity development, case studies and best practices, audit and advice programmes, and networks and knowledge sharing).

► Table 1. Environmental initiatives in the Textile and Garment sector selected for further analysis

No.	Initiative name	Brief description	Activities
1	Partnership for Cleaner Textile (PaCT)	Cleaner production tools, guidance and support for textile sector.	1. For brands – Environmentally sustainable buying practices 2. For factories – Adoption of best practices 3. Policy – Sector transformation and regulatory policy gaps 4. Investments – Facilitating investments in resource efficient technologies
2	Better Cotton Standard System	Farm-level licensing standard for sustainable cotton production. Licensed BCI farmers produce cotton with minimal fertilizers and pesticides; care for water, soil health and natural habitats; and utilize decent work principles. The Better Cotton Standard is not applicable to the cotton supply chain.	1. Principles and criteria 2. Capacity building 3. Assurance programme 4. Chain of custody 5. Claims framework 6. Results and impact
3	Higg Index	Suite of tools for apparel, footwear and textile brands, retailers, and facilities to measure and score a company or product's social or environmental sustainability performance.	1. Higg Product Tools 2. Higg Facility Tools 3. Higg Brand & Retail Tool
4	Fairtrade Textile Standard	Standard for producing and buying Fairtrade textiles – standard engages producers and workers in the chain, while Fairtrade engages brands to commit to fair terms of trade through license contracts.	1. Operator certification via physical audits 2. Brand owner verification and reporting tools
5	China Water Advisory Services Project	One-off, three-year project to promote water and energy efficiency as well as other resource savings in China textile mills via demonstration projects,	1. Firm-level interventions 2. Sector-level interventions 3. Facilitate financing 4. Selective policy and regulatory interventions
6	Ecoleban Guidelines	Guidelines on best sustainable consumption and production practices for the leather sector in Bangladesh. Output of a one-off, four-year project to promote resource efficiency and sustainability of the leather sector supply chain in Bangladesh.	1. Leather value chain sustainability and resource efficiency 2. Eco-labelling schemes 3. Government advocacy and financing bodies engagement 4. Capacity building and dissemination of practices
7	Bluesign	Standard for sustainable processing and manufacturing for textile manufacturing industries and brands	1. Screening/audit/assessment 2. Sign Bluesign system partner agreement 3. Implement mandatory actions 4. Continuous improvement 5. Certification of chemical products and articles 6. Labelling
8	Global Organic Textile Standard (GOTS)	Standard for organic fibres.	1. Organic fibre production 2. Textile processing and trade chain 3. on-site annual inspection 4. certification (GOTS label on products)
9	SMART Myanmar - SMART Textiles & Garments	Two-year project aimed at improving working conditions, promoting labour and environmental standards, and reducing labour right abuses in the textile and garment industry in Myanmar.	1. On-site consultancy and coaching programmes to garment and textile factories (foreign and locally owned)

10	Zero Discharge of Hazardous Chemicals (ZDHC)	Guidelines, standards, certification and training on sustainable chemical management in textile and leather manufacturing with the goal to eliminate the use of hazardous chemicals.	<ol style="list-style-type: none"> 1. Guidelines and standards – ZDHC Wastewater Guidelines 2. ZDHC Gateway (online search tool for chemical buyers) 3. ZDHC Academy (training platform) 4. ZDHC Implementation HUB (expert support directory) 5. Lab approval process 6. Global network of third-party labs 7. Public disclosure map 8. Reporting
11	OEKO-TEX® Standards	Comprehensive certification system for brands, retail companies and manufacturers from the textile chain; modular approach covering management of chemicals, environmental performance, environmental management, occupational safety and health, social responsibility and quality management.	<ol style="list-style-type: none"> 1. MADE IN GREEN product label for textiles and leather products 2. STANDARD 100 label for textiles tested for harmful substances 3. LEATHER STANDARD testing and certification system for leather 4. SteP, which stands for Sustainable Textile and Leather Production 5. DETOX TO ZERO verification system for production facilities 6. ECO PASSPORT independent certification system for chemicals, colorants and auxiliaries
12	Vietnam Green Label (info not current)	Product label – Not yet covering textile or leather products.	Criteria for 14 product groups including paper, batteries, architectural coatings, electronic goods, cosmetics, household items and packaging.
13	Ecomark India	Eco-label for products, including textile and leather products.	Eco-label across 16 product categories including leather, textiles, aerosols, batteries, cosmetics, electronic goods, food items, packaging, paints and oils, paper, plastic, wood and cleaning products
14	China Environmental Label (info not current)	Eco-label for products, including textiles.	96 types of environmental labelling for products, including textiles
15	Sweden Textile Water Initiative (STWI)	This initiative focuses on the reduction of water use as a way of cleaning textile production.	<ol style="list-style-type: none"> 1. Factories – Reduce environmental impact and build resource efficiency 2. Governments – Build institutional capacities for industrial water governance 3. International benchmarks and global water profile building 4. Dissemination of water knowledge 5. Sweden Textile Water Initiative Guidelines 6. Sweden Textile Water Initiative Projects
16	UN Fashion Industry Charter for Climate Action	Charter document containing principles to which signatories and supporting organizations commit to and implement through working groups.	<ol style="list-style-type: none"> 1. Charter document 2. Eight working groups
17	UN Alliance for Sustainable Fashion	An initiative of United Nations agencies and allied organizations designed to contribute to the Sustainable Development Goals through coordinated action in the fashion sector.	<ol style="list-style-type: none"> 1. Promoting active collaboration 2. Knowledge sharing 3. Strengthening synergies (between existing UN initiatives) 4. Outreach and advocacy

Source: Compiled by the authors.

Figure 1 illustrates where each of the initiatives falls along the textile supply chain. Many of the initiatives are ongoing labelling, certification or standards programmes with regular funding and established administrators and operating entities. Others were one-off projects that ran for a number of years from one source of funding and then either ceased operating or continue to work with additional supplements of funding. Two of the initiatives – Vietnam Green Label and China Environmental Label – appeared to be largely inactive at the time of research, with little recent information available during the desktop review.⁴

The activities were varied, from specific tools and guidelines for key actors in the supply chain (such as product or brand tools and facility tools), to labelling or certification schemes, to training platforms and support directories, to laboratory certification programmes. Initiatives often had some kind of government advocacy, knowledge dissemination and capacity-building aspect to their operations.

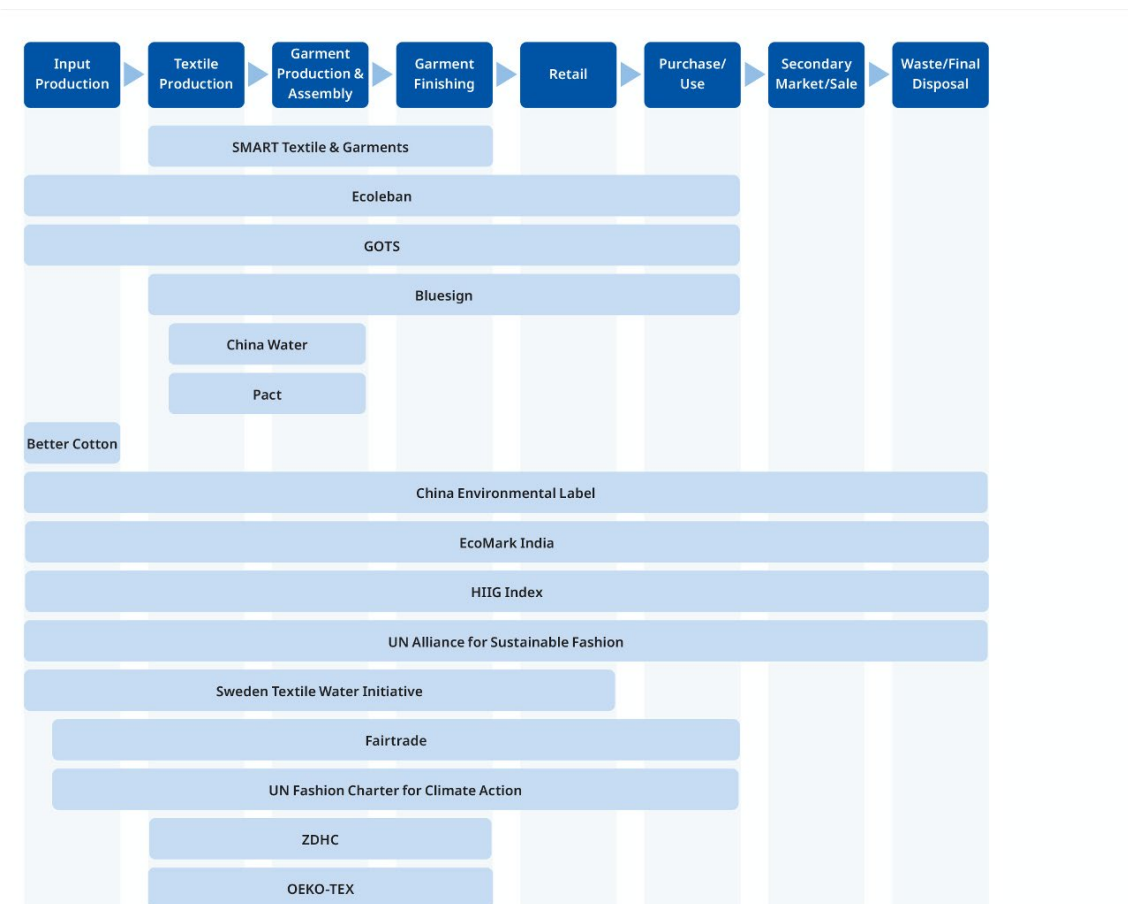
Figure 1 also maps the activities of each of the analysed initiatives across the supply chain. The figure shows that there are many initiatives operating in this space and many covered similar areas of the supply chain. Ten of the 17 initiatives cover most of the production elements of the supply chain. Across all the initiatives three operating models are evident:

1. **Performance standards** – usually with certification and sometimes capacity-building activities. This includes, at one end of the spectrum, ecolabelling initiatives – where producers meet certain criteria in order to access a label to signal environmental sustainability to customers and/or consumers – through to more complex and comprehensive performance standards that assess performance in social and environmental sustainability, for example Higg or Bluesign. These latter initiatives have comprehensive guidance materials and technical capacity-building and audit activities.
2. **Programme offer** – a time-limited programmes of activities usually including brand-level dialogues and tool/advice development, factory-level audits and engagement activities, policy system analysis and advocacy, and access to finance for sustainability investments. Examples include the Sweden Textile Water Initiative and PaCT.
3. **Social dialogue, knowledge sharing and advocacy** – these initiatives focus on social dialogue and knowledge-sharing activities up and down the supply chain. These initiatives are usually linked with wider sustainability goals, such as the Sustainable Development Goals (SDGs), and the contextualizing these goals for the textile and garment sector. These initiatives usually have a strong role for multi-stakeholder dialogue. Examples include the UN Alliance for Sustainable Fashion (linked to the SDGs) and the UN Fashion Charter for Climate Action (linked to the Paris Agreement).

All initiatives include aspects of multi-stakeholder engagement and dialogue. Multi-stakeholder initiatives have become prominent mechanisms for sustainability governance across multiple scales, from the local and national to the regional and global. These initiatives are viewed as more effective in sustainability governance than State actor-based networks, although to date there is little evidence of effectiveness in terms of impact (Okereke and Stacewicz 2018). Multi-stakeholder initiatives work in establishing norms and setting standards for wrong and right actions, as well as providing a space for learning networks and experimentation in institutional configurations for sustainability (Schouten et al. 2012). In a complex supply chain, this boundary spanning and experimentation are essential in stimulating change to sustainability. Although power asymmetries between stakeholders and who is considered a stakeholder (and therefore part of the discussion) are limitations to the change-making potential in multi-stakeholder initiatives.

⁴ It is this lack of up-to-date information concerning these initiatives that has prompted these two initiatives to be marked “info not current” within tables in this paper.

► Figure 1. Supply chain coverage of initiatives



Source: Compiled by the authors.

1.1. Reach and targets of initiatives

The initiatives analysed were available in a range of locations around the world. Seven of the initiatives were country-specific and the remainder were implemented in a large number of countries or available in any country. Nine of the initiatives were specific to the textile and/or garment sectors, one was specific to cotton, another for leather and three were for various manufacturing sectors. Most of the country-specific initiatives were more narrowly focused on a specific part of the supply chain, for example, wet processing. Country-specific initiatives also addressed policy and institutional capacity context in the countries in which they worked. For example, PaCT in Bangladesh and STWI in India. Where initiatives operate across multiple countries and regions, wider supply chain issues are the focus. These initiatives usually include programmes for both brand companies where corporate activities occur and the textile factories and mills in the supply chain.

► Table 2. Country and sector focuses of initiatives

No.	Initiative	Country	Sector
1	Partnership for Cleaner Textile (PaCT)	Bangladesh	Textile wet processing sector
2	Better Cotton Standard System	21 countries	Cotton farming and supply chain
3	Higg Index	35 countries	Apparel, footwear, and textiles industry
4	Fairtrade Textile Standard	Anywhere freedom of association is possible	Textile supply chain
5	China Water Advisory Services Project	China	Textile mills
6	Ecoleban Guidelines	Bangladesh	Leather sector
7	Bluesign	International	Textile and leather supply chain
8	Global Organic Textile Standard (GOTS)	International	Textile supply chain
9	SMART Myanmar – SMART Textiles & Garments	Myanmar	Textile and garment industry
10	Zero Discharge of Hazardous Chemicals (ZDHC)	International	Textile, leather and footwear value chain
11	OEKO-TEX® Standards	International	Textile manufacturers from all processing levels
12	Vietnam Green Label (info not current)	Viet Nam	Various
13	Ecomark India	India	Various
14	China Environmental Label (info not current)	International	Various
15	The Sweden Textile Water Initiative (STWI)	International	Textile and leather supply chain
16	UN Fashion Industry Charter for Climate Action	International	Fashion industry companies
17	UN Alliance for Sustainable Fashion	International	Clothing, leather and footwear made from textiles and related goods

Source: Compiled by the authors.

Figure 2 shows where the environmental initiatives are operating globally. There is wide geographical reach of the various environmental initiatives analysed, as shown in table 3. The three categories of initiatives identified are also useful in understanding organizational reach. For performance standards initiatives, the broad reach of many organizations across many jurisdictions would be necessary for the associated performance standard to have an impact on environmental sustainability. In the case of programme offer initiatives, deep engagement with a smaller number of organizations and countries is the target. For social dialogue, knowledge sharing and advocacy initiatives, reaching a certain number of individual organizations is not the target, rather the target is around developing consensus and networks among organizations for social and environmental sustainability. Table 3 below outlines the number of organizations (unless otherwise labelled) or countries in which each initiative has been implemented.

► Table 3. Organizational and country reach of each initiative

Initiative	Reach – Organizations	Reach – Countries
OEKO-TEX® Standards	21 545 valid certificates and licenses	62
Global Organic Textile Standard (GOTS)	5 760+ certified facilities	64
Zero Discharge of Hazardous Chemicals (ZDHC)	5 400	24
China Environmental Label (info not current)	3 000	1
Better Cotton Standard System	1 400	21
Bluesign	600	50+
Ecoleban Guidelines	580	1
Sweden Textile Water Initiative (STWI)	277	5
Higg Index	212 (77 manufacturers, 24 service providers, 32 retailers, 79 brands)	35
Partnership for Cleaner Textile (PaCT)	200 textile factories	1
Vietnam Green Label (info not current)	59 products (as of 2017)	1
SMART Myanmar – SMART Textiles & Garments	23 factories	1
China Water Advisory Services Project	Unknown (estimate approximately 100)	1
Fairtrade Textile Standard	Unknown	N/A
Ecomark India	Unknown	1
UN Fashion Industry Charter for Climate Action	103 signatories 32 supporting organizations	Unknown
UN Alliance for Sustainable Fashion	8 UN and specialized agencies	Unknown

Source: Compiled by the authors.

► **Figure 2. Summary of country-level focus of the selected initiatives**

1.2. Characteristics of initiatives

This section analyses the initiatives across a number of characteristics including the actors and institutions involved in administering initiatives, governance arrangements, funding models and their focus of change.

1.2.1. Actors

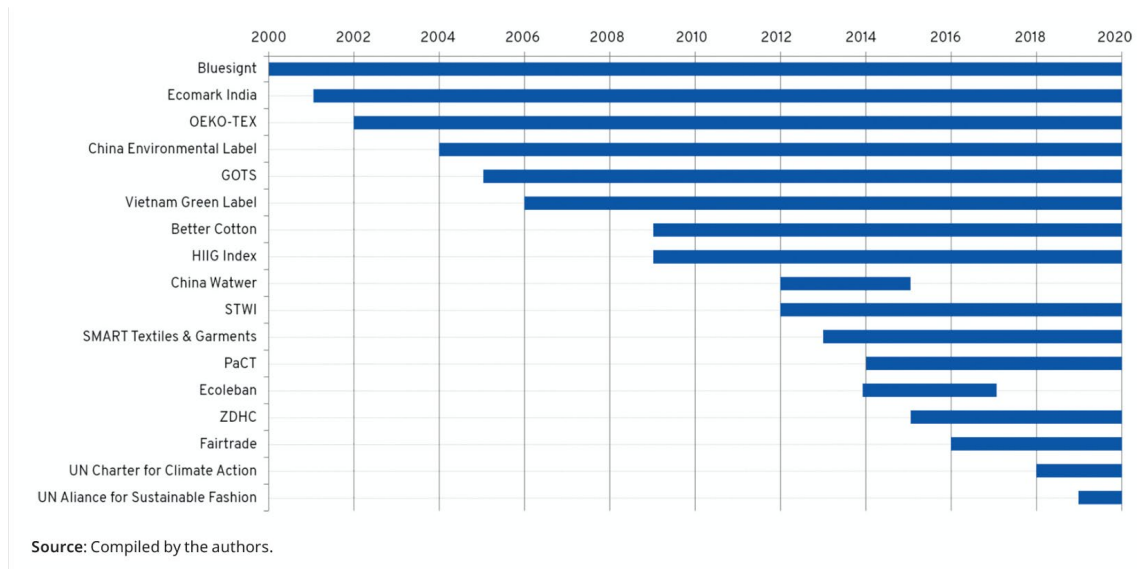
The environmental initiatives were owned or administrated by a variety of organizations. Several initiatives were established through aid organizations of international organizations or bodies, such as the International Finance Corporation (PaCT and China Water) and European Union (Ecoleban via Switch Asia Program). By far the largest category of actors was not-for-profit organizations and foundations that were established to manage and deliver the environmental initiative. These consisted of larger international non-profits such as Better Cotton, Sustainable Apparel Coalition, Fairtrade, Stockholm International Water Institute and Bluesign, as well as smaller non-profits such as GOTS, Sequa and the Stichting ZDHC Foundation. The final

category of actors were government agencies within the countries of operation, including China, India and Viet Nam. These government run initiatives were often associated with one-off funding and information on the initiatives was outdated and the status of the initiative at the time of research was uncertain. Table 4 provides summary data on the administration arrangements for each of the initiatives, and figure 3 shows the length of time these initiatives have been in operation.

► **Table 4. Administration arrangements of the selected initiatives**

Initiative	Years in existence	Owner/administrator	Based where?
Partnership for Cleaner Textile (PaCT)	6 (est. 2014)	International Finance Corporation (administrator)	Bangladesh
Better Cotton Standard System	11 (est. 2009)	Better Cotton Initiative (not for profit)	Geneva, Switzerland
Higg Index	11 (est. 2009)	Sustainable Apparel Coalition (not for profit)	San Francisco, CA, United States
Fairtrade Textile standard	4 (est. 2016)	Fairtrade International (not for profit and private company)	London, United Kingdom
China Water Advisory Services Project	3 (2012–2015)	International Finance Corporation	Washington, DC, United States
Ecoleban Guidelines	4 (2014–2018)	European Union (Switch Asia Program)	Thailand
Bluesign	20 (est. 2000)	Bluesign (private company)	Geneva, Switzerland
Global Organic Textile Standard (GOTS)	15 (est. 2006)	GOTS – four member organizations: OTA (United States), IVN (Germany), Soil Association (United Kingdom) and JOCA (Japan)	Germany
SMART Myanmar – SMART Textiles & Garments	7 (est. 2013)	Sequa (non-profit)	Germany
Zero Discharge of Hazardous Chemicals (ZDHC)	5 (est. 2015)	Stichting ZDHC Foundation	Netherlands
OEKO-TEX® Standards	18 (est. 1992)	OEKO-TEX® (union of 18 independent research and test institutes)	Zurich, Switzerland
Vietnam Green Label (info not current)	14 (est. 2006 – unknown if still operational)	Vietnam Ministry of Natural Resources and Environment (MONRE)	Viet Nam
Ecomark India	19 (est. 1991)	India Central Pollution Control Board (CPCB)	India
China Environmental Label (info not current)	16 (est. 1994)	(Former) China Ministry of Environmental Protection and China Environmental United Certification Centre (CEC)	China
Sweden Textile Water Initiative (STWI)	8 (est. 2012)	Stockholm International Water Institute (SIWI)	Stockholm
UN Fashion Industry Charter for Climate Action	2 (launched 2018)	United Nations Framework Convention on Climate Change	Bonn, Germany
UN Alliance for Sustainable Fashion	1 (launched 2019)	ITC Ethical Fashion Initiative and UN Environment (co-secretariat)	Geneva, Switzerland, and Nairobi, Kenya

Source: Compiled by the authors.

► **Figure 3. Duration of operation of the selected initiatives**

1.2.2. Governance

There are a variety of governance structures for the various environmental initiatives reviewed. Generally, the larger initiatives worked across the supply chain collaborating across fashion brands, manufacturers, suppliers (for example, chemical suppliers), factories and laboratories. Often the fashion brands or related businesses are founding members. Those initiatives funded by international bodies (such as the European Union (EU) or the International Finance Corporation) have an established operating unit or non-profit organization that delivers the initiative. Partners also include other non profits in developed countries and banks that facilitate green lending. In the case of Fairtrade, the Sweden Textile Water Initiative and the Higg Index, there is a non-profit or foundation that works alongside an established private company to deliver the operational aspects of the initiative. Partnerships with local industry associations and research centres are also common within some of the initiatives.

1.2.3. Funding

The funding of the initiatives fell into three categories:

- privately funded via participation, membership, license or sponsorship fees;
- funding from international bodies (for example, the EU);
- private funding (table 5).

► **Table 5. Funding arrangements of the selected initiatives**

Initiative	Funding arrangement/source
Partnership for Cleaner Textile (PaCT)	Participation fees Sponsorship (government and private)
Better Cotton Standard System	Income (for services delivered) Grants and Donations (private & public) Volume-based membership fees & funding from brands
Higg Index	Membership fees (private companies pay annually, amount based on revenue, government membership free, NGOs & academics \$1K/year)
Fairtrade Textile standard	1. Licensee fee from Fairtrade certified products 2. Grants and donations 3. Other income
China Water Advisory Services Project	Private funding (bond issuances)
Ecolaban Guidelines	EU funding (member countries, import duties and fines)
Bluesign	Private (partners/ clients pay service fee)
Global Organic Textile Standard (GOTS)	License Fees (annual) Certification fees
SMART Myanmar - SMART Textiles & Garments	Co-funded by EU and private sector partners (brands, retailers and factories) - charge for factories to participate in programme
Zero Discharge of Hazardous Chemicals (ZDHC)	Membership (brand companies, textile companies)
OEKO-TEX® Standards	License Fees
Vietnam Green Label (info not current)	Subscription fees and Government
Ecomark India	Subscription fees and Government
China Environmental Label (info not current)	Subscription fees and Government
Sweden Textile Water Initiative (STWI)	Membership fees and Government
UN Fashion Industry Charter for Climate Action	United Nations and donor country funding
UN Alliance for Sustainable Fashion	United Nations and donor country funding

Source: Compiled by the authors.

1.2.4. Focus of change

The sustainability elements addressed by each of the initiatives is varied. Across all the initiatives there is naturally a strong focus on water (including water intensity and waste water pollution) and energy (including greenhouse gas emissions). Chemical use and management are also a focus. See table 6 for further details.

Analysing the focus on change using the three initiative models – performance standards; programme offer; and social dialogue, knowledge sharing and advocacy – draws out some patterns. The programme offer initiatives and the more complex and comprehensive examples of the performance standards initiatives operate across multiple sustainability elements. Integrating multiple sustainability elements is obviously more effective, and this integration will look different in different parts of the sector. For example, in textile manufacturing, integration would include the water–energy–chemical nexus. In garment assembly, the energy–waste nexus would be more relevant.

In each case, how these environmental sustainability elements are combined with social sustainability and decent work criteria are also critical. Yet, in very few initiatives are social and environmental elements closely

integrated. The Higg Index is an exception, although here the focus is on complying with a performance standard, and in the context of most participants in the sector in Asia – this is a high standard. The focus of the Higg Index is on compliance, rather than building capacity for compliance. This limits the success of the initiative, as from the limited evidence available, compliance is simply out of reach for many firms, especially smaller, less resourced firms.

► **Table 6. Sustainability elements of the selected initiatives**

Initiative	Sustainability element											
	Waste/ Recycling	Water Use	Energy Use	Wastewater/ Water Pollution	Chemicals/ Hazardous Substances	Greenhouse Gas Emissions/ Air Pollution	Crop/ Soil Health	Biodiversity	Deforestation	Environmental Policy/ Management Systems	Fibre Quality	Materials
Partnership for Cleaner Textile (PaCT)	-	✓	✓	✓	✓	✓	-	-	-	-	-	-
Better Cotton Standard System	-	-	-	✓	-	-	✓	✓	-	-	✓	-
Higg Index	✓	✓	✓	✓	-	✓	-	-	-	✓	-	-
Fairtrade Textile standard	✓	-	✓	✓	✓	✓	-	-	-	✓	-	-
China Water Advisory Services Project	-	✓	✓	-	-	-	-	-	-	-	-	-
Ecolaban Guidelines	✓	-	✓	✓	✓	✓	-	-	-	-	-	-
Bluesign	✓	✓	✓	-	✓	✓	-	-	-	-	✓	-
Global Organic Textile Standard (GOTS)	-	-	-	-	✓	-	-	-	-	✓	✓	-
SMART Myanmar - SMART Textiles & Garments	-	✓	✓	-	✓	-	-	-	-	-	-	-
Zero Discharge of Hazardous Chemicals (ZDHC)	-	-	-	✓	✓	✓	-	-	-	-	-	-
OEKO-TEX® Standards	-	-	-	-	✓	-	-	-	-	✓	-	-
Vietnam Green Label (info not current)	-	-	-	-	-	-	-	-	-	-	-	-
Ecomark India	-	✓	-	-	✓	✓	-	-	-	-	-	-
China Environmental Label (info not current)	-	-	-	-	-	✓	-	-	-	-	-	-
Sweden Textile Water Initiative (STWI)	-	✓	-	✓	-	-	-	-	-	✓	-	-
UN Fashion Industry Charter for Climate Action	-	-	✓	-	-	✓	-	-	-	-	-	✓
UN Alliance for Sustainable Fashion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ = Sustainability element included under initiative. - = Sustainability element not included under initiative.

► 2 Barriers and enablers to eco-innovation in MSMEs in the textile and garment sector

This section provides a summary of a literature review of barriers and enablers for eco-innovation in micro, small and medium sized enterprises (MSMEs) in the textile and garment industry. Where possible, literature about textile MSMEs in the target countries was identified; however, this was limited, so the literature review also includes literature related to enablers of innovation and organizational change for MSMEs more broadly, and to MSMEs in the textile and garment sector beyond Asia.

There are few literature reviews of the textile and clothing industry MSMEs in Asia. Collectively, MSMEs are the largest employers in many low-income countries (McCourtie 2013). The World Bank defines these enterprises by employment: micro, 1–9 employees; small, 10–49 employees; and medium, 50–249 employees. However, each nation and their statistical agency has different definitions of MSMEs, some include employment numbers, others also turnover and assets.

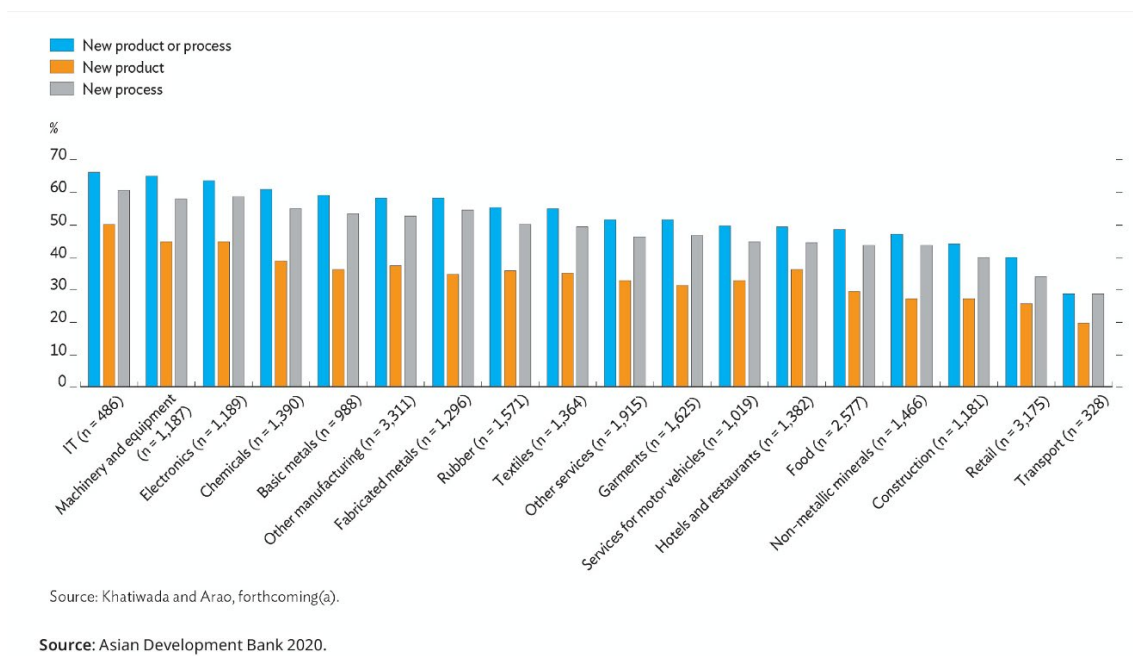
2.1. Innovative activity in Asia

Asian firms show high innovation potential. Analysis of a survey of 27,000 firms in developing Asia finds that 53 per cent innovate to produce new products, processes or both (see figure 4). Highly innovative industries include information technology and high-tech manufacturing industries such machinery and equipment, electronics, and chemicals, with textiles and garments showcasing a lower degree of innovative activity. Innovative firms are usually larger, older and active exporters (Asian Development Bank 2020).

In Asia, two-thirds of large firms report introducing either product or process innovation, compared with 55.6 per cent of medium-sized firms and 41.6 per cent of small firms. Large firms were found to have statistically significant higher shares of both product and process innovation (Asian Development Bank 2020).

A study in Indonesia identified that new technologies can bring innovation to companies and workers in textiles clothing and footwear industries, but that individual firms lack absorptive capacity to adopt these new technologies. Absorptive capacity essentially means the internal know-how to translate new information and knowledge into something useful for the firm. Using LinkedIn data, a recent survey by the Mandiri Institute (2020) found that many firms struggle to find workers with the right competencies in software and information technology services, inducing them to move to other countries. The challenge of growing a tech-savvy workforce goes beyond expanding access to education (which is low across Asia, with only 16 per cent of the population having a tertiary education) to building knowledge and awareness of new technologies (Asian Development Bank 2020).

► Figure 4. Innovative activity in Asia by sector



2.2. Eco-innovation in the textile and garment sector

For multinationals and small- and medium-sized enterprises (SMEs) the pressure to move toward sustainability and innovative operational change is now constant and considerable, yet the resources available to do so, including absorptive capacity, are vastly different. In the Textile and Garment sector there is a lack of research that analyses the implementation of eco-innovations in SMEs and more broadly in enterprises in developing country contexts, where most of the production of the sector is located (Islam, Perry and Gill, 2020). This section provides an overview of the available literature analysing ecoinnovation adoption in the textile and garment sector, including drawing on analysis of the sector in Africa and South America, as well as Asia.

In a study of SMEs in Botswana and Colombia's textile and leather industries (via interviews with experts in the field), key barriers for SMEs identified included (Bhamra et al. 2018):

- lack of awareness about environmental legislation and social impact;
- lack access to knowledge and skills transfer networks;
- communication gaps in supply chains; X low savings rates; poor infrastructure.

In addition, lack of success with sustainability measures was highly related to the socio-economic situation of the business and the strain on SME owners' "social position", such as:

- a belief that the current status quo is the only way of making money;
- a follower mentality – the notion that something is feasible only if proven to be successful elsewhere (Bhamra et al. 2018).

In these countries it was mixed as to whether companies analysed were adhering to any sustainability standards or certification frameworks. Those companies that did not adhere to any sustainability standards expressed that a lack of skills was the main barrier to doing so, and those that were adhering to such

standards stated that the lack of a coherent business strategy outlining the businesses innovation intentions was a barrier to accessing the full benefit of adhering to these standards (Bhamra et al. 2018).

In Colombia, the study highlighted that SMEs are so immersed in their day-to-day routines that they have neither the time nor the resources to think about improving their practices, using their resources more efficiently, and decreasing costs. In many cases, SMEs depend on external help from government programmes or professionals from consultancies to carry out these important tasks as knowledge intensive service activities (KISAs)⁵. The experts interviewed in the study highlighted the linkages between developing an underlying business strategy that identified the trajectory of the business and the ability of the firm to subsequently develop innovative products and services. In general, the MSMEs involved in both studies were unable to articulate their business strategy, objectives and long-term vision. The experts highlighted that this is common with MSMEs in their countries because of the way these small factories work. Running these businesses is very demanding, and major decisions are the responsibility of a single individual – usually the owner or head of the family. The priority is to survive, and there is often little time available to think in longer terms, even though longer-term investments and pay-back periods are possible in family-owned firms.

Further, in many cases, businesses are founded by entrepreneurs with no formal business education. As a result, they do not necessarily have the knowledge and tools to define a formal strategy and grasp the broader forces shaping their business environment. This again reinforces the focus on survival, rather than seeking new opportunities by implementing new innovative practices (Bhamra et al. 2018). The role of government support is also critical. This support comes in the form of two activities: (1) establishing legal frameworks and regulations that act as the minimum performance standards; and (2) creating incentive schemes that encourage businesses to go beyond minimum levels of compliance. Bhamra et al. (2018), concluded that SMEs in both countries studied (Botswana and Colombia) would benefit from a legal framework defining:

- the environmental standards that companies should comply with if they want to operate; and
- the parameters of fair commercial agreements that address the interests of all parties involved.

Other research highlights the importance of government regulatory frameworks in encouraging environmental sustainability in SMEs in developed countries (Aragon-Correa et al. 2008), but the evidence of regulations shaping environmental intentions is less clear in developing countries. In part this could be the result of weaker regulatory institutions. For example, in Tunisia, SMEs noted that public authorities did not exercise the necessary controls when granting technical assistance, support and grants (Gherib and Ghazzi-Nékhili 2012).

Competitors have been identified as the single stakeholder group that influences the formation of environmentally friendly intentions among owner-managers in developing country contexts (Tounes et al 2019). Other studies from other sectors have concluded that environmental organizations and associations influence owner-managers to undertake environmental initiatives (Flannery and May 2000; Papagiannakis and Lioukas 2012). This variety could suggest that environmental intentions are not as concerned with managing external stakeholders in emerging markets. In other words, that institutional pressures does not represent significant coercive force to the same extent in emerging markets. This is especially true when regulatory devices are limited in number and not sufficiently known or adopted by businesses, as is the case in Africa and Asia.

2.3. Innovation enablers

Access to finance, particularly debt finance, is an important innovation enabler for MSMEs. The lack of access to finance is an identified issue in the adoption of sustainability practices – both environmental and social in SMEs (Gadenne et al. 2009; Labaronne and Gana-Queslati 2011). Public policy has a role to play in ensuring

⁵ KISAs are knowledge intensive activities found as part of innovation processes in firms (OECD 2013).

and encouraging access to finance for MSMEs for environmental investments, including providing financial incentives for enhanced environmental practices, particularly practices that go beyond minimum standards.

Activities that overcome information barriers are also useful in encouraging the implementation of sustainable practices in MSMEs (Sleg and Vlek 2009). However, information needs to be contextualized, specific and adapted to the circumstances of the individual firm or sector. There is a close link between awareness of environmental issues and intentions to adopt environmentally sustainable practices. Civil society organizations and government actors can both play a role in this awareness raising. Training and educational providers also contribute, and environmental sustainability should be integrated into technical and vocational education and training programmes across the sector.

For example, a study of eco-innovation among batik⁶ SMEs in Indonesia found that the higher economic and financial returns of producing environment-friendly products provided motivation to shift to cleaner production (Aryantol, Wismantoro, and Widyatmoko 2018). To date, however, the market for these sustainable textiles and garments is mostly in the international market; so export capabilities and experience are needed alongside knowledge of environmentally sustainable practices. In fact, business success in textile and clothing firms is strongly related to a strong relationship between innovation and internationalization, and access to external suppliers of knowledge, in particular leading industrial and commercial partners is critical (Zuchella and Siano 2014).

While analysis of this more integrated and holistic view of sustainability (including the social and environmental aspects) of garment supply chains in Asia is limited, a study of five Indian textile units located in South India identified influential enablers for sustainable supply chain management, and revealed that five enablers dominate the industry's practices (Diabat, Kannan and Mathiyazhagan 2014):

- adoption of safety standards;
- adoption of green practices;
- community economic welfare;
- health and safety issues; and
- employment stability.

The combination of working standards, job security, community welfare and green practices provides further support for an integrated approach to environmental sustainability that includes the social and gender aspects of the sector's workforce. These enablers match closely to the requirements for a just transition, and as the ILO Guidelines for Just Transition highlight, require a holistic and coordinated view of development and sustainability.

⁶ Batik refers to a traditional Indonesian process for dyeing fabrics.

► Conclusion and implications for the effectiveness of green initiatives

The textile and garment sector is one of the most globalized supply chains in the world. The social and environmental impacts of the supply chain are under close scrutiny by many stakeholders. In response to these impacts and in recognition of the complex and multi-faceted drivers of and solutions to these issues, a number of initiatives, tools and assessment platforms have been developed and implemented throughout the supply chain.

There is a great deal of diversity in these initiatives, including differences in their focus, the actors involved, who the beneficiaries are, the longevity of the activities, and how they define and measure success. For many stakeholders the number and diversity of initiatives is confusing.

The first aim of this paper was to map and analyse these initiatives in the supply chain, specifically focusing on initiatives that seek to enhance environmental sustainability in the sector. A short-list of 17 initiatives from a long list of 35 was analysed in Section 2. The analysis of the selected initiatives highlighted three operating models for these environmental initiatives:

1. **Performance standards** – usually with certification and sometimes capacity-building activities. This includes, at one end of the spectrum, ecolabelling initiatives – where producers meet certain criteria in order to access a label to signal environmental sustainability to customers and/or consumers – through to more complex and comprehensive performance standards that assess performance in social and environmental sustainability, for example the Higg Index or Bluesign. These latter initiatives have comprehensive guidance materials and technical capacity-building and audit activities.
2. **Programme offer** – a time-limited programmes of activities usually including brand-level dialogues and tool/advice development, factory-level audits and engagement activities, policy system analysis and advocacy, and access to finance for sustainability investments. Examples include the Sweden Textile Water Initiative and PaCT.
3. **Social dialogue, knowledge sharing and advocacy** – these initiatives focus on social dialogue and knowledge-sharing activities up and down the supply chain. These initiatives are usually linked with wider sustainability goals such as the SDGs, and contextualizing these goals for the textile and garment sector. These initiatives usually have a strong role for multi-stakeholder dialogue. Examples include the UN Alliance for Sustainable Fashion (linked to the SDGs) and the UN Fashion Charter for Climate Action (linked to the Paris Agreement).

The second aim of this paper was to uncover how these initiatives overlap with barriers and enablers for eco-innovation in MSMEs. These firms make up the majority of firms within the supply chain and a significant proportion of employment. These firms are not often at the core of the supply chain but rather at the periphery – existing through sub-contracting relationships with the larger firms and buyers.

The sustainability challenges in these firms are similar to all firms in the supply chain, yet because of their smaller size (and correspondingly smaller human and financial capital resources) and their peripheral position in the supply chain (with less access to knowledge and know-how), these challenges are more difficult to overcome.

Section 3 summarized a literature review of barriers and enablers for eco-innovation in SMEs. We drew upon literature from studies focusing on textile and garment firms/ sector and/or Asian MSMEs. This review highlighted a number of barriers to the uptake of eco-innovations including:

- Lack of awareness about environmental issues and their impacts, including social impacts;

- Lack of awareness of options for eco-innovation, and how eco-innovation could be integrated into strategic business planning activities and contribute to competitiveness and productivity;
- Lack of awareness of responsibilities in complying with environmental legislation, and know-how in investing in moving beyond mere compliance;
- Lack access to knowledge and skills transfer networks – seeing how best practice is implemented in other businesses and the capacity to adapt and adopt;
- Communication gaps in supply chains;
- Low savings rates as a barrier to access to finance;
- Poor infrastructure, for example, access to water systems and waste water filtration systems.

Considering the conclusions from the initiatives analysis and the literature review of eco-innovation in MSMEs, two key findings emerge:

First, none of the initiatives specifically focus on MSMEs, even though these firms make up a significant proportion of the sector and have clear, distinctive and well-evidenced barriers for the adoption of cleaner production processes.

Second, while none of the three operational models for initiatives seek to exclude MSMEs, there are a number of features in each model that limit their ability to have the desired impact on MSMEs:

- Concerning the performance standards model, MSMEs tend to lack the required level of internal absorptive capacity to bring in, integrate and use the performance standards in a way that develops the environmental sustainability of the firm.
- Concerning the programme offer model, if an MSME is within the target group for the initiative the firm will likely benefit from the programme offer model, because these programmes provide a mix of capacity building, auditing and improvement advice, access to finance and advocacy to policymakers to address other non-market barriers. However, because of the resource intensity of these initiatives only a relatively small number of firms can benefit, and therefore they are not offered on a scale to deliver widespread, system-level change.
- The social dialogue, knowledge sharing and advocacy model is useful in sharing “best practices”, but a limitation can be found in who is included in the dialogue and what is considered as being “best practice”. Are all stakeholders with roles and potential roles in enhancing environmental sustainability part of the dialogue – including MSMEs? And what processes are in place to address and moderate other issues of inclusivity, such as power imbalances and differing knowledge bases.

These sector-based initiatives have an important role to play in coordinating sustainability activities across the sector, and these mechanisms will be essential in achieving enhanced environmental sustainability in the sector, including achieving emissions reduction goals with a low carbon transition that is also “just”.

These initiatives represent a form of sectoral governance mechanisms that can operate at the sectoral level, but also mutually reinforce and enhance efforts at the country level (regulations, public incentives) and enterprise level (firm level strategy, behaviour change, investments in eco innovation).

However, there are limits to these initiatives, and we should be aware of these limits. Each of the three types of operating model has, by design, limitations with regard to reach, coverage and focus, and this is before implementation metrics are considered (on which there are minimal data available in the public domain). Focus on and coverage geared towards enhancing the environmental sustainability of micro-, small- and medium-sized enterprises in the garment sector is a clear gap – as well as an opportunity and direction for future work.

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